



# CFA Institute

## CFA Institute Research Challenge hosted by CFA Society Hartford Providence College Team B

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# OTIS Made to move you

Figure 1: Company Data

| Key Statistics                  |               |
|---------------------------------|---------------|
| Closing Price (\$)              | 82.44         |
| 52-Week Range (\$)              | 62.31 – 92.84 |
| Shares Outstanding (m)          | 424.962       |
| Market Cap (\$ m)               | 35,033.87     |
| Enterprise Value (\$ m)         | 39,472.87     |
| Dividend Yield (%)              | 1.12%         |
| Float (%)                       | 100%          |
| Avg Daily Vol (3 Mo – Millions) | 2.383         |
| Institutional Holdings (%)      | 86.2%         |

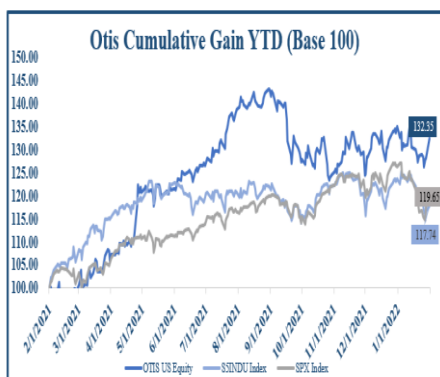
Source: FactSet

Figure 2: Key Metrics (FYE Dec)

| Financial Estimates                 | FY 20A | FY 21A | FY 22E | FY 23E | FY 24E |
|-------------------------------------|--------|--------|--------|--------|--------|
| <b>OTIS: Total (\$ in Millions)</b> |        |        |        |        |        |
| Revenues                            | 12,756 | 14,298 | 14,788 | 15,161 | 15,744 |
| EBITDA                              | 1,830  | 2,311  | 2,377  | 2,517  | 2,699  |
| EBIT                                | 1,639  | 2,108  | 2,176  | 2,308  | 2,448  |
| Net Income                          | 1,056  | 1,420  | 1,445  | 1,556  | 1,680  |
| FCFF                                | 1,324  | 1,722  | 1,693  | 1,697  | 1,866  |
| <b>Margins and Growth (%)</b>       |        |        |        |        |        |
| Gross Margin                        | 29.6%  | 29.3%  | 29.6%  | 29.8%  | 30.0%  |
| EBIT Margin                         | 12.80% | 14.70% | 14.72% | 15.23% | 15.55% |
| EBITDA Margin                       | 14.30% | 16.20% | 16.07% | 16.60% | 16.95% |
| Net Margin                          | 8.3%   | 9.9%   | 9.8%   | 10.3%  | 10.7%  |
| ROIC                                | 25.2%  | 28.3%  | 24.0%  | 23.9%  | 25.2%  |

Source: Company Filings and Internal Research

Figure 3: Price Performance



Source: FactSet

## Executive Summary

Otis Worldwide Corporation (“Otis”, “OTIS”, or the “Company”) is the leading elevator and escalator manufacturing, installation, and service company in the world. With operations in over 200 countries, and an employee base of roughly 69,000 people, we believe that Otis is poised for significant growth in a fundamentally attractive industry (proxy statement).

## Investment Recommendation

We issue a **BUY** recommendation on OTIS with a 12-month target price of \$107.75, representing a 30.7% upside from the stock’s closing price of \$82.44 on February 4, 2022. We calculate this target price from an average of the following three valuation methodologies: discounted cash flow model, comparable company analysis, and a sum of the parts valuation analysis.

## Investment Summary and Outline

With a positive industry outlook, an enticing and durable business model, as well as strong upside potential supported by our valuation analyses, we believe that Otis is currently undervalued in the market and positioned well for future growth driven by the following catalysts: 1) leverage Internet of Things (“IoT”) solutions, which should allow for service portfolio growth and lower servicing costs, in order to capture market share from the Independent Service Providers (“ISPs”) who comprise roughly 50% of the global service market (Barclays Initiating Coverage Report, 15 April 2020, Analyst: Julian Mitchell). 2) Capitalize on the current modernization prospect in the industry, where approximately 6 million (33%) of the 19 million global installed elevator units are greater than 20 years old, which should allow the Company to capture off-portfolio units and increase its leading service portfolio even further. 3) Supported by favorable industry tailwinds, harness the intellectual property and revolutionary new products in order to grow new equipment market share.

### 1) The IoT – The Key To Service Portfolio Growth

At the Sanford C. Bernstein Strategic Decision Conference in June of 2021, Judith Marks – CEO of Otis Worldwide Corporation – expressed that there are currently 2 million installed Otis elevators globally who are being serviced by lower cost ISPs. Specifically, Marks noted that although there are 3.5 million installed Otis units globally, only 1.5 million of those units are in the Company’s industry leading service portfolio of 2.1 million units. Thus, there are roughly 2 million Otis elevators in the market currently being serviced by lower-cost ISPs. It is our belief that through Otis’ commitment to investment in technological and digital solutions, like Otis One and Gen360, the Company should be able to not only recapture a large portion of these 2 million units back into their portfolio, but they should be able to also capture off-portfolio units from many of the ISPs as well. While management plans to continue to leverage its digital offerings across many regions, we believe that China remains the most attractive opportunity for the Company to drive service portfolio growth. Composing roughly 60% of the total new equipment units sold each year and comprising 40% of the global service industry installed base, China remains the world’s largest new equipment and service region in the industry (Otis Investor Day Presentation 2019). With consolidation occurring in the industry amongst the largest real-estate developers, it is our belief that Otis and the other large OEMs have an attractive opportunity to outcompete the ISPs due to the scale, sales coverage, and resources (Otis Investor Day 2019).

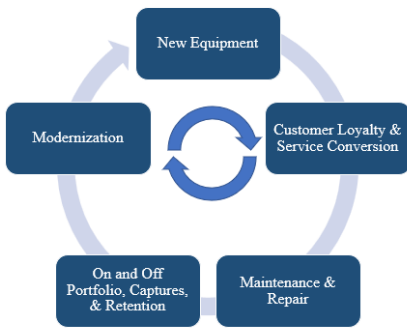
### 2) Modernization – A Two for One Punch!

There is an attractive and lucrative modernization opportunity within the industry, with roughly 33% of the global installed base being older than 20 years old, according to management. With roughly 60% of that figure residing in EMEA, and an emerging modernization opportunity arising in China in the coming years, we expect that Otis should be able to capitalize on this favorable industry trend through the use of its IoT solutions and other digital offerings that provide an attractive value proposition that benefits both clients and Otis itself. Not only will this modernization opportunity allow Otis to increase their share in the modernization space, but it should also allow them to capture off-portfolio units and convert them into their service portfolio and consequently locking the customers into a recurring maintenance contract - a two for one punch!

### 3) Favorable Industry Tailwinds Support New Equipment Growth

In an ever-increasing digital world where connectivity, data-analytics, and productivity are cherished, it is our belief that Otis’ technological advances and new products, supported by favorable industry trends, should allow them to increase their industry-leading portfolio in a competitive \$80 billion industry. It is our belief that Otis’ commitment to increasing their global density, by increasing their salesforce strategically, in addition to their new products and Internet of Things technology, should allow them to offer customers a value-added proposition that is hard to refuse. These innovative solutions, coupled with favorable macroeconomic tailwinds including a rise in the global urban population, a growing middle class, and the increased demand for connected IoT devices should only help catapult Otis’ growth in this segment. According to their investor day presentation in 2019, it is estimated that by 2050 the global urban population is estimated to make up 70% of the total population, in addition to the middle class to around 5.5 billion by 2030, as well. As a result, Otis’ strong brand name, long-history- and recent commitment to innovation since their spin-off, creates an immense moat around the company that we believe should allow them to continue to grow their new equipment segment at a time when the industry is ripe with opportunity and tailwinds.

Figure 4: Business Model



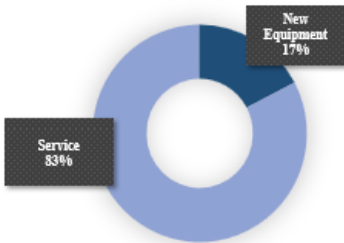
Source: Repurposed from Company Investor Day 2019

Figure 5: Otis 2021 Revenue Breakdown by Business Segment



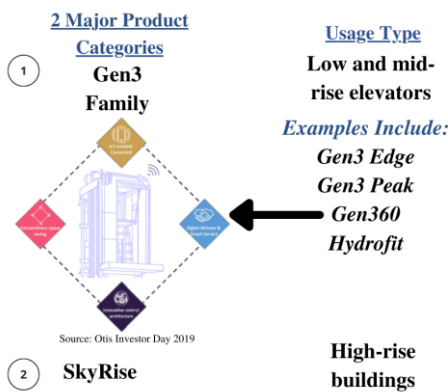
Source: Company Filings

Figure 6: Otis 2021 Operating Profit Breakdown by Business Segment



Source: Company Filings

Figure 7: Otis Products The Otis Product Portfolio



**Business Description**

Otis Worldwide Corporation was founded in 1853 and is the world’s market leading elevator and escalator manufacturing, installation, and service company physically located in over 80 countries today. In addition to elevators and escalators, Otis also designs, manufactures, sells, and installs a range of moving walkways. The Company operates and delivers its products and services in 3 main property sectors. These sectors include infrastructure (i.e. airports, railways, or metros), commercial (i.e. office spaces, hospitals, malls), and residential. Aside from their new equipment business, Otis provides servicing needs for its own products, as well as many off-portfolio customers. These services include regular maintenance and repairs, in addition to modernization services. Modernization services consist of upgrades on aging elevators and escalators, typically greater than 20 years old, which can range from a simple aesthetic upgrade to complete operational upgrades to the unit itself. In order to serve their customers, Otis typically sells directly to the end-customer through its network of 4,200 sales representatives, in addition to agents and distributors in different regions. While Otis became a publicly listed company in 1920, in 1976 the Company was acquired by United Technologies (“UTC”), consequently taking the company back to its private form. However, in April of 2020, the Company was spun off from UTC, forming Otis into a public and independent company once again (Otis SEC Form 10 and 2021 10-K).

**Business Model**

At the Sanford Bernstein Strategic Decision Conference, Judith Marks described Otis’ business model, like others in the elevator industry, as being characteristic of the “razor blade model” (Otis Worldwide. (2021) 2021 Bernstein Strategic Decisions Conference. <https://www.otis.com>). The sale of Otis’ new equipment signifies the “razor” of its business model which generates 45% of the Company’s revenue, but only 20% of its total profit (Otis 2021 10k). Yet, it is important to note that unlike many other companies who institute the razor-blade model, Otis and the other players in the elevator industry actually generate a profit on the sale of their new equipment (razor) segment. According to management, typically the first 1-2 years of maintenance service is included within the contract of the new equipment. This period is what the Company deems as the “warranty period” (Bernstein). Once this period ends, Otis aims to attach the new unit to their service portfolio by locking the customer into a maintenance service contract of 4 years on average (range of 1-5 years). It is important to note that once the 1 year warranty period ends, it is not guaranteed that the OEM who sold the new equipment will win the maintenance contract that follows. Nonetheless, the attachment rate (the rate at which the warranty period ends and the customer decides to stay with the OEM), is very high within the industry. Globally, this rate is approximately 80% for the OEMs, but varies drastically by region with China having an attachment rate of only ~50% (MBI Deep Dives). After the 4 year maintenance contract ends, Otis hopes to continue to reattach the customer into additional 4 year contracts for a period of about 20 years - the average useful life of an elevator before it needs an upgrade. It is also important to note that once the OEM has gained control of the recurring maintenance contract, the renewal rate from the customer is immensely high, with Otis maintaining the industry leading renewal rate of 93-94% globally. Thus, it is clear that the maintenance and repair division of Otis’ service segment resembles a subscription or annuity-like revenue stream that is predictable, durable, and resilient in times of economic distress such as Covid-19. After continuing to re-initiate maintenance contracts, once the equipment reaches an age of 20 years, Otis aims to modernize the equipment through aesthetic or operational upgrades such as new hoistways, controllers, door operators, and more. It is after this modernization period, that Otis aims to re-sign the customer to its service portfolio again, initiating the service cycle and maintenance contracts again. In short, Otis’ services segment is the “blade” of the business model, providing a stable, consistent revenue stream and high-margin division that shelters the company in times of downturns. With this segment comprising 55% of its revenue and 80% of its total profit, it is clear why management has deemed the Company a “business services company” at the heart (Bernstein conference).

**Business Segments**

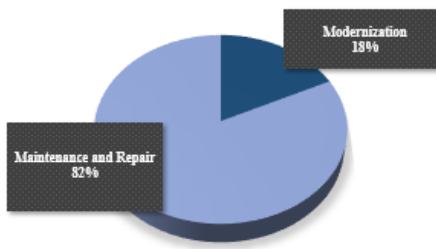
**1) New Equipment**

Within the new equipment industry, 1 million new equipment units are sold each year globally, of which Otis estimates to have the industry leading market share of 16%. In 2020, the company generated new equipment sales of \$5.4 billion, with \$318 million in operating profit. Otis currently has 14 manufacturing facilities located in Brazil, China, the Czech Republic, France, India, South Korea, Russia, Spain, and the United States, who are supported by roughly the Firm’s 1,500 new equipment sales representatives and 7,200 installation employees. As mentioned previously, Otis’ new equipment segment can be broken down into 3 main end markets for their customers: residential, commercial, and infrastructure. In order to meet the needs and demands of their customers within these respective segments, Otis has a variety of products that it offers to its clients. It is important to note, in 2019, over 50% of the new equipment orders received were for elevators using the Gen2 system - the basis for low and mid-rise elevator solutions (Form 10 - 2020). The customers Otis serves in the new-equipment segment consists of real-estate and building developers, as well as general contractors who develop and/or design buildings for residential, commercial, retail, or mixed-use activity (Company 2021 10k). According to MBI Deep Dives, who conducted an internal call with a member from Otis’ Investor Relations, roughly 60-70% of the 1 million new equipment units sold each year stem from the residential sector, with the remaining 30-40% being attributed to both the infrastructure and commercial sectors. Specific to Otis, management notes that their end market exposure is more than 50% driven by residential, which aligns well with the global figures just stated (Q22020 Earnings Transcript). All in all, management expects the new equipment segment to trend in line with Gross Domestic Product (GDP), growing at a low to mid-single digit figure in the medium term according to their Investor Day presentation in 2019 (Otis Investor Day 2019).

**2) Services**

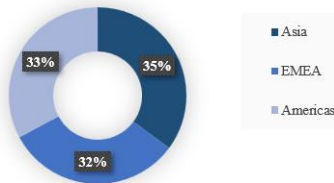
With roughly 2 million elevator units under maintenance contract, Otis also maintains the market leading share of approximately 12% of the service industry. These 2 million units under contract are inclusive of both Otis’ own products and units from other OEMs. In 2019, Otis’ service segment generated sales of \$7.5 billion, with

**Figure 8: 2021 Service Revenue Breakdown**



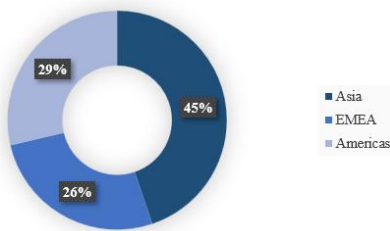
Source: Company Filings

**Figure 9: 2019 Total Revenue by Geography**



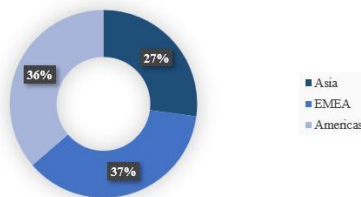
Source: 2019 Company Investor Day Presentation

**Figure 10: 2019 New Equipment Revenue by Geography**



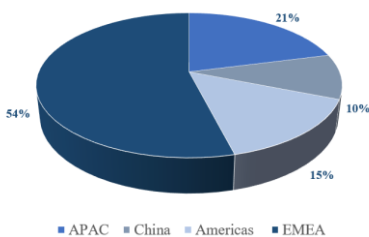
Source: 2019 Company Investor Day Presentation

**Figure 11: 2019 Service Revenue by Geography**



Source: 2019 Company Investor Day Presentation

**Figure 12: Maintenance Portfolio Breakdown (~2.1 million Units)**



Source: 2019 Company Investor Day Presentation

operating profit of \$1.6 billion. Within this business segment, the company offers inspections to ensure compliance with code, maintenance offerings to prevent accidents, as well as customized offerings to meet specific customer needs. In order to deliver on these services, Otis leverages its 33,000 field technicians who operate out of the Firm’s 1,4000 branches and offices which are typically situated closely to their end-customers. Furthermore, the Company offers and sells these services directly to customers through its network of roughly 2,700 dedicated service sales employees. These customers include building owners, facility managers, housing associations, and government agencies that operate and run buildings where elevators and escalators are installed (Form 10). As we have mentioned, Otis’ service segment consists of two business units that will be explained next. These are 1) maintenance and repairs and 2) modernization.

**a) Maintenance and Repair**

As described earlier, the maintenance and repair segment contributes 80% of Otis’s overall service segment revenue and serves as the high-margin, annuity-like revenue stream that proves resilient in times of economic distress and downturns. Otis’ service portfolio of 2.1 million units is the leader in the industry, which is supported by their industry leading conversion rate of 94%. By using Covid-19 as a stress-test and example for analysis, it is evident that this segment truly provides a shield to the company in times of economic uncertainty, and we find the business model extremely attractive due to its free-cash flow visibility, its predictability, and durability.

**b) Modernization**

While only 20% of service revenue, the modernization sub-segment provides an attractive opportunity for the business as a whole. As Judith Marks continues to comment in her investor calls, there is immense opportunity within the modernization segment. Over 5 million global units are over twenty years old and in need of modernization. In EMEA alone, there are 3 million units that are over 20 years old as well. Management sees modernization as an attractive opportunity for the company moving forward not only to bolster revenue in this segment, but to then convert these modernization units into the service portfolio as well.

**Geographical Perspective**

The Company maintains a diverse revenue base spread across the 3 main regions where the Company operates. These are 1) the Americas, 2) Europe, Middle East, and Africa (“EMEA”), and 3) Asia.

**Americas:**

In 2019, of the \$13.1 billion the Company generated in total revenue, 4.3\$ billion (32.82%) came from the Americas. Furthermore, management notes, of this \$4.3 billion, 63% came from service revenue with the remaining 37% coming from new equipment revenue. As mentioned with 1,400 branches and offices globally, in addition to 69,000 employees, Otis maintains 200 offices and branches (14.29%) in the Americas with 15,000 (21.74%) of their workforce located in the region as well.

**EMEA:**

Similar to the Americas, in 2019, Otis generated \$4.2 billion in sales in EMEA, comprising 32% of the Company’s total revenue for the year. The revenue split of this \$4.2 billion matches almost identical to that of the Americas as well, with 65% stemming from services and 35% from new Equipment. The company maintains 700 branches and offices (50%) in the region with 37.68% (26,000) of their employee base located in the region as well.

**Asia:**

In 2019, Asia contributed 35.11% of the company’s total sales, with service comprising 44% of this amount and new equipment covering the remaining 56%. Within Asia, Otis currently holds 500 offices (35.71%) and 28,000 employees (40.58%) of the total 69,000 employees.

**Overview of Portfolio**

With the industry leading portfolio, in both new equipment share and maintenance units under contract, as of 2020 43% of Otis revenue stemmed from new equipment with the remaining 57% being allocated to the service segment. Within the service segment, as has been mentioned, roughly 82% of the segment’s revenue is driven from maintenance and repair, with the remaining 18% coming from modernization revenue. Given the durable, predictable nature of the service segment, we are attracted to this revenue mix and find the skew towards service revenue an admirable quality of the quality. From Otis’ Investor Day Presentation in 2019, of the leading 2-million-unit maintenance portfolio, 50% of the portfolio rests in EMEA and the region accounts for 45% of the total installed base worldwide. The remaining ~50% of Otis’ portfolio can be broken down almost evenly between the Americas at 15%, China at 15%, and Asia-ex China at 15% as well.

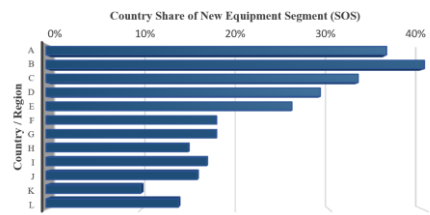
**Market Strategy – New Equipment Segment**

Within their earnings calls and other presentations, management has continued to outline numerous priorities and goals for the medium to long term in order to create value for shareholders. In order to clearly understand the Company’s vision moving forward, it is important to analyze these strategies from both of the company’s business units. Despite this, it is clear that since the spin-off in 2020, Otis has made it a priority to transform itself into a growth company that prioritizes innovation and technology at the forefront in an ever increasing digital and connected world.

**1. Increase Sales Coverage and Effectiveness:**

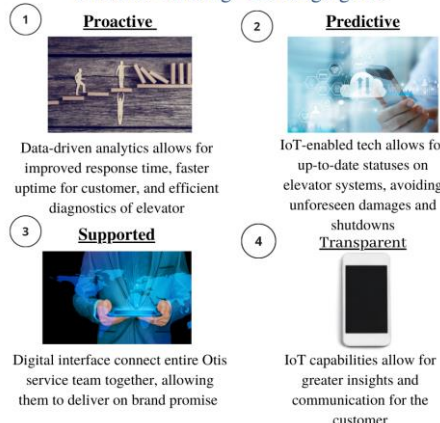
In order to grow new equipment share, Otis believes a large driver will be the pure density and reach of the Company. As such, in order to capture more of the growing new equipment market, Otis has plans to increase its sales force and address an additional 20% of the new equipment market where the company currently does not have sufficient reach. Management notes that especially within China, a huge market for OEMs, Otis has increased its sales coverage by a mid-single digit growth rate (adding more than 850 agents and distributors in

**Figure 13: 2019 Example New Equipment Share by Country / Region Increase Sales Coverage**



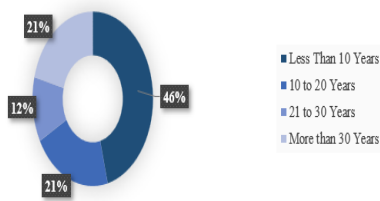
Source: Repurposed from 2019 Company Investor Day Presentation

**Figure 14: Otis ONE Features**  
Otis One Offering - Leveraging IoT



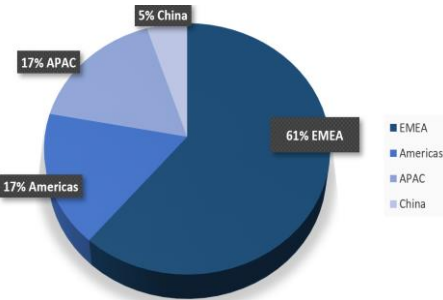
Source: Text and Features Paraphrased from Company Otis One Brochure

**Figure 15: Modernization Opportunity in Industry**



Source: 2019 Company Investor Day Presentation

**Figure 17: Units > 20 Years Old in Industry (~5.5M of Total Global Installed Base)**



Source: 2019 Company Investor Day Presentation

in China), which led to a 7% increase in the amount of new equipment proposals the Company received (Bernstein Earnings Call). Furthermore, through the use of Otis Create - a website that allows customers to custom build and configure an Otis elevator - management hopes to increase the effectiveness of their sales team by allowing them more easily provide customer quotes and specs for clients in a timely fashion.

**2. Expand Product Offering / Introduce New Solutions:**

At Investor Day, Otis highlighted their efforts to introduce new products and solutions in segments of the new equipment market that the Company was previously lacking in. To that end, within the broader Gen2 product segment, Otis recently launched the Gen2Prime in India which allowed them to address the entry-level new equipment segment in emerging markets and is expected to address an additional 50,000 new units annually (2019 Otis Investor Day). In addition to this, Otis recently launched their Gen3 and Gen360 offerings, a next generation elevator that provides energy efficient solutions to meet a growing ESG demand, and integrated IoT technology and connectivity to meet customers' needs in a digital world. All of these efforts aim to increase share in the new equipment market, while also improving conversion rates.

**Market Strategy – Services Segment**

**1. Enhance Subscription Services:**

In the past few years, Otis has made a conscious effort to increase their revenue per unit on their service subscriptions through various add-ons and incremental offerings including access to APIs, their eView offering, and other solutions such as Compass360. Otis estimates through these offerings, it will be able to increase its sales per unit by 30% (2019 Investor Day).

**2. Capitalize on Modernization Opportunity:**

As mentioned previously, Otis has made it clear that the modernization opportunity in the industry is immensely attractive with more than 33% of the global elevator installed base being over 20 years old (approx. 6 million units), and 61% of these units resting in EMEA. By 2024, Otis estimates that more than 1 million units will be older than 15 years in China, another great modernization trend emerging. Through the IoT technology and other strategic plans, management believes it is well positioned to take advantage of this opportunity in the market.

**3. Harness IoT Technology:**

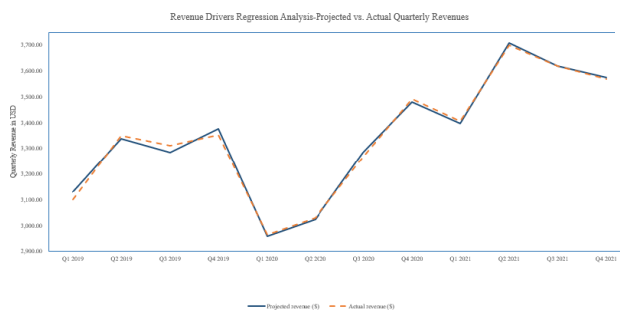
Otis believes that through digital solutions such as Otis One and its other innovative technology, the Company will be able to offer value-added services that please not only the customers, but also increase productivity for the Company as well. With Otis One reducing the time per visit and decreasing the occurrence rate as well, customers will have more uptime on their elevators - a win for both parties. Management believes through leveraging this technology, they will be able to reduce costs, while also making the role of service technicians more fulfilling.

**Revenue Drivers**

**New Equipment Segment**

From looking at the regression analysis below, it is evident that a variety of key indicators play a large role in driving revenue growth for the company. This data, sourced from Bloomberg, exhibits these key indicators and shows how closely they track to actual revenue for the Company. Thus, they should be given close attention.

**Figure 16: Revenue Back test Regression**



Source: Bloomberg and FactSet

| Regression Statistics |              |   |        |         |
|-----------------------|--------------|---|--------|---------|
| Multiple R            | 0.9974       | Average % Error Between Predicted and Actual Earnings = -0.008% |        |         |
| R Square              | 0.9949       |   |        |         |
| Adjusted R Square     | 0.9912       |   |        |         |
| Standard Error        | 317832       |   |        |         |
| Observations          | 12           |   |        |         |
|                       | Coefficients | Standard Error  | t Stat | P-value |
| Intercept             | 1943.723     | 1032.743  | 1.882  | 0.166   |
| EUR/CNY               | 348.587      | 269.822   | 1.282  | 0.287   |
| EUR/USD               | -589.588     | 2407.387  | -0.245 | 0.822   |
| ISM                   | -5.415       | 11.395  | -0.475 | 0.667   |
| Eurozone              | 28.502       | 5.435   | 5.244  | 0.014   |
| China                 | -68.089      | 20.173  | -3.375 | 0.043   |
| Dodge Construction    | 9.275        | 3.071   | 3.022  | 0.057   |
| FE Investment Growth  | -4.437       | 2.362   | -1.879 | 0.167   |
| China Floor Starts    | 0.080        | 0.018   | 4.434  | 0.021   |

**Expense Drivers**

At Otis' Investor Day presentation in 2019, the Company outlined their major costs which contribute to the company's operations. While management has not disclosed this detail around the cost of goods sold breakdown since Investor Day, these figures can be used as a rough proxy for the company's operations today. Thus, when it comes to the cost of goods sold for Otis, management outlined during Investor Day that approximately 67% of their cost of goods sold could be attributed to installation and field costs, with the remaining 33% being attributed to manufacturing costs.

**Installation & Field Costs:**

With installation and field costs comprising the majority of the company's cost of sales at 67%, management has made a conscious effort to reduce these costs in order to improve their margins and lower their expenses. With installation and field costs comprising the majority of the company's cost of sales at 67%, management has made a conscious effort to reduce these costs in order to improve their margins and lower their expenses. According to their Investor Day presentation, management decreased their callback rate from 2017-2019 and lowered their average maintenance hours per visit by 2% in the same time period. As such, we expect this figure to continue to trend lower through the company's IoT technology and Otis One which should lower the amount of visits and increase productivity overall. At the Sanford Bernstein Strategic Conference, management noted that 70% of their cost base is labor on the service side of the business and 30% on the new equipment

side. Thus, through the continued implementation of IoT technology, we expect this figure to continue to trend lower as well.

**Material Costs:**

With the remaining 33% of cost of sales being attributed to manufacturing costs, these costs can be broken down further into labor & overhead, and material costs. While labor and overhead comprises an estimated 26% of their manufacturing costs, we estimate 74% of this amount can be attributed to material costs, made up of both global material suppliers (33%) and local material suppliers (67%). Through reducing the number of suppliers the Company uses, cost reductions, and other methods, Otis hopes to reduce their material costs 3% annually in the medium term (Investor Day). At the Otis Worldwide Corp at Morgan Stanley Laguna Conference, Judith Marks noted that of about the \$2.5 billion per year the Company spends on material, \$300 million of that is raw materials, of which 75%-80% is steel. While Otis does not break out the remainder of their raw material spend, Kone – a direct competitor of Otis – can be used as a proxy for the remaining raw material exposure. As you can see in the figure to the left, the remaining raw material exposure consists of raw earths, aluminum, car fuel, and copper. Thus, all of these components are important to the company and must be tracked in order to understand the drivers of the company’s expenses in any given quarter and year.

**Selling, General, and Administrative Expenses (SG&A):**

While management does not provide a breakdown of the Company’s SG&A expenses, it is important to note that the Company has set a medium term goal to reduce its SG&A as a percentage of sales by 100-150 bps over the next 3 to 5 years. Management expects to yield this reduction by consolidating its back-office structure, implementing ERPs and digital technologies, and seeing cost savings as a standalone company. Their increased emphasis on building a network connected with Otis One and IoT products will allow increased efficiency on the service side, hopefully growing margins and reducing SG&A expense.

**Industry Analysis and Competitive Positioning**

According to Precedence Research, the global elevator and escalator industry was valued at \$71.68 billion in 2019 and is expected to reach over \$114.90 billion by 2027, growing at a compounded annual growth rate of 6.3% from 2020-2027. In terms of the global original equipment market, the market is worth roughly 1 million new units per year and has grown at a CAGR of 1-1.5% from 2016-2020. Of these 1 million new units sold per year, China represents 60% of this figure (~600,000 units). On the service side, the global installed base is estimated to be around 18 million units as of 2020 and has grown at a roughly 6% CAGR from 2016-2020. Otis’ installed base of roughly 2 million units under contract agreement is also the market leader, with the next largest competitor lagging the Company by roughly 25%.

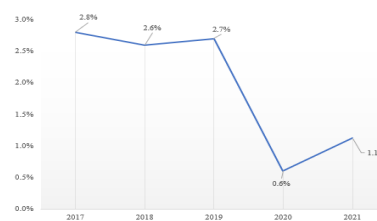
**Industry Dynamics**

When it comes to the elevator and escalator industry, there are several key industry dynamics that are characteristic of many of the players in the market. These include favorable working capital dynamics, low cap-ex intensity, and strong Free Cash Flow generation and conversion. It is for these reasons, and the many other favorable characteristics of the industry, that we see the global elevator industry as fundamentally attractive.

**Strong Working Capital Dynamics:**

elevator begins, the OEM begins to receive periodic payments based on certain progresses and checkpoints made with the project. As a result, companies in this industry do not need to undergo a long wait time in order to get paid on their projects. Through the graph shown to the left, it is evident that the working capital figures as a percentage of sales for all of the companies in the industry is relatively low. This dynamic ultimately makes the elevator industry less precarious from an investment standpoint.

**Figure 22: Working Capital as a % of Sales (Constantly Below 3%)**

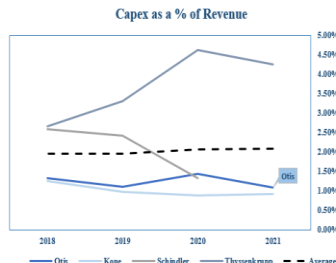


*Source: Company Filings and 2019 Company Investor Day Presentation*

**Low Capital Expenditure Requirements:**

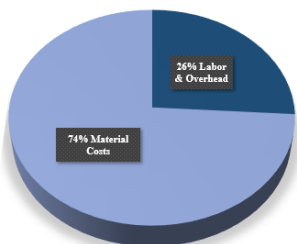
While new developments have been made within the industry recently to invest in IoT technology and energy-efficient solutions, given the high barriers to entry on the new equipment side of the business, the elevator industry exhibits extremely low capital expenditure spend each year. As you can see from the graph shown, for Otis and many of the other large OEMs, capex as a % of sales remains around 1-1.5% - a low figure which makes the business very attractive as well.

**Figure 24: Capex as a % of Revenue for Companies in the Elevator Industry**



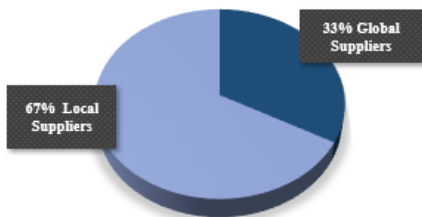
*Source: Otis Filings and Data Pulled from Comparable Company Analysis*

**Figure 18: Otis COGS Breakdown 2019**



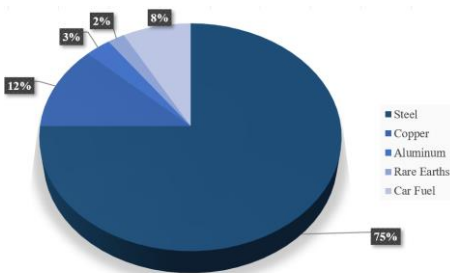
*Source: 2019 Company Investor Day Presentation*

**Figure 19: Otis 2019 Material Costs Breakdown**



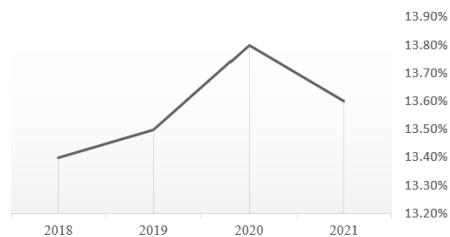
*Source: 2019 Company Investor Day Presentation*

**Figure 20: Kone 2021 Raw Material Exposure (Used as a Proxy for Otis)**



*Source: Kone 2021 Equity Story*

**Figure 21: Otis SG&A as a % of Sales**

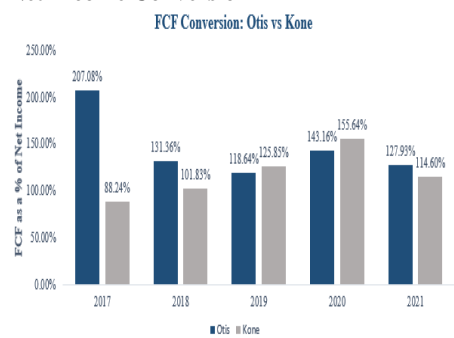


*Source: Company Filings*

**Figure 23: Global Elevator & Escalator Industry Market Value and Estimate**



**Figure 25: Otis and Kone Historical FCF to Net Income Conversion**



Source: Company Filings

**Strong FCF Dynamics:**

As a result of consistent negative working capital and low capital expenditures, the elevator industry is characterized by high free cash to net income conversions of 110-120% and strong FCF generation. With favorable working capital dynamics, low capex spend, and high FCF generation and conversation, we see the elevator industry as a fundamentally attractive industry with strong business dynamics.

**China – The Real Opportunity Amongst OEMs:**

Given that China makes up 50-60% of the industry’s new equipment growth each year, it is no surprise that all of the big four OEMs see China as the real opportunity to spur future portfolio growth and market share. With the top national developers consolidating in the real estate market who represent 50% of sales in the region, and favorable macro growth trends in the region, Otis believes that it will be able to leverage its IoT technology in order to win share in the region.



Figure 26: China Macro Trend Growth Opportunity

Source: FactSet and Bloomberg

**Demand Drivers – New Equipment**

We predict robust growth in the new equipment elevator industry, propelled by several demand drivers: 1) urbanization, 2) growing middle class, 3) aging populations, 4) accelerating demand for digitization, 5) GDP growth, and 6) the construction market

**Urbanization:**

The macro tailwind of urbanization provides favorable demographics for Otis’s growing service portfolio, which accounts for almost 80% of the company’s total profits. In addition, Otis’s service segment makes its earnings much more resilient in economic downturns compared to other industrial companies, making this extremely favorable. Currently 55% of the global population lives in urban areas now and is expected to increase to 70% by 2050. This means an increase in the urban population from 4.2 billion today to 5 billion by 2030. With more people expected to migrate into cities, more skyscrapers will need to be built in order to accommodate their living and working spaces. This will be beneficial to Otis, as these tall buildings will need vertical lifts to transport people (Otis Investor Day 2019 Presentation).

**Growing Middle Class:**

The global middle-class population is estimated to grow a substantial 60% in the next decade, driving up the average household wealth, suggesting that the economy should continue to grow steadily as well. Historically, a growing middle-class correlate to a growing economy. Industrial companies in general are cyclical, as they tend to ebb and flow in line with the growth of the economy. Elevator companies like Otis will benefit from the increase in infrastructure and construction that typically comes with a growing economy (Otis Investor Day 2019 Presentation).

**Digitalization:**

At the Company’s Investor Day in 2019, management noted the increased trend in digitalization and connected IoT devices within the elevator industry that they expect will play an influential role in the demand for elevators moving forward. According to management, by 2025, there will be approximately 25 billion connected IoT devices in the industry, from an estimated 12 billion in 2020 - a 4.5% CAGR. Furthermore, according to Verified Market Research, the IoT in elevators market size was valued at \$15.66 billion in 2018 and is projected to be valued at \$49.73 billion by 2026 - a 15.46% CAGR from 2019-2026. Thus, it is immensely clear that connectivity and digitalization is a powerful trend in the industry that is reshaping not only the demand for new equipment elevators moving forward, but also the products and solutions companies offer as well (Otis Investor Day Presentation 2019).

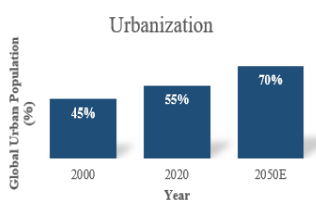
**GDP Growth:**

As management has noted several times within their earnings calls and investor presentations, new equipment revenue tends to grow at a low single digit growth rate that tracks well with a global Gross Domestic Product indicator. As such, the global economic activity and growth during any one particular year and moving forward, is a key demand driver on the new equipment side of the business.

**Construction Market:**

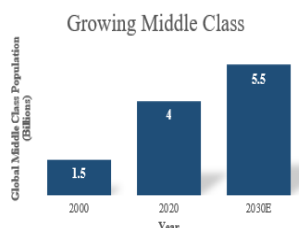
Given the elevator industry relies on infrastructure growth and demand, the development of the construction market is an important metric to forecast and watch, in order to understand the coming demand for new equipment elevators. According to Research and Markets, the global construction market was valued at \$7.28 trillion in 2021 and is projected to reach \$14.41 trillion by 2030 - a 7.3% CAGR from 2022-2030.

**Figure 27: Growth of Urban Population**



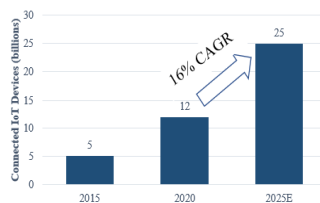
Source: Company Investor Day Presentation 2019

**Figure 28: Growth of Middle Class**



Source: Company Investor Day Presentation 2019

**Figure 29: Estimated Connected IoT Devices (Digitalization Trend)**



Source: Company Investor Day Presentation 2019

**Figure 30: Global Gross Domestic Product (GDP) Growth Forecasts**



Source: Statista

**Supply Drivers**

**High Barriers to Entry:**

Multiple factors have created a competitive moat isolating Otis and the rest of the “big four” of the elevator and escalator manufacturing industry into an oligopolistic market for their equipment business. These companies: Otis, Kone, Thyssenkrupp, and Schindler, all have very similar market shares that control over 67% of the industry. The intense competition between them in terms of pricing and generating organic revenue creates an environment that would be very difficult to enter and compete. Entering the market and gaining share in these companies would require producing a superior product on a scale and convincing buyers to leave companies with long track records of success. Regulatory pressures from governments to ensure elevator and escalator safety also pose a barrier to new entrants, as conforming to regulations can require additional cost.

**High Competition in the Market:**

The elevator industry is dominated by four main companies, each that have a similar market share and compete across the globe. These top four companies all battle to innovate and outperform, competing on price and contracts for new builds and service commitments. Building elevators and escalators is expensive and challenging, while servicing them is much cheaper and easier to do. There are thousands of independent servicing providers across all areas where Otis operates, who can compete heavily on price. New entrants in this segment can steal business from Otis and other main players and eat away at forecasted growth in services revenue if Otis is unable to retain contracts from current existing customers and new equipment customers in the future. Renewal rates for contracts with customers are high and contracts are long-term in nature, so it is more challenging to acquire existing business from competitors. Therefore, most of the competition is for new businesses in areas of opportunity. Otis is investing in growing its sales force and operations in these opportunity areas like China.

**Leveraging Technology:**

In a world that has been completely transformed by digitization, people are demanding technology to make life more efficient, accessible, and adaptable. Therefore, the top elevator companies must compete with each other through innovating, making their products and services extremely efficient, convenient, and cost-effective. Otis has recently focused on innovating and investing in digitizing their services in order to grow its business faster and more efficiently than the rest of the market. Improving their IoT capabilities and building a connected network have helped differentiate their product in the short term, and they plan to continuously improve their business and products to grow market share and remain the leader in their industry.

**Competitive Positioning**

As the elevator pioneer, Otis is the largest company in the industry and holds the largest market share of 17%, with 16% in new equipment and 18% in maintenance. The top four elevator companies, including Otis, Kone, ThyssenKrupp, and Schindler Group, represent 67% of the entire industry. Otis’s sales are equally split between the Americas, EMEA, and China, providing a well-diversified geographical portfolio for both their new equipment and service sectors. Otis is the top company in the Americas for both new equipment and services. They are also the leading service provider in the EMEA, which has the world’s largest installed base. In China, the largest new equipment and service country, Otis is number two, following its competitor Kone. The barriers to entry into the elevator industry are relatively high since it is a highly regulated industry

**The Global Leader – A Key Scale Advantage:**

As we discussed, in a consolidated market where the top five main players roughly 50% of the market, Otis Worldwide Corporation maintains the market leading market share of roughly 18%. On the new equipment side of the business, where an annual 1 million units are sold, Otis holds the market leading position of 16%, and on the service side the Company maintains a leading 12% share of the 18 million global installed units. Given that the service segment of the business is where the true profit potential stems from, it is our belief that Otis’ pure scale and size compared to its competitors gives the Company a key strategic advantage as a result of economies of scale / density. 70% of Otis’ aftermarket / service costs stems from labor, maximizing the amount of units a mechanic services is crucial. Given that Otis’ service portfolio is estimated to be 38% larger than the next competitor, we believe this offers a true cost advantage over competitors, as Otis’ technicians are able to service more elevators per technician. With more mechanics, Otis is able to service more elevators than their peers, decrease fuel costs and travel time, and ultimately increase customer satisfaction by allowing for quicker service to their clients.

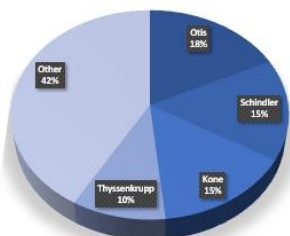
**The Otis Name and Brand – A Key Intangible Moat:**

While the services side of the business remains highly fragmented with low barriers to entry, the new equipment business possesses an intangible moat due to the high barriers to entry and regulation that has deferred a major new entrant into the market in over 30 years. Elisha Otis, who developed the industry’s first ratchet safety break for passengers, founded Otis in 1852, creating the elevator industry as we know it today. 18 billion people take elevator trips every year in the United States and incidents involving elevators and escalators kill roughly 30 people each year (0.0000016%). Even more important, half of these deaths are the result of people working in the elevator shafts or near them (MBI Deep Dives). As such, while these figures demonstrate that elevators are extremely safe products, real estate developers and other customers want to do business with a company that has a strong brand reputation, history, and a track record of providing safety and exceptional products to clients. This 165 years of business and success in completing complex projects gives Otis a key intangible moat around its business, that we believe comes from the premium embedded in the Otis name that is characteristic of safety, expertise, and more. With key buildings such as the Eiffel Tower and the Empire State Building having Otis elevators, it is clear the Otis brand is synonymous with industry leadership and safety.

**Industry Leading Retention Rate:**

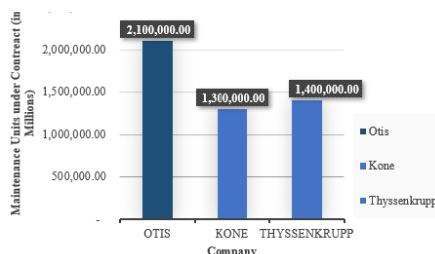
One of the most important metrics within the elevator and escalator industry is the retention rate – the rate at which customers renew their service subscription with the company after coming off the warranty period. With an industry leading global retention rate of 93-94%, Otis sees this figure rising to the high 90’s due to the onset of the IoT and Otis One technology. In India, for example, where the Company has roughly 250,000 units connected via an IoT device, the retention rate is even higher with 98-99% retention. Thus, it is our belief that as the company continues to leverage its IoT technology and connectivity, it has room to continue to improve its already leading retention rate, and use this technology to leverage off-portfolio customers as well. This, to us, is a key competitive advantage of the company, that speaks to their competitive position as a firm.

**Figure 31: Growth of Urban Population**



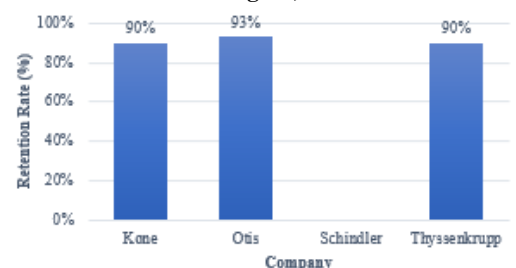
Source: Company Filings and Fortune Business Insights

**Figure 32: Maintenance Portfolio of Top OEMs (Source: Company Filings)**



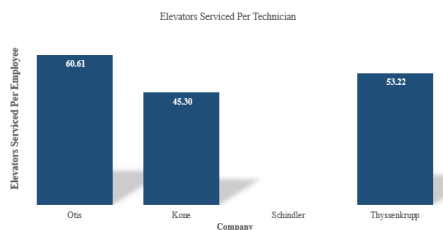
Providence College Team B

**Figure 33: Reported Retention Rate for Top OEMs (Schindler Does not Report this Figure)**



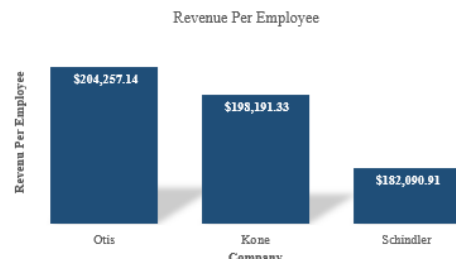
Source: Company Filings

**Figure 34: Estimated Elevators Served Per Technician**



Source: Company Filings

**Figure 35: Estimated Revenue Per Employee**



Source: Company Filings

## Valuation

In order to arrive at our target price of \$107.75, representing a 30.7% upside from the closing price on February 4, 2022, our team utilized a combination of discounted cash flow analysis, sum of the parts analysis, and a comparable company analysis.

### Discounted Cash Flow Analysis:

From our discounted cash flow model, we derived an intrinsic equity value per share of \$107.75, utilizing the exit EBITDA multiple approach. In order to derive this figure, our group utilized the forecasted projected EBIT of the Company from our projected three statement model, and multiplied this figure by our projected tax rate. After yielding NOPAT for each year, we added back our projected depreciation and amortization in the year, our change in working capital, and subtracted capital expenditures to yield projected free cash flow to firm ("FCFF") figures through 2027. Each projected FCFF figure was then discounted back to the present by the firm's calculated weighted average cost of capital (WACC) of 5.7%. The sum of these figures represents the present value of stage 1 cash flows. In order to derive our terminal value, our group utilized the projected 2027 EBITDA of the firm and multiplied this by an exit EV/EBITDA multiple of 18.0x. This multiple was justified through our comparable company's analysis which derived a mean peer group LTM EV/EBITDA multiple of 18.0x. This terminal enterprise value was added to the present value of the stage 1 cash flows to derive a total enterprise value of the firm. After subtracting the current net debt of the firm and dividing this figure by the current diluted shares outstanding, we derived our target price of \$107.75, representing a 30.7% upside from the close on February 4, 2022.

**Figure 36: DCF Equity Value per Share Sensitivity to Long Term Growth Rate and WACC**

|       |      | Equity value per share     |           |           |           |           |
|-------|------|----------------------------|-----------|-----------|-----------|-----------|
|       |      | Long term growth rate (g): |           |           |           |           |
|       |      | 0.5%                       | 1.0%      | 1.5%      | 2.0%      | 2.5%      |
| WACC: | 7.7% | \$ 61.14                   | \$ 65.18  | \$ 69.89  | \$ 75.41  | \$ 82.00  |
|       | 6.7% | \$ 72.70                   | \$ 78.43  | \$ 85.27  | \$ 93.56  | \$ 103.82 |
|       | 5.7% | \$ 88.69                   | \$ 97.28  | \$ 107.93 | \$ 121.45 | \$ 139.20 |
|       | 4.7% | \$ 112.24                  | \$ 126.27 | \$ 144.69 | \$ 169.94 | \$ 206.65 |
|       | 4.7% | \$ 112.24                  | \$ 126.27 | \$ 144.69 | \$ 169.94 | \$ 206.65 |
|       | 3.7% | \$ 150.44                  | \$ 176.65 | \$ 214.77 | \$ 275.31 | \$ 386.31 |

Source: Team Analysis

**Figure 37: DCF Equity Value per Share Sensitivity to Exit EBITDA Multiple and WACC**

|       |      | Equity value per share |           |           |           |           |
|-------|------|------------------------|-----------|-----------|-----------|-----------|
|       |      | Exit EBITDA Multiple   |           |           |           |           |
|       |      | 15.0x                  | 16.0x     | 18.0x     | 19.0x     | 20.0x     |
| WACC: | 7.7% | \$ 83.28               | \$ 88.13  | \$ 97.83  | \$ 102.69 | \$ 107.54 |
|       | 6.7% | \$ 87.33               | \$ 92.41  | \$ 102.57 | \$ 107.65 | \$ 112.73 |
|       | 5.7% | \$ 91.61               | \$ 96.93  | \$ 107.57 | \$ 112.89 | \$ 118.21 |
|       | 4.7% | \$ 96.13               | \$ 101.70 | \$ 112.85 | \$ 118.42 | \$ 123.99 |
|       | 4.7% | \$ 96.13               | \$ 101.70 | \$ 112.85 | \$ 118.42 | \$ 123.99 |
|       | 3.7% | \$ 100.91              | \$ 106.75 | \$ 118.43 | \$ 124.27 | \$ 130.11 |

Source: Team Analysis

### Comparable Company Analysis:

In order to derive our target price of \$85.50 from our comparable company analysis, we first utilized two different peer groups. Given that Otis has a different peer group for its new equipment segment versus its servicing segment, we decided to incorporate two peer groups into our analysis. On the new equipment side, we utilized the other three major new equipment manufacturers in the industry: Kone, Schindler, and ThyssenKrupp. On the service side of the business, we utilized JP Morgan's Equity Research industry peer group to identify other pure play service companies that matched Otis' service division. These companies include Carrier, General Electric, Rockwell Automation, amongst a few others. After the financials and projections of each company were spread, we created an output table that derived the market capitalization, enterprise value, as well as the net debt and current diluted shares outstanding of each firm. In addition to this, the revenues, EBITDA, EBIT, and EPS of each firm were calculated on a LTM, year 1, and year 2 forecast. With this information, we were able to calculate the following multiples: EV/Revenue, EV/EBITDA, EV/EBIT, and P/E on a LTM basis, year 1 forecast, and year 2 forecast basis. Next, we created a valuation matrix that triangulated the data from the output tab to derive equity values for Otis based on these multiples. As such, to be conservative, utilizing the median LTM comps-derived Otis value, we averaged the four values to derive an average LTM Otis value of \$85.50, representing a 8.52% upside from its closing price on February 4, 2022.

### Sum of the Parts:

In order to derive our target price of \$103.54 from our sum of the parts analysis, we pulled our 2027 forecasted EBITDA for both the new equipment segment and the services segment. Given that each of these segments is distinct in their growth prospects, customer base, and operations, we believe it makes sense to value this business as two separate entities combined. As such, in order to derive an implied terminal enterprise value of each segment, we first needed to establish an appropriate EV/EBITDA multiple for each business unit. Going back to our comparable company analysis, we isolated the "Big 4" new equipment manufacturers including Otis, Kone, Schindler, and ThyssenKrupp to determine an appropriate new equipment multiple. While Otis has the second highest LTM EV/EBITDA multiple of the group of 16.5x, and with Schindler having the lead with a 20.0x LTM EV/EBITDA multiple, we believe Otis' high multiple is warranted. In fact, we attached a 9% premium to its current 16.5x multiple, to utilize a new equipment exit multiple of 18x. Given the iconic global brand, trust, and leading market share of the company, we believe Otis deserves a premium valuation over the competition. In addition, given the long run growth runway of the segment, as well as the high consolidation occurring in the field, we believe this high multiple is warranted. On the service side of the business, we followed the same procedure, isolating the pure-play industrial companies from our comps analysis to yield a mean LTM EV/EBITDA multiple of 22.0x. Given the immense durability of this segment, its predictability, and its attractive growth properties, we believe this peer derived 22x EV/EBITDA service segment multiple is acceptable. Multiplying our 2027 EBITDA for each segment by their appropriate multiples, we derived terminal values for each business segment, and added them together to yield a total enterprise value of the firm in 2027. Subtracting the net debt, and dividing them by the current shares outstanding, we derived a projected equity value per share of \$129.80 in 2026. After discounting this figure back to the present by the cost of equity, we yielded an implied equity per share value of \$103.54, representing a 25.60% upside from the close on February 4, 2022.

Financial Analysis

Scaling Revenue for International Macro Trend Growth

Forecasting revenues over a 6-year period, we estimate a CAGR of 2.5%. Otis’s revenue is split into two main segments – New Equipment and Maintenance and Repairs. We decided to project both main segments revenues separately based on company guidance. The New Equipment segment has been growing at a CAGR of 0.58% over the previous five-year period and given forecasting we expect to see a new CAGR of 3.49% over the next six years. Otis will continue to hold a majority market share of over 50% globally and will play a major role in macro trends and modernization that are changing the landscape of the industry. Urbanization and modernization will continue to grow New Equipment sales, while Otis’s ingenuity with the new Otis One system will bring their services to the forefront of the industry. The Otis One system will shorten the time needed for maintenance, while maximizing the utility of a visit, thus raising revenues, and cutting excess costs as a result. The Service segment of the company makes up around 45% of revenues, with New Equipment sales making up the remainder. Servicing is expected to gain greater market share over the elevators and escalators already in use due to the introduction of the Otis One. With just under 17% of revenues coming from China, and growing infrastructural developments in both EMEA and Asia, we expect the large international presence that Otis has in order to continue to grow with the market.

Figure 38: First Forecast Year (2022) New Equipment EBIT Sensitivity

| New Equipment | \$185  | New Equipment Revenue growth rate |        |        |        |        |
|---------------|--------|-----------------------------------|--------|--------|--------|--------|
|               |        | 0.0%                              | 0.5%   | 1.5%   | 2.5%   | 3.5%   |
| Gross         | 17.30% | \$ 157                            | \$ 158 | \$ 159 | \$ 161 | \$ 162 |
| Gross         | 17.50% | \$ 170                            | \$ 171 | \$ 172 | \$ 174 | \$ 176 |
| Profit        | 17.70% | \$ 183                            | \$ 184 | \$ 185 | \$ 187 | \$ 189 |
| Margin:       | 17.90% | \$ 196                            | \$ 197 | \$ 198 | \$ 200 | \$ 202 |
|               | 18.10% | \$ 208                            | \$ 209 | \$ 212 | \$ 214 | \$ 216 |

Source: Team Analysis

Figure 39: First Forecast Year (2022) Service EBIT Sensitivity

| Service | \$1,991 | Service Revenue growth rate |          |          |          |          |
|---------|---------|-----------------------------|----------|----------|----------|----------|
|         |         | 3.0%                        | 4.0%     | 5.0%     | 6.0%     | 7.0%     |
| Gross   | 37.00%  | \$ 1,795                    | \$ 1,812 | \$ 1,830 | \$ 1,847 | \$ 1,865 |
| Gross   | 37.95%  | \$ 1,872                    | \$ 1,890 | \$ 1,908 | \$ 1,926 | \$ 1,945 |
| Profit  | 38.95%  | \$ 1,953                    | \$ 1,972 | \$ 1,991 | \$ 2,010 | \$ 2,029 |
| Margin: | 39.95%  | \$ 2,034                    | \$ 2,054 | \$ 2,074 | \$ 2,093 | \$ 2,113 |
|         | 40.1%   | \$ 2,042                    | \$ 2,062 | \$ 2,082 | \$ 2,102 | \$ 2,121 |

Source: Team Analysis

Hedging Commodities Volatility and New Technology Help to Expand

Otis has continued to lead the industry in operating margin with a margin of 14.11% against the industry average of 8.63%. Otis has continued to cut cost margins even through the pandemic and going forward looks to continue cutting operating costs. The management has said that volatile commodities prices do not have a great effect on costs by using hedging techniques and long-term contracts that would allow for volatility to calm. The introduction of the Otis One system also seeks to improve cost cutting strategies by shortening the time needed to find issues and allowing for service workers to digitally assess issues prior to visits. By making visits timelier and more efficient, Otis seeks to cut costs, while also boosting the experience of its customers and expects to see gains in their Service segment as a result.

Figure 40: First Forecast Year (2022) New Equipment EBIT Sensitivity

| New Equip.        | \$185  | New Equipment Gross Profit Margin |        |        |        |        |
|-------------------|--------|-----------------------------------|--------|--------|--------|--------|
|                   |        | 17.30%                            | 17.50% | 17.70% | 17.90% | 18.10% |
| SG&A              | 13.90% | \$ 133                            | \$ 146 | \$ 159 | \$ 172 | \$ 185 |
|                   | 13.70% | \$ 146                            | \$ 159 | \$ 172 | \$ 185 | \$ 198 |
|                   | 13.50% | \$ 159                            | \$ 172 | \$ 185 | \$ 198 | \$ 212 |
| As a % of Revenue | 13.30% | \$ 172                            | \$ 185 | \$ 198 | \$ 212 | \$ 225 |
|                   | 13.1%  | \$ 185                            | \$ 198 | \$ 212 | \$ 225 | \$ 238 |

Source: Team Analysis

Figure 41: First Forecast Year (2022) Service EBIT Sensitivity

| Service           | \$1,991 | Service Gross Profit Margin |          |          |          |          |
|-------------------|---------|-----------------------------|----------|----------|----------|----------|
|                   |         | 37.00%                      | 37.95%   | 38.95%   | 39.95%   | 40.10%   |
| SG&A              | 13.90%  | \$ 1,797                    | \$ 1,875 | \$ 1,958 | \$ 2,040 | \$ 2,055 |
|                   | 13.70%  | \$ 1,813                    | \$ 1,892 | \$ 1,974 | \$ 2,057 | \$ 2,069 |
|                   | 13.50%  | \$ 1,830                    | \$ 1,908 | \$ 1,991 | \$ 2,074 | \$ 2,086 |
| As a % of Revenue | 13.30%  | \$ 1,846                    | \$ 1,925 | \$ 2,007 | \$ 2,090 | \$ 2,102 |
|                   | 13.1%   | \$ 1,863                    | \$ 1,941 | \$ 2,024 | \$ 2,107 | \$ 2,119 |

Source: Team Analysis

Raising Capex to Continue Industry Leading Margins

We expect Capex to be increased steadily going forward through 2026. Starting next year we expect to see \$210 million and reaching all the way to \$245 million in 2026. The industry as a whole is lower on Capex due to barriers to entry and the increase is expected in order to capture the macro demand for both elevator and escalator sales, along with servicing. Investing more will also help to continue the growth in market share that Otis already dominates globally and will keep them at the forefront of the industry. Otis’s industry leading return on invested capital is important to note and we believe that this increase in Capex over the next 5 years will serve to increase their revenues and continue the strong cash flow growth that we have forecasted. The increase in Capex we forecasted through 2026 is expected to boost revenues even more, with Otis having industry leading Return on Invested Capital averaging around 190% since going public in 2019. With rising Capex to further develop their product line along with historically high ROIC, Otis is positioned to strengthen their already sturdy financials.

Environmental, Social, and Governance

Environmental

Otis holds a strong belief that “Financial performance and Corporate Responsibility go hand in hand”. Otis has implemented strong ESG initiatives to help all major stakeholders: passengers, customers, colleagues, and the broader society. Since March of 2021, Otis has been a signatory member of the U.N. Global Compact, proving to investors their commitment to ESG. The company has set goals to reduce Scope 1 and Scope 2 Emissions by 50% by 2030. Scope 1 and 2 emissions include direct emissions from sources they own or control, as well as indirect emissions from purchased electricity, steam, heat, and cooling. This initiative will help Otis reach their factory short term goals of carbon neutrality by 2030, zero waste to landfill certification by 2025, and help the completion of the ISO 14001 certification for all Otis factories by 2025. In order to make progress towards these goals, from 2015-2020, management notes that they have reduced their factory greenhouse gas emissions by over 30%, in addition reducing their water usage by 40%, and recycling 99% of their factory waste all during this timeframe. 85% of the Company’s manufacturing facilities are ISO14001 certified, in addition to 6 of their European manufacturing center being ISO 50001 - an international accolade around energy performance. Through their recent product development in solutions such as their ReGen system, Gen2 Switch, Compass 360, and more, it is clear that management has made a financial commitment to better their environmental footprint not only from a corporate responsibility standpoint, but from a financial standpoint as well. Otis believes these solutions are not only better for the earth but are better for productivity and performance as well. In comparison to its peers, Otis shines in the Environmental portion of ESG.

Their GHG Emissions Intensity (Metric Tons CO<sub>2</sub> e/\$M net sales) was reported at 16.4 for 2020, 21.53 less than the industry average at 37.6. Otis is currently in 15 ETF's that focus on ESG, proving that ETF portfolio managers value the commitments and performance Otis has made (Otis 10k and Company website).

### **Social:**

Otis has strong geographic colleague diversity across EMEA, Americas, China, and APAC. This allows their employees to have a fluid understanding of their local clients and provides the best service possible given the geographic distribution. In the aftermath of 2020, Otis created a "Commitment to Change" initiative to ensure that all employees felt like their voices were heard. Otis also recognizes the unique skills that their business needs in order to thrive, which is why they are continuing to commit funds and resources to invest and educate local communities about vocational occupations, as well as STEM related education. The firm is focusing on six pillars to integrate into their business, ensuring transparency, inclusion, and social justice. Specifically for employees wishing to voice opinions on improving the company overall, Perspectives on Inclusions was created to continue their improvement on diversity and inclusion. Otis has also pledged to promote and widen the availability of mental health resources available to employees, as well as broaden the employee benefits packages to include well-being benefits for employees to utilize. All employees of Otis can take advantage of a subsidized education program to continue their education in any field of study applicable to Otis. Furthermore, Otis was the first company in the industry to sign the Paradigm for Parity® Coalition, committing to gender equality in its workplace by 2030. Plus, Otis was recognized in 2020 as one of the best places to work for the LGBTQ community by the Human Rights Campaign - an impressive accolade. Lastly, in 2021, the company received the prestigious Corporate Citizenship award given by the Conference Board's Committee for Economic Development. It is through these accolades and the many efforts the company has taken with its company, that we believe Otis is a Company that is not solely focused on profit. Instead, the safety, wellbeing, and growth of their employees is at the forefront of their minds and is an important lifeblood of the Company overall (Otis 10k and Company Website).

### **Governance:**

#### **Board of Directors:**

The Board of Directors is composed of nine members with various backgrounds to bring a multitude of perspectives to support Otis. The board is formed of three females and six males and is headed by Executive Chairman, Christopher J. Kearney. For a company that has three quarters of their revenue coming from outside of the United States, all their Board members live in the United States. The board should work towards filling a board that is split equally between males and females, in alignment with their company goal of reaching gender parity in executive directors by 2030. All members of the board must have long-term stock ownership with Otis and must continue to meet the minimum ownership requirements.

#### **Executive Directors:**

Located across the world, the 17 members of the executive team manage the company with their extensive and impressive backgrounds. Currently, only 35% of the executive team is female. Current CEO Judy Marks has 37 years of experience in the industry, with past positions held as CEO of Siemens USA and Dresser-Rand, a Siemens business, as well as leadership positions at IBM and Lockheed Martin.

#### **The Otis Absolutes:**

The Otis Absolutes is the sum of what is most important to the Otis leadership team: Safety, Ethics, and Quality. Whether you work in the corporate office in Connecticut, or are an elevator technician in Beijing, Otis wants all employees to consistently live out their values each day to keep safety as the top priority. The Otis Absolutes even helps with the ethical decision-making process, to help employees make decisions that make the most situational sense. The document provides employees with examples of how to best stand for themselves in and outside of the workforce, as well as promoting workplace practices with other competitors, in a "fierce but fair way" (Otis 10K and Company Website).

## **Investment Risks**

### **Raw Materials:**

Otis has stated that they do not believe the current supply chain is a problem for their business. However, both new equipment and service rely on raw materials, mainly steel, to ensure the business runs smoothly. With a heavy reliance on suppliers to secure these, Otis is directly affected by price volatility and availability of raw materials. Management has acknowledged to investors that high inflation continues to raise prices of their raw materials essential to the business such as steel and has budgeted projected impacts of commodity inflation in 2021 and forecasted for 2022, so they are prepared to face cost increases. A decrease in raw materials can have an adverse effect on the company's overall competitive position in the market, as well as adversely affect cash flows. Steel is a readily available commodity in all areas where Otis does business, so these price hikes should be as mitigated as possible thanks to their robust supply chain network.

### **China:**

China has been and will continue to be a growth prospect for OTIS, with 60% of new annual equipment sales coming from China. Otis needs to continue to not only sell new equipment, but keep the service growing as well, as they only have about 40% of these service contracts. Battling against numerous ISP's in this market, Otis needs to leverage its new IoT advantage in OTIS One to gain share in this area. A slowdown in the Chinese Real Estate market, one that has seen consistent growth for recent years, is another important risk in area. However, management addressed these issues, stating that growth in their backlog for China orders in 2021 will help offset what they see to be a flat or slightly decreased market in 2022. A major competitor that Otis needs to compete with is Kone, who they have lost market share to over the past decade. Through investments in the APAC region, Otis can ensure they become the dominant leader in China as urbanization grows over the next 30 years in the region.

### **Labor:**

Since becoming a publicly traded company, Otis has won numerous awards highlighting the positive work environment and inclusivity towards its diverse workforce. This is very important since labor consists of 70% of costs on the service end of their business, the segment that management is looking to as a growth driver in the future. The Otis workforce is unionized, with around 64% of their employees falling under a collective bargaining agreement (2020 10K). This upcoming June, Otis will have to renegotiate contracts with these unions, something that has not been done since 2017. A current inflationary environment and societal desires for higher pay will likely lead to Unions demanding higher wages, which could affect margins. The past negotiation in 2017 was a success for the company and they do not anticipate any difficulties this time around, but the macro environment creates a small but noticeable risk for Otis.

### **Currency Risk:**

According to their most recent annual report, 74% of Otis's revenue comes from outside the United States. As a result, much of their business is done in local denominated currencies, making exchange rates very important to how the company performs. Bloomberg Intelligence lists two exchange rates as mainly important to Otis, EUR/USD and EUR/CNY. The Euro/Dollar rate represents much of Otis's business done in the EMEA region, where it services 1.1 million units, the same amount as its main competitors service globally. The Euro/Chinese Yen is indicative of the increasing importance of the Chinese market to Otis's growth and success in the future. Exchange rate fluctuations accounted for a \$43 million decrease in cash value for the company in 2021 (10K), and management forecasted that strengthening of the Euro and Yen against the dollar will be a \$0.07 EPS headwind this upcoming fiscal year.

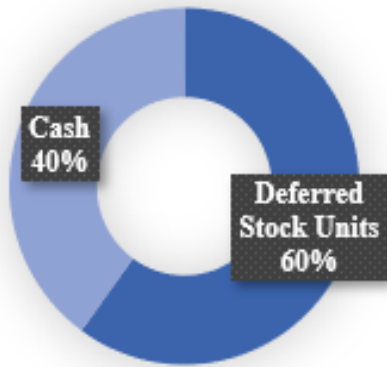
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## Appendix A – Board Overview

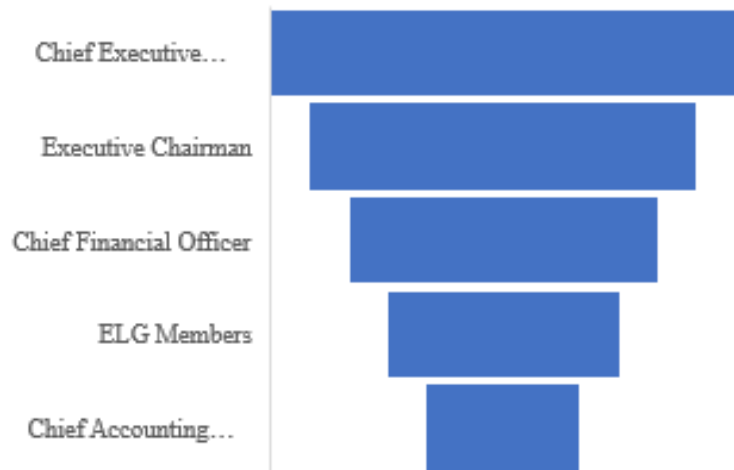


| Role   | Cash (\$) | Deferred Stock Units | Total   |
|--|-----------|----------------------|---------|
|  | (\$)      | (\$)                 | (\$)    |
|  | -40%      | -60%                 |         |
| All Directors (base retainer)                    | 124,000   | 186,000              | 310,000 |
| <b>Incremental Amounts Above Base Retainer:*</b> |           |                      |         |
| Lead Director                                    | 14,000    | 21,000               | 35,000  |
| Audit Committee Chair                            | 10,000    | 15,000               | 25,000  |
| Audit Committee Member                           | 6,000     | 9,000                | 15,000  |
| Compensation Committee Chair                     | 8,000     | 12,000               | 20,000  |
| Nominations and Governance Committee Chair       | 8,000     | 12,000               | 20,000  |

### Director Retainers



### Required Stock Ownership Level



### Board of Directors

| Member                 | Position   | Residence     | Background  |
|------------------------|--|---------------|---|
| Judith Marks           | CEO & Chair  | United States | Previously served as CEO of Siemens USA and Dresser-Rand, a Siemens business.   |
| Christopher J. Kearney | Former Executive Chairman                                | United States | Non-Executive Chairman of SPX Flow Inc.   |
| John H. Walker         | Lead Independent Director, Compensation (Chair)          | United States | Non-executive chairman, executive chairman, and chairman and CEO for Global Brass and Copper Holdings, Inc President and CEO of The Boler Company |
| Jeffrey H. Black       | Member, Audit (Chair)                                    | United States | Former Vice Chairman, Deloitte  |
| Kathy Hopinkah Hannan  | Member, Audit, Nominations and Governance                | United States | Former Partner, KPMG  |
| Shailesh G. Jejurikar  | Member, Audit, Compensation                              | United States | CEO P&G Fabric & Home Care  |
| Harold W. McGraw III   | Member, Compensation, Nominations and Governance         | United States | Former chairman, president & CEO of the McGraw-Hill Companies   |
| Margaret M. V. Preston | Member, Compensation, Nominations and Governance (Chair) | United States | Managing Director, Private Wealth Management for TD Bank  |
| Shelley Stewart, Jr    | Member, Audit, Nominations and Governance                | United States | Chief Procurement Officer at DuPont de Nemours  |

## Appendix B – ESG Targets

| <b>ESG Targets</b>                                       | <i>Current Status (all 2020 metrics unless noted otherwise)</i>   | <i>Measurable Goal</i> |
|--|---|------------------------|
| <i>Achieve 50% Reduction of Scope 1 Emissions</i>        | 133.8 Direct (Scope 1) (000's Metric Tons CO <sub>2</sub> e)<br>75.2 Indirect (Scope 2) (000's Metric Tons CO <sub>2</sub> e) | 2030                   |
| <i>Achieve 50% Reduction of Scope 2 Emissions</i>        | 75.2 Indirect (Scope 2) (000's Metric Tons CO <sub>2</sub> e)   | 2030                   |
| <i>Reach Carbon Neutrality</i>                           |   | 2030                   |
| <i>Achieve 100% zero waste-to-landfill certification</i> |   | 2025                   |
| <i>Complete ISO 14001 for all factories</i>              | ~80% of Otis factories have this certification  | 2025                   |
| <b>Social</b>  |   |                        |
| <i>Total Recordable Incident Rate</i>                    | 0.54 (based on 200,000 colleague work hours)  |                        |
| <i>Lost Time Incident Rate</i>                           | 0.13 (based on 200,000 colleague work hours)  |                        |
| <i>Gender Parity across Board of Governors</i>           | 35% Female (as of Jan. 2022)  | 50%                    |
| <i>Gender Diversity in Presidency Role</i>               | 20% (as of Jan. 2022)   |                        |
| <b>Governance</b>  |   |                        |
| <i>Diversity BoD</i>                                     | 33% Female  |                        |
| <i>BoD Meeting Attendance</i>                            | 100%  |                        |

## Appendix C – Peer Comparison

| Name                | Ticker  | Last Twelve Months (LTM) |             |           |       | Year 1 Forecast - Calendar Year |             |           |       | Year 2 Forecast - Calendar Year |             |           |       | PEG ratio |
|---------------------|---------|--------------------------|-------------|-----------|-------|---------------------------------|-------------|-----------|-------|---------------------------------|-------------|-----------|-------|-----------|
|                     |         | EV / Revenues            | EV / EBITDA | EV / EBIT | P/E   | EV / Revenues                   | EV / EBITDA | EV / EBIT | P/E   | EV / Revenues                   | EV / EBITDA | EV / EBIT | P/E   |           |
| Otis                | OTIS    | 2.5x                     | 15.7x       | 17.2x     | 24.0x | 2.7x                            | 16.7x       | 18.2x     | 27.3x | 2.6x                            | 15.7x       | 17.2x     | 24.5x | 2.1       |
| Kone                | KNYJY   | 2.4x                     | 17.6x       | 20.9x     | 24.8x | 2.6x                            | 18.4x       | 21.6x     | 27.8x | 2.5x                            | 17.1x       | 20.0x     | 25.7x | 6.8       |
| Schindler           | SHLAF   | 2.1x                     | 19.9x       | 15.7x     | 28.0x | 1.9x                            | 14.2x       | 17.7x     | 27.1x | 1.9x                            | 13.2x       | 16.4x     | 24.6x | 6.8       |
| Thyssenkrupp        | TYEKF   | 0.2x                     | 3.1x        | 1.8x      | 1.1x  | 0.2x                            | 2.8x        | 6.8x      | 6.2x  | 0.2x                            | 3.8x        | 6.6x      | 7.1x  | (1.0)     |
| Carrier             | CARR    | 2.4x                     | 18.3x       | 21.3x     | 16.7x | 2.4x                            | 14.6x       | 16.2x     | 19.9x | 2.3x                            | 13.7x       | 15.1x     | 17.9x | 1.8       |
| General Electric    | GE      | 1.9x                     | 11.5x       | 30.2x     | -5.8x | 1.6x                            | 13.0x       | 17.9x     | 29.5x | 1.5x                            | 10.4x       | 13.4x     | 18.6x | 5.2       |
| Rockwell Automation | ROK     | 4.6x                     | 22.5x       | 26.0x     | 25.4x | 4.4x                            | 20.1x       | 22.0x     | 25.3x | 4.2x                            | 18.6x       | 21.1x     | 22.9x | 2.2       |
| Trane Technologies  | TT      | 3.0x                     | 18.0x       | 20.7x     | 26.0x | 2.7x                            | 15.7x       | 17.8x     | 22.5x | 2.6x                            | 14.6x       | 16.5x     | 20.2x | 1.1       |
| Roper Technologies  | ROP     | 9.2x                     | 21.9x       | 32.0x     | 42.5x | 9.0x                            | 23.3x       | 32.2x     | 29.0x | 8.5x                            | 23.3x       | 32.2x     | 26.9x | 2.8       |
| Hitachi             | 6501-JP | 0.8x                     | 7.3x        | 14.2x     | 5.6x  | 1.0x                            | 7.3x        | 11.6x     | 10.1x | 1.0x                            | 6.9x        | 10.5x     | 9.9x  | 1.4       |
| High                |         | 9.2x                     | 22.5x       | 32.0x     | 42.5x | 9.0x                            | 23.3x       | 32.2x     | 29.5x | 8.5x                            | 23.3x       | 32.2x     | 26.9x | 6.8x      |
| Low                 |         | 0.2                      | 3.1         | 1.8       | (5.8) | 0.2                             | 2.8         | 6.8       | 6.2   | 0.2                             | 3.8         | 6.6       | 7.1   | (1.0)     |
| Median              |         | 2.4                      | 17.8        | 20.8      | 24.4  | 2.5                             | 15.2        | 17.9      | 26.2  | 2.4                             | 14.1        | 16.4      | 21.6  | 2.2       |
| Mean                |         | 2.9x                     | 15.6x       | 20.0x     | 18.8x | 2.9x                            | 14.6x       | 18.2x     | 22.5x | 2.7x                            | 13.7x       | 16.9x     | 19.8x | 2.9x      |
| Mean (excl. OTIS)   |         | 3.0x                     | 15.6x       | 20.3x     | 18.2x | 2.9x                            | 14.4x       | 18.2x     | 21.9x | 2.8x                            | 13.5x       | 16.9x     | 19.3x | 3.0x      |
| OTIS                |         | 2.5x                     | 15.7x       | 17.2x     | 24.0x | 2.7x                            | 16.7x       | 18.2x     | 27.3x | 2.6x                            | 15.7x       | 17.2x     | 24.5x | 2.1x      |

| COMPARABLE COMPANY ANALYSIS OUTPUT    |         |                            |                       |          |          |         |         |          |          |         |      |          |          |         |      |                |           |                            |
|---------------------------------------|---------|----------------------------|-----------------------|----------|----------|---------|---------|----------|----------|---------|------|----------|----------|---------|------|----------------|-----------|----------------------------|
| Name                                  | Ticker  | Market capitalization (mm) | Enterprise value (EV) | Revenues | EBITDA   | EBIT    | EPS     | Revenues | EBITDA   | EBIT    | EPS  | Revenues | EBITDA   | EBIT    | EPS  | LT growth rate | Net debt  | Diluted shares outstanding |
| <i>Place target in first position</i> |         |                            |                       |          |          |         |         |          |          |         |      |          |          |         |      |                |           |                            |
| Otis                                  | OTIS    | 35,152.4                   | 39,591.4              | 15,840.0 | 2,522.0  | 2,307.0 | 3.43    | 14,788.0 | 2,377.0  | 2,176.0 | 3.0  | 15,161.0 | 2,517.0  | 2,308.0 | 3.4  | 0.1            | 4,439.0   | 426.4                      |
| Kone                                  | KNYJY   | 33,192.3                   | 33,017.0              | 13,524.0 | 1,881.0  | 1,577.0 | 2.58    | 12,624.0 | 1,799.0  | 1,526.0 | 2.3  | 13,049.0 | 1,933.0  | 1,651.0 | 2.5  | 0.0            | (175.3)   | 518.6                      |
| Schindler                             | SHLAF   | 26,694.7                   | 24,660.2              | 11,872.6 | 1,236.3  | 1,567.1 | 8.86    | 12,796.3 | 1,740.0  | 1,390.9 | 9.2  | 13,303.5 | 1,875.3  | 1,504.4 | 10.1 | 0.0            | (2,034.5) | 107.6                      |
| Thyssenkrupp                          | TYEKF   | 6,486.5                    | 9,879.0               | 46,664.0 | 3,139.0  | 5,461.0 | 9.47    | 39,828.0 | 3,570.1  | 1,444.6 | 1.7  | 40,412.0 | 2,601.5  | 1,502.3 | 1.5  | (0.1)          | (4,685.0) | 622.5                      |
| Carrier                               | CARR    | 40,889.3                   | 47,612.3              | 20,167.0 | 2,597.0  | 2,240.0 | 2.75    | 19,557.0 | 3,253.0  | 2,935.0 | 2.3  | 20,275.0 | 3,485.0  | 3,163.0 | 2.6  | 0.1            | 6,723.0   | 892.0                      |
| General Electric                      | GE      | 108,713.0                  | 129,436.0             | 68,499.0 | 11,273.9 | 4,293.0 | (16.96) | 78,703.0 | 9,979.0  | 7,242.0 | 3.4  | 84,538.0 | 12,463.0 | 9,637.0 | 5.3  | 0.1            | 20,723.0  | 1,098.0                    |
| Rockwell Automation                   | ROK     | 32,895.7                   | 36,813.3              | 7,953.2  | 1,636.4  | 1,414.6 | 11.04   | 8,306.5  | 1,835.6  | 1,676.1 | 11.1 | 8,791.1  | 1,976.8  | 1,747.7 | 12.2 | 0.1            | 3,917.6   | 117.2                      |
| Trane Technologies                    | TT      | 38,589.7                   | 41,272.7              | 13,746.2 | 2,289.4  | 1,996.1 | 6.11    | 15,240.0 | 2,624.0  | 2,315.0 | 7.1  | 15,971.0 | 2,820.0  | 2,507.0 | 7.9  | 0.2            | 2,683.0   | 243.1                      |
| Roper Technologies                    | ROP     | 47,796.3                   | 55,366.5              | 6,028.5  | 2,523.6  | 1,728.3 | 10.54   | 6,136.0  | 2,379.0  | 1,717.0 | 15.4 | 6,502.0  | 2,379.0  | 1,717.0 | 16.7 | 0.1            | 7,570.2   | 106.7                      |
| Hitachi                               | 6501-JP | 50,160.2                   | 80,361.2              | 97,373.0 | 11,019.0 | 5,662.0 | 9.32    | 80,972.0 | 10,998.0 | 6,939.4 | 5.1  | 81,965.7 | 11,622.9 | 7,669.1 | 5.3  | 0.1            | 30,201.0  | 967.4                      |

**Otis Comps Valuation**

|                    | Last Twelve Months (LTM) |             |           |           | Year 1 Forecast - Calendar Year |             |           |          | Year 2 Forecast - Calendar Year |             |           |          | PEG ratio  |  |
|--------------------|--------------------------|-------------|-----------|-----------|---------------------------------|-------------|-----------|----------|---------------------------------|-------------|-----------|----------|------------|--|
|                    | EV / Revenues            | EV / EBITDA | EV / EBIT | P/E       | EV / Revenues                   | EV / EBITDA | EV / EBIT | P/E      | EV / Revenues                   | EV / EBITDA | EV / EBIT | P/E      |            |  |
| <b>Median</b>      |                          |             |           |           |                                 |             |           |          |                                 |             |           |          |            |  |
| Enterprise value   | 46,127.3                 | 39,322.1    | 46,134.9  | 32,004.4  | 42,445.6                        | 34,685.2    | 39,627.7  | 33,387.2 | 41,521.0                        | 34,546.0    | 38,972.1  | 32,842.5 | 53,128.2   |  |
| Net debt           | 4,439.0                  | 4,439.0     | 4,439.0   | 4,439.0   | 4,439.0                         | 4,439.0     | 4,439.0   | 4,439.0  | 4,439.0                         | 4,439.0     | 4,439.0   | 4,439.0  | 4,439.0    |  |
| Equity value       | 41,688.3                 | 34,883.1    | 41,695.9  | 27,565.4  | 38,006.6                        | 30,246.2    | 35,188.7  | 28,948.2 | 37,082.0                        | 30,107.0    | 34,533.1  | 28,403.5 | 48,689.2   |  |
| Shares outstanding | 426.4                    | 426.4       | 426.4     | 426.4     | 426.4                           | 426.4       | 426.4     | 426.4    | 426.4                           | 426.4       | 426.4     | 426.4    | 426.4      |  |
| Share price        | \$97.77                  | \$81.81     | \$97.79   | \$64.65   | \$89.13                         | \$70.93     | \$82.53   | \$67.89  | \$86.97                         | \$70.61     | \$80.99   | \$66.61  | \$114.19   |  |
| <b>High</b>        |                          |             |           |           |                                 |             |           |          |                                 |             |           |          |            |  |
| Enterprise value   | 145,476.5                | 56,736.2    | 73,905.2  | 66,680.1  | 133,435.3                       | 55,319.9    | 70,167.4  | 42,384.8 | 129,100.4                       | 58,578.1    | 74,423.9  | 42,915.0 | 118,054.0  |  |
| Net debt           | 4,439.0                  | 4,439.0     | 4,439.0   | 4,439.0   | 4,439.0                         | 4,439.0     | 4,439.0   | 4,439.0  | 4,439.0                         | 4,439.0     | 4,439.0   | 4,439.0  | 4,439.0    |  |
| Equity value       | 141,037.5                | 52,297.2    | 69,466.2  | 62,241.1  | 128,996.3                       | 50,880.9    | 65,728.4  | 37,945.8 | 124,661.4                       | 54,139.1    | 69,984.9  | 38,476.0 | 113,615.0  |  |
| Shares outstanding | 426.4                    | 426.4       | 426.4     | 426.4     | 426.4                           | 426.4       | 426.4     | 426.4    | 426.4                           | 426.4       | 426.4     | 426.4    | 426.4      |  |
| Share price        | \$330.76                 | \$122.65    | \$162.91  | \$145.97  | \$302.52                        | \$119.33    | \$154.15  | \$88.99  | \$292.36                        | \$126.97    | \$164.13  | \$90.23  | \$266.45   |  |
| <b>Low</b>         |                          |             |           |           |                                 |             |           |          |                                 |             |           |          |            |  |
| Enterprise value   | 3,353.4                  | 7,937.2     | 4,173.4   | (4,108.3) | 3,668.0                         | 6,577.6     | 14,880.7  | 12,475.8 | 3,706.2                         | 9,558.2     | 15,177.3  | 14,562.7 | (12,974.0) |  |
| Net debt           | 4,439.0                  | 4,439.0     | 4,439.0   | 4,439.0   | 4,439.0                         | 4,439.0     | 4,439.0   | 4,439.0  | 4,439.0                         | 4,439.0     | 4,439.0   | 4,439.0  | 4,439.0    |  |
| Equity value       | (1,085.6)                | 3,498.2     | (265.6)   | (8,547.3) | (771.0)                         | 2,138.6     | 10,441.7  | 8,036.8  | (732.8)                         | 5,119.2     | 10,738.3  | 10,123.7 | -17413.0   |  |
| Shares outstanding | 426.4                    | 426.4       | 426.4     | 426.4     | 426.4                           | 426.4       | 426.4     | 426.4    | 426.4                           | 426.4       | 426.4     | 426.4    | 426.4      |  |
| Share price        | (\$2.55)                 | \$8.20      | (\$0.62)  | (\$20.05) | (\$1.81)                        | \$5.02      | \$24.49   | \$18.85  | (\$1.72)                        | \$12.01     | \$25.18   | \$23.74  | (\$40.84)  |  |

**Appendix D – Porter’s Five Forces Analysis**



Threats are scored on a 1-5 basis, with 1 representing little (though not zero) threat to Otis and 5 being the largest threat.

**PORTER’S FIVE FORCES**

**Threat of New Entrants - 3**

Multiple factors have created a competitive moat isolating Otis and the rest of the “big four” of the elevator and escalator manufacturing industry into an oligopolistic market for their equipment business. These companies (Otis, Kone, Thyssenkrupp, and Schindler) all have very similar market shares that control over 67% of the industry. The intense competition between them in terms of pricing and generating organic revenue creates an environment that would be very difficult to enter and compete. Entering the market and gaining share on these companies would require producing a superior product at scale and convincing buyers to leave companies with long track records of success. Regulatory pressures from governments to ensure elevator and escalator safety also pose a barrier to new entrants, as conforming to regulations can require additional cost. The landscape is much different for the service side of the business, which generates significantly higher margins for Otis than new equipment. Building elevators and escalators is expensive and challenging, servicing them is much cheaper and easier to do. There are thousands of independent servicing providers across all areas where Otis operates, who can compete heavily on price. New entrants in this segment can steal business from Otis and other main players and eat away at forecasted growth in services revenue if Otis is unable to retain contracts from current existing customers and new equipment customers in the future.

**Bargaining Power of Suppliers-2**

Suppliers generally constitute a low threat to Otis. Raw materials (mainly steel) and machine parts (also made of mostly steel) make up most of the front half of Otis's supply chain, and these are readily available in all areas that Otis operates in. Changes in commodity prices may impact their business, but Otis will have a plethora of companies from which to source their necessary supplies. Labor, however, is a crucial aspect to Otis's service business where bargaining power is higher due to a unionized workforce. Otis's 2020 10-K cites that approximately 64% of employees are covered by collective bargaining agreements, with most of these expiring in July of 2022. The most recent deal with US-based employees went without disruption in 2017, and Otis does not anticipate any issues in the upcoming renegotiation. However, given the current inflationary environment putting upward pressure on wages and safety issues present while working during the covid-19 pandemic, these labor unions should have more bargaining power than they did in 2017. We do not predict any issues with these negotiations but seeing as labor is ~70% of costs for Otis's service business, it is a "supply" that poses a notable, but not significant, threat to their business in the current fiscal year.

#### **Bargaining Power of Customers - 4**

Customers have high bargaining power in this industry for numerous reasons. Installing elevators and escalators comes at a high cost and the long lifespan (extended by periodical servicing) demand that customers make smart decisions about who they contract for business. In addition, these products are relatively undifferentiated. At the most basic level, Otis and its competitors all offer products that perform the same task, moving people. Due to this business landscape, Otis must work hard to earn contracts for new builds by highlighting their value add to similar products offered by other companies. While customer power is high, Otis has built a global reputation that allows them an advantage in securing new revenues. As the world leader in market share with a long history of business success, Otis has consistently modernized their equipment and service offerings, currently with OTIS One, and is able to show this track record to customers and secure contracts for new business. While customer bargaining power is high, Otis has been and will be able to handle their demands now and in the future.

#### **Threat of Substitution-1**

Since the creation of the elevator safety brake by Elisha Graves Otis in the mid-19<sup>th</sup> century, elevators have become a fixture of everyday life, especially in urban environments, with escalators also being very important to modern infrastructure and development. In the near two centuries since creation, there has not been one substitute product that has been able to operate at the same efficiency and with the same success as elevators have. The "Lindy effect" is a phenomenon that has been commonly used to describe businesses and products like Otis and its elevators. This theory states that the longer something has existed and is used, it will have a longer remaining life expectancy. While the modern elevator has existed for almost two centuries, the idea and concept of it dates to 236 B.C., with the creation of one by Greek mathematician Archimedes. It is very unlikely that any substitute product will emerge to replace or steal any market share from Otis's business and the industry itself in the foreseeable future.

#### **Competitive Environment-4**

Otis operates within an intensely competitive environment. As noted in Threat of New Entrants, the four main companies in this industry have very similar market share and compete heavily across the world. Otis, Kone, Thyssenkrupp, and Schindler all battle to innovate and outperform, competing on price and contracts for new builds and service commitments. Generally, renewal rates for contracts with customers are high and contracts are long-term in nature, so it is difficult (but not impossible) for Otis to steal existing business from competitors. Therefore, most of the competition is for new business in areas of opportunity. Otis is investing in growing its sales force and operations in these opportunity areas like the APAC region, mainly China, where it lost market leadership to Kone within the last decade. Competition from these main players is the greatest threat to Otis, and they must innovate and invest in growing business faster and more efficiently than the rest of the market. Improving their IoT capabilities and building a connected network should help differentiate their product in the short term, but they need to continuously improve their business and products if they want to grow market share and remain the leader in their industry.

## **Appendix E – SWOT Analysis**

**Strengths:** Otis is the pioneer of the elevator and has created a well-established and respected name for itself in the industry worldwide. Since the invention of the elevator, they have been able to maintain the largest market share in the industry up until present. They have business operations in both the new equipment segment and servicing segment around the world and are working on further expanding offerings into key markets like China. Otis not only has an

industry leading retention rate with its service contracts, but these service contracts initiated at the beginning of new equipment installation ensure a steady cash flow stream from each customer in the future. Finally, the company continuously reinvests their money into research and development into new technologies and intelligent systems that help it to set its products and services apart from its competitors.

**Weaknesses:** The company faces immense competition from the other top three elevator companies, as well as from local service providers. This inherently leaves limited room for Otis to expand its market share. Additionally, worker’s accidents in the past have hurt their brand image, although these occurrences are rare and almost always ruled in favor of Otis by a judge. Finally, Otis was the leading player in China back in 2009, a position they have since lost to competitor Kone, who was the number four player back then. When China’s real estate market was cooling down and much smaller competitors were willing to aggressively compete on pricing, Otis did not engage in the price war. This caused them to lose some of their market share to Kone as a result. Since then, they have not been able to regain the number one spot in China back from Kone.

**Opportunities:** The company is planning on further growing and expanding their business operations in China, a key market for expansion in the elevator industry due to the country’s rapid urban development. Moreover, tie-ups with real estate and construction companies that they will create in these countries will boost business and create steady cash flows in the future. In general, the major macro trends of urbanization, a growing middle class, aging populations, and digitalization in the future will help to boost demand for their new equipment segment, which certainly will help to boost this smaller portion of their business structure over time. The company’s continued research and development into innovative technology will allow them to continuously put out the best products and services to offer its customers. The new technology provides an opportunity to Otis to practice differentiated pricing strategy in the new market. It also will enable the firm to maintain its loyal customers with great service and lure new customers through other value-oriented propositions. Otis also has the opportunity to capture new customers from online channels. Over the past few years, the company has invested vast sums of money into building its online platform. This investment has opened a new sales channel for Otis, which over the next few years the company can leverage by knowing its customers better and serving their needs using big data analytics. Government green drive also opens an opportunity for procurement of Otis products by the states as well as federal government contractors. These new opportunities in green drives will create a level playing field for all the players in the industry. It represents a great opportunity for Otis to drive home its advantage in new technology and gain market share in the new product category.

**Threats:** Otis faces intense competition from its three main competitors with almost equal market shares, making it difficult to expand and even threatens to take some of their market share away. Although Otis sets itself apart by investing heavily in innovation for their products, these other competitors could replicate the same technology or make it even better. New technologies developed by the competitors or a market disruptor could be a serious threat to the industry in the short or long term. Another form of competition that could pose a threat are from the Independent Service Providers that can offer low, competitive prices to lure Otis’s customers away into signing service contracts with them instead. Finally, inflation, rising interest rates, rising wages, and rising raw material costs can pose a threat to profitability in Otis’s business operations around the globe. These worldwide trends will affect its competitors just as much though, as it is an uncontrollable issue that all countries face.

| OTIS   |   | SWOT Analysis  |  |
|--|---|--|--|
| S  | W   | O  | T  |
| Strengths  | Weaknesses  | Opportunities  | Threats  |
| <ol style="list-style-type: none"> <li>1. Pioneer of the elevator with an acclaimed brand worldwide and a strong brand portfolio</li> <li>2. Largest market share in the elevator industry</li> <li>3. Business operations around the world in key markets for opportunity like China</li> <li>4. Industry leading retention rate</li> <li>5. Strong free cash flow due to its servicing contracts</li> <li>6. Continuous investment in R&amp;D, new technologies and intelligent systems that set its products and services apart from its competitors</li> </ol> | <ol style="list-style-type: none"> <li>1. Competition from big players as well as local players means limited room for market share expansion</li> <li>2. Worker’s accidents in the past have hurt the brand image</li> <li>3. Lost some of its market share in China to competitor Kone due to pricing competition and has not yet been able to regain it</li> </ol> | <ol style="list-style-type: none"> <li>1. Further growth opportunities and business expansion in China</li> <li>2. Tie-ups with real-estate &amp; construction companies can boost business</li> <li>3. Macrotrends of urbanization, growing middle class, aging populations, and digitalization</li> <li>4. Continued R&amp;D into innovative technology</li> <li>5. New customers from online channels</li> <li>6. New technology provides an opportunity for Otis to change its pricing strategy to compete and gain more market share</li> <li>7. Government green drives will allow for procurement of Otis products by state and federal government contractors</li> </ol> | <ol style="list-style-type: none"> <li>1. Three main competitors in the elevator industry are almost equal in market share, making it difficult to possibly expand</li> <li>2. Though Otis invests heavily in innovation for their products, other companies could easily replicate the technology</li> <li>3. Growing strengths of Independent Service Providers increase the competition for customers and pricing</li> <li>4. Inflation, rising interest rates, rising wages, and rising raw material costs can pose a threat to profitability</li> </ol> |

Appendix F1 – Income Statement

| Income Statement                                      |                  | Historical       |                  |                  |                  |                  | Forecasted       |                  |                  |                  |                  | Growth %     |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------|
| Year  | 2017A            | 2018A            | 2019A            | 2020A            | 2021A            | 2022E            | 2023E            | 2024E            | 2025E            | 2026E            | 2027E            | 6-Y CAGR %   |
| <b>Revenues</b>                                       | <b>12,323.00</b> | <b>12,915.00</b> | <b>13,118.00</b> | <b>12,756.00</b> | <b>14,298.00</b> | <b>14,787.92</b> | <b>15,160.60</b> | <b>15,744.10</b> | <b>16,373.86</b> | <b>17,028.82</b> | <b>17,709.97</b> | <b>3.05%</b> |
| - COGS  | (8,621.00)       | (9,189.00)       | (9,292.00)       | (8,977.00)       | (10,105.00)      | (10,414.46)      | (10,641.99)      | (11,028.57)      | (11,455.74)      | (11,913.97)      | (12,390.53)      |              |
| <b>Gross Profit</b>                                   | <b>3,702.00</b>  | <b>3,726.00</b>  | <b>3,826.00</b>  | <b>3,779.00</b>  | <b>4,193.00</b>  | <b>4,373.46</b>  | <b>4,518.62</b>  | <b>4,715.53</b>  | <b>4,918.13</b>  | <b>5,114.85</b>  | <b>5,319.45</b>  | <b>3.32%</b> |
| - SG&A Expense  | (1,609.00)       | (1,701.00)       | (1,832.00)       | (1,949.00)       | (1,882.00)       | (1,996.37)       | (2,001.20)       | (2,046.73)       | (2,128.60)       | (2,213.75)       | (2,353.05)       |              |
| <b>EBITDA</b>   | <b>2,093.00</b>  | <b>2,025.00</b>  | <b>1,994.00</b>  | <b>1,830.00</b>  | <b>2,311.00</b>  | <b>2,377.09</b>  | <b>2,517.42</b>  | <b>2,668.79</b>  | <b>2,789.52</b>  | <b>2,901.10</b>  | <b>2,966.40</b>  | <b>3.76%</b> |
| - D&A Expense   | (177.00)         | (190.00)         | (180.00)         | (191.00)         | (203.00)         | (200.77)         | (209.14)         | (220.62)         | (233.02)         | (246.06)         | (259.77)         |              |
| <b>EBIT</b>   | <b>1,916.00</b>  | <b>1,835.00</b>  | <b>1,814.00</b>  | <b>1,639.00</b>  | <b>2,108.00</b>  | <b>2,176.31</b>  | <b>2,308.28</b>  | <b>2,448.17</b>  | <b>2,556.50</b>  | <b>2,655.05</b>  | <b>2,706.63</b>  | <b>3.70%</b> |
| - Interest Expense                                    | (21.00)          | (14.00)          | (14.00)          | 122.00           | 136.00           | (21.00)          | (21.00)          | (21.00)          | (21.00)          | (21.00)          | (21.00)          |              |
| - Non-Service Pension Cost                            | (20.00)          | (44.00)          | (33.00)          | 6.00             | 11.00            | 11.00            | 11.00            | 11.00            | 11.00            | 11.00            | 11.00            |              |
| <b>Pretax Profit</b>                                  | <b>1,957.00</b>  | <b>1,893.00</b>  | <b>1,861.00</b>  | <b>1,511.00</b>  | <b>1,961.00</b>  | <b>2,029.00</b>  | <b>2,161.00</b>  | <b>2,301.00</b>  | <b>2,410.00</b>  | <b>2,435.00</b>  | <b>2,560.00</b>  | <b>3.95%</b> |
| - Total Taxes   | (1,148.00)       | (683.00)         | (594.00)         | (455.00)         | (541.00)         | (584.00)         | (605.00)         | (621.00)         | (626.00)         | (609.00)         | (640.00)         |              |
| <b>Net Income</b>                                     | <b>809.00</b>    | <b>1,210.00</b>  | <b>1,267.00</b>  | <b>1,056.00</b>  | <b>1,420.00</b>  | <b>1,445.00</b>  | <b>1,556.00</b>  | <b>1,680.00</b>  | <b>1,783.00</b>  | <b>1,827.00</b>  | <b>1,920.00</b>  | <b>4.85%</b> |
| - Noncontrolling Interest                             | (173.00)         | (161.00)         | (151.00)         | (150.00)         | (174.00)         | (174.00)         | (174.00)         | (174.00)         | (174.00)         | (174.00)         | (174.00)         |              |
| <b>Net Income Attributable to Common Shareholders</b> | <b>636.00</b>    | <b>1,049.00</b>  | <b>1,116.00</b>  | <b>906.00</b>    | <b>1,246.00</b>  | <b>1,271.00</b>  | <b>1,382.00</b>  | <b>1,506.00</b>  | <b>1,609.00</b>  | <b>1,653.00</b>  | <b>1,746.00</b>  | <b>5.43%</b> |
| Basic Shares Outstanding                              | -                | -                | 432.70           | 433.20           | 424.96           | 420.18           | 411.02           | 401.91           | 392.86           | 383.85           | 374.87           |              |
| <b>Basic EPS</b>                                      | <b>-</b>         | <b>-</b>         | <b>\$ 2.58</b>   | <b>\$ 2.09</b>   | <b>\$ 2.93</b>   | <b>\$ 3.02</b>   | <b>\$ 3.36</b>   | <b>\$ 3.75</b>   | <b>\$ 4.10</b>   | <b>\$ 4.31</b>   | <b>\$ 4.66</b>   | <b>7.50%</b> |
| Diluted Shares Outstanding                            | -                | -                | 436.00           | 434.60           | 425.50           | 418.75           | 409.62           | 400.51           | 391.46           | 382.45           | 373.47           |              |
| <b>Diluted EPS</b>                                    | <b>-</b>         | <b>-</b>         | <b>\$ 2.56</b>   | <b>\$ 2.08</b>   | <b>\$ 2.93</b>   | <b>\$ 3.03</b>   | <b>\$ 3.37</b>   | <b>\$ 3.76</b>   | <b>\$ 4.11</b>   | <b>\$ 4.32</b>   | <b>\$ 4.67</b>   | <b>7.48%</b> |

Appendix F2 – Balance Sheet

| Balance Sheet                            |          | Historical      |                 |                   |                   |                   | Forecasted        |                   |                   |                   |                   |
|--|----------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Year                                     | 2017A    | 2018A           | 2019A           | 2020A             | 2021A             | 2022E             | 2023E             | 2024E             | 2025E             | 2026E             | 2027E             |
| <b>Assets</b>                            |          |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |
| Cash & equivalents                       | -        | 1,329.00        | 1,446.00        | 1,782.00          | 3,475.00          | 4,213.00          | 4,158.00          | 4,155.00          | 4,195.00          | 4,247.00          | 4,346.00          |
| Accounts receivable                      | -        | 2,720.00        | 2,861.00        | 3,148.00          | 3,232.00          | 3,343.00          | 3,427.00          | 3,559.00          | 3,701.00          | 3,849.00          | 4,003.00          |
| Contract Assets                          | -        | 657.00          | 529.00          | 458.00            | 550.00            | 569.00            | 583.00            | 606.00            | 630.00            | 655.00            | 681.00            |
| Inventories                              | -        | 637.00          | 571.00          | 659.00            | 622.00            | 641.00            | 655.00            | 679.00            | 705.00            | 733.00            | 763.00            |
| Other current assets                     | -        | 269.00          | 251.00          | 446.00            | 382.00            | 395.00            | 405.00            | 421.00            | 437.00            | 455.00            | 473.00            |
| <b>Current Assets</b>                    | <b>-</b> | <b>5,612.00</b> | <b>5,658.00</b> | <b>6,493.00</b>   | <b>8,261.00</b>   | <b>9,161.00</b>   | <b>9,228.00</b>   | <b>9,420.00</b>   | <b>9,668.00</b>   | <b>9,944.00</b>   | <b>10,266.00</b>  |
| Future income tax benefits               | -        | 364.00          | 373.00          | 334.00            | 335.00            | 335.00            | 335.00            | 335.00            | 335.00            | 335.00            | 335.00            |
| PPE, net                                 | -        | 678.00          | 721.00          | 774.00            | 774.00            | 932.00            | 1,091.00          | 1,252.00          | 1,417.00          | 1,584.00          | 1,754.00          |
| Operating Lease right-of-use assets      | -        | -               | 535.00          | 542.00            | 526.00            | 526.00            | 526.00            | 526.00            | 526.00            | 526.00            | 526.00            |
| Intangible Assets                        | -        | 569.00          | 490.00          | 484.00            | 419.00            | 433.00            | 444.00            | 461.00            | 480.00            | 499.00            | 519.00            |
| Goodwill                                 | -        | 1,688.00        | 1,647.00        | 1,773.00          | 1,667.00          | 1,667.00          | 1,667.00          | 1,667.00          | 1,667.00          | 1,667.00          | 1,667.00          |
| Other non current assets                 | -        | 224.00          | 263.00          | 310.00            | 297.00            | 307.00            | 315.00            | 327.00            | 340.00            | 354.00            | 368.00            |
| <b>Total Assets</b>                      | <b>-</b> | <b>9,135.00</b> | <b>9,687.00</b> | <b>10,710.00</b>  | <b>12,279.00</b>  | <b>13,361.00</b>  | <b>13,606.00</b>  | <b>13,988.00</b>  | <b>14,433.00</b>  | <b>14,909.00</b>  | <b>15,435.00</b>  |
| <b>Liabilities</b>                       |          |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |
| Accounts payable                         | -        | 1,351.00        | 1,331.00        | 1,453.00          | 1,556.00          | 1,603.65          | 1,638.69          | 1,698.21          | 1,763.99          | 1,834.55          | 1,907.93          |
| Accrued Liabilities                      | -        | 1,599.00        | 1,739.00        | 1,977.00          | 1,993.00          | 2,114.11          | 2,119.23          | 2,167.45          | 2,254.15          | 2,344.31          | 2,491.83          |
| Contract Liabilities, current            | -        | 2,326.00        | 2,270.00        | 2,542.00          | 2,674.00          | 2,765.62          | 2,835.32          | 2,944.45          | 3,062.23          | 3,184.72          | 3,312.10          |
| Other current liabilities                | -        | -               | -               | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 |
| <b>Current Liabilities</b>               | <b>-</b> | <b>5,276.00</b> | <b>5,340.00</b> | <b>5,972.00</b>   | <b>6,223.00</b>   | <b>6,483.38</b>   | <b>6,593.24</b>   | <b>6,810.11</b>   | <b>7,080.37</b>   | <b>7,363.58</b>   | <b>7,711.86</b>   |
| Future Pension/Retirement Obligations    | -        | 527.00          | 590.00          | 654.00            | 558.00            | 577.12            | 591.66            | 614.44            | 639.01            | 664.57            | 691.16            |
| Operating Lease Liabilities              | -        | -               | 386.00          | 367.00            | 336.00            | 347.51            | 356.27            | 369.98            | 384.78            | 400.17            | 416.18            |
| Future income tax obligations            | -        | 750.00          | 695.00          | 321.00            | 267.00            | 276.15            | 283.11            | 294.00            | 305.76            | 318.00            | 330.71            |
| Short Term Borrowings                    | -        | -               | -               | 701.00            | 24.00             | 700.00            | 700.00            | 700.00            | 700.00            | 700.00            | 700.00            |
| Long term debt                           | -        | 27.00           | 34.00           | 5,262.00          | 7,249.00          | 7,249.00          | 7,249.00          | 7,249.00          | 7,249.00          | 7,249.00          | 7,249.00          |
| Other non current liabilities            | -        | 340.00          | 316.00          | 634.00            | 606.00            | 626.76            | 642.56            | 667.29            | 693.98            | 721.74            | 750.61            |
| <b>Total liabilities</b>                 | <b>-</b> | <b>6,920.00</b> | <b>7,361.00</b> | <b>13,911.00</b>  | <b>15,263.00</b>  | <b>16,259.92</b>  | <b>16,415.84</b>  | <b>16,704.82</b>  | <b>17,052.90</b>  | <b>17,417.06</b>  | <b>17,849.52</b>  |
| <b>Equity</b>                            |          |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |
| Redeemable noncontrolling interest       | -        | 109.00          | 95.00           | 83.00             | 160.00            | 160.00            | 160.00            | 160.00            | 160.00            | 160.00            | 160.00            |
| UTC Net Investment (Deficit)             | -        | 2,277.00        | 2,458.00        | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 |
| Noncontrolling interest                  | -        | 537.00          | 531.00          | 548.00            | 481.00            | 481.00            | 481.00            | 481.00            | 481.00            | 481.00            | 481.00            |
| Common stock /Additional Paid in Capital | -        | -               | -               | 59.00             | 119.00            | 186.00            | 255.00            | 327.00            | 401.00            | 479.00            | 559.00            |
| Retained earnings                        | -        | (708.00)        | (758.00)        | (3,076.00)        | (2,256.00)        | (2,238.00)        | (2,218.00)        | (2,197.00)        | (2,174.00)        | (2,151.00)        | (2,126.00)        |
| Treasury Stock                           | -        | -               | -               | -                 | (725.00)          | (725.00)          | (725.00)          | (725.00)          | (725.00)          | (725.00)          | (725.00)          |
| Other comprehensive income (loss)        | -        | -               | -               | (815.00)          | (763.00)          | (763.00)          | (763.00)          | (763.00)          | (763.00)          | (763.00)          | (763.00)          |
| <b>Total equity</b>                      | <b>-</b> | <b>2,215.00</b> | <b>2,326.00</b> | <b>(3,201.00)</b> | <b>(2,984.00)</b> | <b>(2,899.00)</b> | <b>(2,810.00)</b> | <b>(2,717.00)</b> | <b>(2,620.00)</b> | <b>(2,519.00)</b> | <b>(2,414.00)</b> |
| Balance Check                            | 0        | 0               | 0               | 0                 | 0                 | 0                 | 0                 | 0                 | 0                 | 0                 | 0                 |

Appendix F3 – Cash Flow Statement

| CASH FLOW STATEMENT                                    |                 |                   |                   |                   |                   |                   |
|--|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Fiscal Year  | 2022F           | 2023F             | 2024F             | 2025F             | 2026F             | 2027F             |
| Fiscal Year end date                                   | 12/31/2022      | 12/31/2023        | 12/31/2024        | 12/31/2025        | 12/31/2025        | 12/31/2026        |
| Net income   | 1,445           | 1,556             | 1,680             | 1,783             | 1,827             | 1,920             |
| Depreciation and amortization                          | 201             | 209               | 221               | 233               | 246               | 260               |
| Stock based compensation                               | 67              | 69                | 72                | 74                | 77                | 81                |
| Decreases / (Increases) in working capital assets      | (162)           | (123)             | (194)             | (210)             | (219)             | (228)             |
| Increases / (Decreases) in working capital liabilities | 260.00          | 110.00            | 217.00            | 270.00            | 283.00            | 348.00            |
| Other non current assets                               | (207.72)        | (210.26)          | (222.44)          | (231.81)          | (241.08)          | (250.73)          |
| Future income Tax benefits                             | -               | -                 | -                 | -                 | -                 | -                 |
| Operating Lease rights                                 | -               | -                 | -                 | -                 | -                 | -                 |
| Future Pension and Postretirement Benefit              | 19.00           | 15.00             | 23.00             | 25.00             | 26.00             | 27.00             |
| Operating Lease Liabilities                            | 12.00           | 9.00              | 14.00             | 15.00             | 15.00             | 16.00             |
| Future Income Tax Obligations                          | 9.00            | 7.00              | 11.00             | 12.00             | 12.00             | 13.00             |
| Other non current liabilities                          | 21.00           | 16.00             | 25.00             | 27.00             | 28.00             | 29.00             |
| <b>Cash from operating activities</b>                  | <b>1,664</b>    | <b>1,657</b>      | <b>1,845</b>      | <b>1,997</b>      | <b>2,061</b>      | <b>2,207</b>      |
| Capital expenditures                                   | (161.35)        | (165.41)          | (171.78)          | (178.65)          | (185.79)          | (193.23)          |
| Goodwill   | -               | -                 | -                 | -                 | -                 | -                 |
| Intangibles  | (14)            | (11)              | (17)              | (18)              | (19)              | (20)              |
| <b>Cash from investing activities</b>                  | <b>(176)</b>    | <b>(176)</b>      | <b>(189)</b>      | <b>(197)</b>      | <b>(205)</b>      | <b>(213)</b>      |
| Redeemable noncontrolling Interest                     | -               | -                 | -                 | -                 | -                 | -                 |
| non-Controlling interest                               | -               | -                 | -                 | -                 | -                 | -                 |
| Long term debt   | -               | -                 | -                 | -                 | -                 | -                 |
| Revolver / Short Term Borrowing                        | 676.00          | -                 | -                 | -                 | -                 | -                 |
| Share repurchases                                      | (867)           | (934)             | (1,008)           | (1,070)           | (1,096)           | (1,152)           |
| Common dividends                                       | (560)           | (603)             | (651)             | (691)             | (707)             | (744)             |
| Treasury Stock   | -               | -                 | -                 | -                 | -                 | -                 |
| <b>Cash from financing activities</b>                  | <b>(750.55)</b> | <b>(1,537.00)</b> | <b>(1,659.00)</b> | <b>(1,760.42)</b> | <b>(1,803.00)</b> | <b>(1,896.00)</b> |
| <b>Net change in cash during period</b>                | <b>738.02</b>   | <b>(56.33)</b>    | <b>(2.88)</b>     | <b>39.55</b>      | <b>52.51</b>      | <b>98.77</b>      |

Appendix G1 - Discounted Cash Flow Model

| Unlevered Free Cash Flows                                   |           |              |              |              |              |              |              |              |
|---|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Fiscal year ended   | LTM       | Actual       | Forecasts    |              |              |              |              |              |
|   | 2/22/2022 | 12/31/21     | 12/31/22     | 12/31/23     | 12/31/24     | 12/31/25     | 12/31/26     | 12/31/27     |
| Total Revenue   | 14,367    | 14,298       | 14,788       | 15,161       | 15,744       | 16,374       | 17,029       | 17,710       |
| % growth  |           |              | 3.4%         | 2.5%         | 3.8%         | 4.0%         | 4.0%         | 4.0%         |
| EBITDA  | 2,320     | 2,311        | 2,377        | 2,517        | 2,669        | 2,790        | 2,901        | 2,966        |
| % margin  |           | 16.2%        | 16.1%        | 16.6%        | 17.0%        | 17.0%        | 17.0%        | 16.7%        |
| EBIT  | 2,118     | 2,108        | 2,176        | 2,308        | 2,448        | 2,557        | 2,655        | 2,707        |
| % margin  |           | 14.7%        | 14.7%        | 15.2%        | 15.5%        | 15.6%        | 15.6%        | 15.3%        |
| Tax on EBIT   |           | 582          | 627          | 646          | 661          | 665          | 664          | 677          |
| Tax rate  |           | 27.6%        | 28.8%        | 28.0%        | 27.0%        | 26.0%        | 25.0%        | 25.0%        |
| <b>NOPAT (aka EBIAT)</b>                                    |           | <b>1,526</b> | <b>1,550</b> | <b>1,662</b> | <b>1,787</b> | <b>1,892</b> | <b>1,991</b> | <b>2,030</b> |
| Depreciation & amortization                                 |           | 203          | 201          | 209          | 221          | 233          | 246          | 260          |
| Changes in net working capital                              |           |              | 99           | (13)         | 23           | 61           | 64           | 121          |
| Capital expenditures  |           |              | (156)        | (161)        | (165)        | (172)        | (179)        | (186)        |
| as % of revenue   |           |              | 1.1%         | 1.1%         | 1.1%         | 1.0%         | 1.0%         | 1.0%         |
| <b>Unlevered free cash flows (UFCF) - FCFF</b>              |           |              | <b>1,693</b> | <b>1,697</b> | <b>1,866</b> | <b>2,014</b> | <b>2,123</b> | <b>2,225</b> |
| Net working capital (WC Assets - WC liabilities)            |           | (1,437)      | (1,536)      | (1,523)      | (1,546)      | (1,607)      | (1,671)      | (1,792)      |
| as % of revenue   |           | (10.4%)      | (10.0%)      | (10.0%)      | (9.8%)       | (9.8%)       | (9.8%)       | (10.1%)      |
| <b>Present value of UFCF on Feb 22, 2022 valuation date</b> |           |              |              |              |              |              |              |              |
|   |           | Val date     | Yr 1 - Stub  | Year 2       | Year 3       | Year 4       | Year 5       | Year 6       |
| Date for discounting cash flows                             |           | 2/22/2022    | 12/31/2022   | 12/31/2023   | 12/31/2024   | 12/31/2025   | 12/31/2026   | 12/31/2026   |
| Unlevered free cash flows (UFCF) stub adjusted              | 85.8%     |              | 1,453        | 1,697        | 1,866        | 2,014        | 2,123        | 2,225        |
| <b>Present value of of unlevered free cash flows</b>        |           |              | <b>1,386</b> | <b>1,532</b> | <b>1,593</b> | <b>1,627</b> | <b>1,623</b> | <b>1,701</b> |

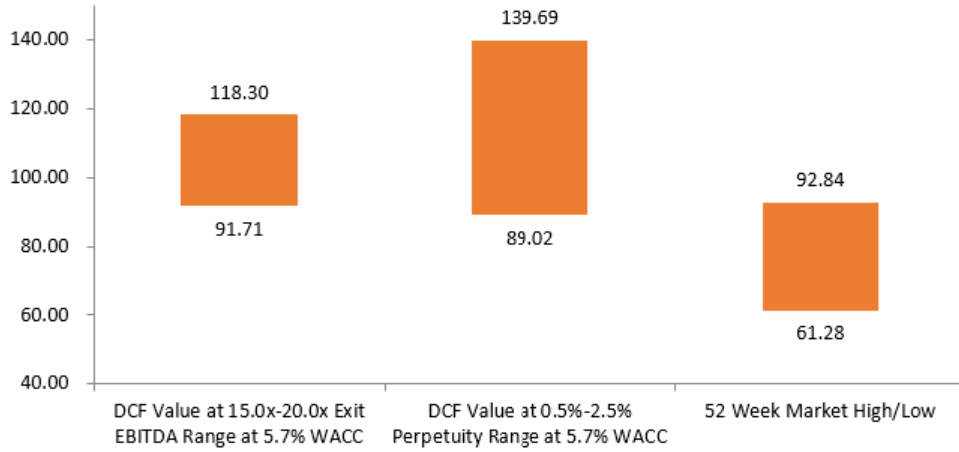
| Terminal value - growth in perpetuity approach |               | Terminal value - EBITDA multiple approach |                |
|--|---------------|---|----------------|
| Long term growth rate                          | 1.5%          | Terminal year EBITDA                      | 2,966          |
| 2026 FCF x (1+g)                               | 2,258         | EBITDA multiple                           | 18.0x          |
| Terminal value in 2027                         | 53,959        | Terminal value in 2027                    | 53,395         |
| Present value of terminal value                | 41,251        | Present value of terminal value           | 40,819         |
| Present value of stage 1 cash flows            | 9,461         | Present value of stage 1 cash flows       | 9,461          |
| <b>Total enterprise value (TEV)</b>            | <b>50,712</b> | <b>Enterprise value (stage 1 + 2)</b>     | <b>50,280</b>  |
| <i>Terminal value as % of TEV</i>              | <i>81.3%</i>  | <i>Terminal value as % of TEV</i>         | <i>81.2%</i>   |
| <i>Stage 1 cash flows as % of TEV</i>          | <i>18.7%</i>  | <i>Cash flows as % of TEV</i>             | <i>18.8%</i>   |
| <i>Implied TV exit EBITDA multiple</i>         | <i>18.2x</i>  | <i>Implied terminal growth rate</i>       | <i>1.5%</i>    |
| <b>Net debt</b>                                |               | <b>Shares outstanding</b>                 |                |
| Source doc                                     | Q3 2021 10Q   | Source doc                                | Date           |
| Source date                                    | 9/30/2021     | Q3 2021 10Q                               | 9/30/2021      |
| Gross debt and equivalents                     |               | Basic shares                              | 424,962        |
| Debt   | 7,273         | Restricted stock / RSUs                   | 0.000          |
| Convertible debt                               | 0             | Options / warrants                        | 0.000          |
| Preferred stock                                | 0             | Convertible debt                          | 0.000          |
| Noncontrolling (minority) interests            | 641           | Convertible preferred stock               | 0.000          |
| <b>Nonoperating assets</b>                     |               | <b>Net diluted shares outstanding</b>     | <b>424,962</b> |
| Cash   | 3,475         |   |                |
| Equity investments                             | 0             |   |                |
| <b>Net debt</b>                                | <b>4,439</b>  |   |                |

| Valuation                     |                                 |                 |
|-------------------------------|---------------------------------|-----------------|
|                               | Perpetuity                      | EBITDA          |
| Enterprise value              | 50,712                          | 50,280          |
| Net debt                      | 4,439                           | 4,439           |
| Equity value                  | 46,273                          | 45,841          |
| Shares outstanding            | 425                             | 425             |
| <b>Equity value per share</b> | <b>\$108.89</b>                 | <b>\$107.87</b> |
| <b>% Upside</b>               | <b>32.1%</b>                    | <b>30.8%</b>    |
|                               | <b>Last twelve months (LTM)</b> |                 |
|                               | <u>Perpetuity</u>               | <u>EBITDA</u>   |
| EV / Revenue                  | 3.5x                            | 3.5x            |
| EV / EBITDA                   | 21.9                            | 21.7            |
| EV / EBIT                     | 23.9                            | 23.7            |
|                               | <b>Year 1</b>                   |                 |
|                               | <u>Perpetuity</u>               | <u>EBITDA</u>   |
| EV / Revenue                  | 3.4x                            | 3.4x            |
| EV / EBITDA                   | 21.3                            | 21.2            |
| EV / EBIT                     | 23.3                            | 23.1            |

## Appendix G2 – WACC Computation

| WACC Buildup  |              |   |
|---|--------------|---|
| <i>\$ and shares in millions, except per share data</i> |              |   |
| Cost of capital assumptions                             |              |   |
| Cost of debt  | 2.64%        | Source                                      |
| Tax rate  | 25.00%       | Factset - YTM on a Bond                     |
| <b>Cost of debt (after tax)</b>                         | <b>1.98%</b> | From terminal year of UFCF forecast         |
|   |              | Cost of debt x (1 - tax rate)               |
| Risk free rate  | 1.75%        | WSJ: 10 Year US Treasury Yield              |
| Beta  | 0.800        | Bloomberg 2 year weekly adjusted beta       |
| Market risk premium                                     | 5.50%        | Market risk premium from D&P September 2021 |
| <b>Cost of equity</b>                                   | <b>6.15%</b> | RfR + Beta x MRP                            |
| Capital weights (capital structure)                     |              |   |
|   | Current      | Target (override)                           |
| Equity  | 36,476.1     | 89%   |
| Debt  | 4,584.0      | 11%   |
|   | 41,060.1     |   |
| <b>Cost of capital (WACC)</b>                           |              | <b>5.7%</b>                                 |

**DCF Equity Valuation Range**



**Appendix G4 – Sum of The Parts Analysis**

| Segment                             | Weak Case        |              |                  | Base Case         |              |                  | Best Case         |              |                  |
|-------------------------------------|------------------|--------------|------------------|-------------------|--------------|------------------|-------------------|--------------|------------------|
|                                     | 2027E Low EBITDA | LTM Multiple | Enterprise Value | 2027E Base EBITDA | LTM Multiple | Enterprise Value | 2026E Best EBITDA | LTM Multiple | Enterprise Value |
| New Equipment                       | \$ 196.00        | 18           | \$ 3,528.00      | \$ 378.00         | 18           | \$ 6,804.00      | \$ 611.00         | 18.00        | \$ 10,998.00     |
| Services                            | \$ 2,062.00      | 22           | \$ 45,364.00     | \$ 2,588.00       | 22.00        | \$ 56,936.00     | \$ 3,218.00       | 22.00        | \$ 70,796.00     |
| 5 Year-Enterprise Value             |                  |              | \$ 48,892.00     |                   |              | \$ 63,740.00     |                   |              | \$ 81,794.00     |
| (-) Net Debt                        |                  |              | (4,439)          |                   |              | (4,439)          |                   |              | (4,439)          |
| (=) 2026 (5-Yr) Future Equity Value |                  |              | \$ 44,453.00     |                   |              | \$ 59,301.00     |                   |              | \$ 77,355.00     |
| (/) Shares Outstanding              |                  |              | 424.962          |                   |              | 424.962          |                   |              | 424.962          |
| (=) 5-Yr Value / Share              |                  |              | \$ 104.60        |                   |              | \$ 139.54        |                   |              | \$ 182.03        |
| Discounted Share Price Today        |                  |              | \$ 77.62         |                   |              | \$ 103.54        |                   |              | \$ 135.06        |
|                                     |                  |              | -5.85%           |                   |              | 25.60%           |                   |              | 63.83%           |