

PIONEERPOWER SOLUTIONS

Overly ambitious and capital constrained

Current Price: \$6.00 Price Target: \$5.55 Upside (Downside): -7.43%

Short Thesis of Pioneer Power Solutions, Inc. by Jake Gutwein

Table of Contents

COLUMBIA UNIVERSITY

IN THE CITY OF NEW YORK

I: Company Overview II: Industry Overview & Risk Factors III: Thesis & Catalysts IV: Valuation V: Appendices



I: Company Overview

"Pioneer Power Solutions, Inc. manufactures, sells and services a broad range of specialty electrical transmission, distribution and on-site power generation equipment for applications in the utility, industrial, commercial and backup power markets."

Company Overview

T&D Solutions: Pioneer Transformers Ltd., Jefferson Electric, Inc., Pioneer CEP brand names

- "consists of two primary product categories: electrical transformers and switchgear"

Critical Power: Pioneer Critical Power, Inc., Titan Energy Systems, Inc. brand names

- "provides customers with power generation equipment, paralleling switchgear, related electrical distribution infrastructure, and a data collection and monitoring platform"

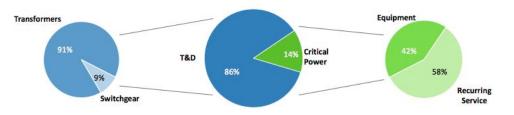
Company Information & Themes

Products & Services: Custom-engineered electrical transformers, low and medium voltage switchgear and engine-generator sets and controls, national service and maintenance staff

"Our principal products and services include custom-engineered electrical transformers, switchgear and engine-generator sets and controls, complemented by a national field-service network to maintain and repair power generation assets"

Facilities: 13 non-HQ locations throughout the United States, Canada, and Mexico across manufacturing, distribution, sales, engineering, service and administration

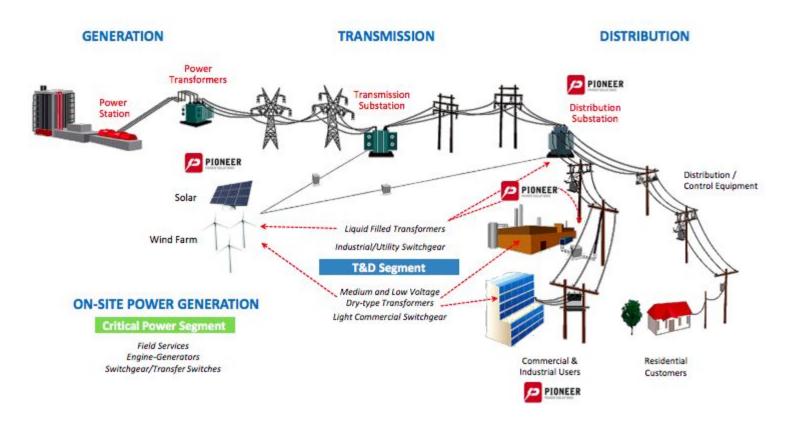
The company is headquartered in Fort Lee, NJ





COLUMBIA UNIVERSITY

IN THE CITY OF NEW YORK





Transmission & Distribution Solutions

Basic Segment Details

- Comprises 86% of overall revenue, with 91% deriving from transformers and 9% from switchgear
- Emphasize custom-engineered products that are manufactured-to-order, and creates "over two-thirds" of T&D revenue
- Liquid-filled transformers are manufactured in Granby, Quebec
- Dry-type and custom magnetic transformers are manufactured in Farnham, Quebec and Reynosa, Mexico
- Low-voltage electric power distribution and panel boards, low- and medium-voltage switchgear, and switchboards are manufactured in Southern California

Segment Description & Analysis

- "Equipment that distributes, controls, conditions, and monitors the flow of electrical energy while protecting critical equipment such as transformers, motors, data center equipment, and other machinery"
- Fill the equipment portion of the systems that enable efficient and effective management of electrical power distribution systems
- Marketed through Pioneer Transformers Ltd., Jefferson Electric, Inc., Bemag Transformers, Inc., Pioneer Critical Power Inc., and Pioneer Custom Electric Products, Inc.
- Switchgear operations revenue from Pioneer Critical Power, Inc. is counted under the T&D Solutions segment instead of the Critical Power segment (accounted for in financials)
- Demand drivers are "end user maintenance programs to repair, replace, or retrofit aging equipment, as well as to upgrade or expand their electrical distribution systems to accommodate growth and other changes in their operations"
- Production of magnetic subassemblies for systems sold by OEMs drives custom solutions revenue, and are often implemented in "data center, elevator control, and electric drive applications"
- Other T&D revenue is a result of sales from Pioneer's standard transformer designs, sold via electrical distributors and brand label customers, which will increase in revenue as new commercial construction improves



Transmission & Distribution Solutions: Product Overview



Product offerings within the Transmission & Distribution Solutions segment



Transmission & Distribution Solutions: Product Segment Details

Liquid-Filled Transformers

- Small- and medium-power are implemented for utilities and large industrial applications

- Padamount are implemented in utility distribution networks, underground, and renewable projects

- Network are implemented in subway- and vault-type units which provide continuity of utility service

- Unitized Padamount are implemented as part of an equipment system that is used in lieu of a traditional substation

- Others include "mini-pad, platform-mount and other specialty low voltage designs"

Dry-Type Transformers

- Medium-voltage and power-dry are designed as custom applications for locations where liquid-filled transformers are unsafe or fail to meet other specifications

- OEM are "custom designed and manufactured magnetic components and subassemblies incorporated by customers into their product offering"

- Power quality are "harmonic-eliminating and mitigating transformers, passive filters, K-factor, control, drive isolation and other magnetically-driven power quality solutions"

- Low voltage standard are a "catalogue of ventilated, encapsulated and other designs sold to electrical distributors and brand label customers for general purpose electrical loads"

- Low voltage custom are "quick-turn, low voltage distribution transformers manufactured to customer electro-mechanical specifications"

Transformers

- As an overview, electric transformers are utilized as a method to adjust electricity voltage that is conducted through a power line, which is done by electromagnetic induction in the transformer

- The electric power plant application of transformers is to increase voltage that is conducted through power lines to move electricity with increased efficiency over long distances

- Electric power plants also use transformers to decrease the voltage of electricity when it arrives at the end location, which allows this electricity to actually be utilized in commercial/residential settings

Switchgear

- Low-voltage panel boards, switchboards, and switchgear use components from major manufacturers
- Specialty solutions include unit substations
- Nema electrical enclosures are custom manufactured and U.L. approved
- Parallelling switchgear is low- and medium-voltage and is implemented in managing multiple power sources
- Pioneer sells their own as well as other manufacturers' Automatic Transfer Switches
- Others include "controls, load banks, surge protection and related equipment for power conditioning and reliability"

- Switchgear can be broadly defined, as it is generic and applies to "the finished assembly of a system of devices utilizing electrical disconnects, fuses and circuit breakers, whose general function is to distribute, control and monitor the flow of electrical energy, while isolating and protecting critical equipment such as transformers, motors and other electrically powered machinery"



Critical Power Solutions

Segment Outlook

- Comprises 14% of overall revenue
- 42% of segment revenue derives from equipment, with the remaining 58% from switchgear
- Although the segment accounts for less revenue than the T&D segment, it is critical to maintaining and expanding market share





Product offerings within the Critical Power Solutions segment

Segment Description & Analysis

- "Onsite power generation systems, control equipment and services that ensure uninterrupted power to operations in times of emergency and in primary power applications, including data centers"
- The juxtaposition of modern power generation machinery with a technology-enabled data collection and monitoring system allows Pioneer to ensure uninterrupted power supply during critical time periods
- Marketed through Titan Energy Systems Inc., a brand name of Pioneer's Minnesota operations
- Design, manufacture, sell, commission, and provide aftermarket service to "onsite power generation and control equipment"
- Pioneer's systems and monitoring are primarily used in facilities in which a power outage would be detrimental to that facility's revenue or reputation, including "data centers, hospitals, communications facilities, factories, national retailers, military sites, office complexes," and others
- Flexible business model allows Pioneer to only provide specific equipment or service, while also potentially providing an entire equipment package
- "We believe that our value proposition to customers is differentiated by our use of advanced communications and automated data collection technologies to provide a highly-sophisticated remote monitoring, automated control and reporting platform to our customers"



Critical Power Solutions: Product Segment Details

Power Generation Equipment

- Engine-generator sets, which primarily consist of natural gas, diesel, and bi-fuel power generation equipment sourced through Generac Industrial Power and other manufacturers. Sold in both individual units and multi-unit configurations

- Uninterruptible Power Supply (UPS) systems sourced from major manufacturers, and are an authorized dealer for GE, Toshiba and Eaton-Powerware

- Small revenue portion obtained from UPS segment, which are primarily utilized by "data-intensive businesses to provide battery backup power to servers until the emergency backup genset(s) come online"

- Unique proprietary technology solutions, notably GenMax which is PPSI's "proprietary harmonic suppression technology that resolves power reliability and genset capacity issues frequently encountered when new gensets are introduced into a system of existing gensets"

 Able to use PSG capabilities from the switchgear segment to "excel in projects requiring multiple gensets in side-by-side arrangements that are paralleled for synchronous operation"

- Critical Power segment is the only authorized distributor for the "Industrial Power equipment and parts of Generac Power Systems Inc." in Minnesota, Iowa, Illinois, Wisconsin and Nebraska, and "one of only 32 such distributors throughout North America"

Service

- Contracts typically extend from a range of one to five years, with contracts incorporating "scheduled preventative maintenance, and 24/7 repair and support services...for all makes and models of equipment"

- Specific regional service is offered by PPSI technicians in the Midwest and Florida, with a maintained inventory of equipment, parts, service vehicles, and certified staff

- National service if "provided by our technicians and network of field service providers throughout the United States for multi-site, multi-state power generation equipment owners." This network allows PPSI to "provide quick-response, 24/7 service capability that can effectively service any make and model of back-up power equipment in any city of the United States"

- In total, over 7,500 generators owned by over 1,200 clients are serviced by PPSI, with several "multi-side, multi-state customers" including Verizon and Target

- Service is available to clients who did not originally purchase equipment from PPSI, enabling further revenue diversification between installation and maintenance contracts

- In general, the service segment enables PPSI to obtain a recurring revenue stream and recognize improved margins relative to equipment sales

Remote Monitoring

- Unique, proprietary system which enables "real-time remote monitoring, metering and control" for power sources and systems of the client, capturing and monitoring "up to 100 critical points and functions on the genset"

- Data display is updated in real-time and fully customizable, allowing clients to obtain easily-understandable web-based reporting

- Monitoring dashboard includes work order tracking and service request submission, facilitating the recording and categorization of information across power solutions and facilities

- Expanding further into the asset management segment, which extends the monitoring and service segments to include "automated audit and inventory tracking and reporting services," and allow for a moat via more efficient work, higher quality service, and enhanced margins

- Specific focus on scalability, which has allowed PPSI to win contracts from larger customers with multiple locations

- Network operations center functions via preventative maintenance, stopping failures before they occur, and is highly scalable which furthers national expansion efforts



Customer Retention

- 27% of 2016 sales were to Canadian customers, 72% to U.S. customers, and 1% to Central and Latin American customers

- Canadian customers included "electrical utilities, municipal power systems, large industrial companies engineering and construction firms and a number of electrical distributors"

- U.S. customers were largely concentrated in commercial construction

- Largest customer in 2016 was Siemens, an industrial manufacturing company; top 20 customers represent 51% of revenue

- Other notable customers "include a number of recognized national and regional utilities, industrial companies and engineering, procurement and construction firms," and have maintained "long-term relationships with dozens of blue chip customers"

- Products also sold through "hundreds of electrical distributors served by [PPSI's] network of stocking locations throughout the U.S. and Canada"

End Markets

- Broad range of applications within utility, industrial, commercial and backup power markets provides a diversified revenue mix

- Transformers are sold to electric utilities, renewable energy and power grid systems, and industrial and commercial construction

- Custom transformers are primarily sold to OEMs as a component

- Liquid-filled transformers custom-designed and sold to the small power market and other customers that require further specifications, including "electrical utilities, independent power providers, electrical co-ops, industrial companies, commercial users and electrical equipment wholesalers"

- Medium voltage and power-dry transformers are applied primarily to indoor and metropolitan areas

- Magnetically-driven transformers allow PPSi to gain exposure to customers that have sensitive automation equipment and need efficient power systems

85% Customer Retention in 2016



"Moat" Analysis & Management Team

Diversified Product Offering

- Unique emphasis on preventative maintenance and real-time analytics, allowing PPSI to provide superior service to their customers and streamline costs

- Ability to continue building out the suite of product offerings via strategic acquisitions, functioning as a platform for unique and value-add products and services for the wider power industry

- Further diversifying the product suite will allow PPSI to drive sales to larger customers and, in addition, win service contracts for those customers

Strong Cash Flow

- Consistent revenue stream brought by service & maintenance contracts which help solidify revenue projections and enhance the strength of customer relationships

- Service & maintenance contracts ensure that the overall revenue stream is diversified and reduces reliance on new construction

- Strong cash flow metrics and ability to transition new revenue into cash flow allows PPSi to further support strategic acquisitions

Management Team

- Management has a strong background in company leadership and each team member is able to bring a unique background to provide synergistic benefits

- Several management team members have positive experience with the search process and integration of strategic acquisitions

Nathan J. Mazurek, *Chairman & CEO*: Joined PPSI in Dec. 2009, or the start of the company. Previously, he was Chairman & CEO of the primary subsidiary of PPSI. From 2001-2005 he focused on acquisitions.

Thomas Klink, *CFO & Director*: Has held his current role since Jan. 2016, and previously was President of now-subsidiary Jefferson Electric. Before that, he was a division controller at MagneTek, Inc., which is traded on the NASDAQ.

Yossi Cohn, *Director*: Joined PPSI in Dec. 2009, and is the founder and managing partner at YY Capital Partners, LLC. Previously he was head of investor relations at a telecom company and research director at a FoF.

David J. Landes, *Director*: Joined PPSI in Dec. 2009, and was President of Provident Sunnyside, LLC., CYMA Investments LLC., and 516 Churchill Associates, LLC. Before that, he focused on corporate and securities law.



Restructuring

- In 2Q15, cost-reduction strategies via tighter business integration were evaluated with intended execution to be completed by mid-2016 and fixed cost reduction of \$2.5M

- In 3Q15, the plan was established which outlined a consolidation of the six existing manufacturing facilities into three, reduction of redundant personnel, relocation of staff members and realignment of product lines and supply chains among segments

- Relocation of Medium Voltage Transformer product line completed in $2\ensuremath{\mathsf{Q}17}$

- Consolidation of two Minneapolis subsidiaries, which provided synergistic offerings, into one facility was completed in 2016

- Eliminated Titan Northeast subsidiary which focused on backup power sales but was not profitable, illustrating the shift toward more profitable business segments

- Shifting of Bemag Transformer unit of T&D Solutions segment to U.S. customers has improved profitability via integration with Jefferson Electric, Inc. business

Two-Pronged Strategy

1. Internal Growth

- "operating efficiencies, new product development, customer focus and our continued migration towards more highly-engineered products and specialized services"
- "intend to significantly increase the percentage of our sales derived from engineered-to-order products and differentiated services and believe this can be accomplished by targeting market segments, such as data centers and independent power producers, which have growth characteristics exceeding the norm in our industry"

2. Strategic Acquisitions

- "complementary product and service offerings, new sales channels, end-markets and scalable operations"
- "In addition to switchgear and transformer manufacturers, we also intend to acquire manufacturing and service businesses focused on other technically-advanced, customized, ancillary or complementary products that address market segments where we seek further penetration, such as in data centers, backup power equipment and service, traction power, renewable energy and natural resources"



II: Industry Overview & Risk Factors

Positive Trends

Growth in Applications & Data Center Market

- The world is currently experiencing a vast growth in the quantity of mission critical facilities, which require that critical power systems are in place in the case of a power outage

- The U.S. demand for critical power is driven by the data center and health care industries

- Data center growth in the U.S. is expected to continue to grow strongly with the technology boom

- Efficient power is also of importance for these facilities, as implementation of strong power systems can improve margins and the bottom line

- Many of these manifestations will require the use of several PPSI products and services, burgeoning their demand in the coming years

Growth Rates

- Electrical T&D equipment is expected to grow as a market in the coming years

- Switchgear and transformer demand are expected to grow by 6.1% and 4.5% annually through 2019

- Pole/transmission line hardware is expected to grow 6%

- Rising demand for renewable energy utilization, particularly connectivity to the grid, will fuel market growth and demand

General Market Direction

- Electricity use in the U.S. is expected to increase by 28% between 2011 and 2040

- Commercial and industrial companies are investing more heavily in on-site power sources, which are for power outage scenarios and energy efficiency

- Large capex is expected within the grid, with several locations operating past their service capabilities



Risk Factors & Competition

Risk Factors

- Housing market showing signs of slowing down

- "Mortgage applications decreased 6.6 percent from one week earlier," (i.e. Feb. 14-21) and this metric accounts for seasonality in the housing market

- "The average contract interest rate for 30-year fixed-rate mortgages with conforming loan balances (\$453,100 or less) increased to its highest level since January 2014, 4.64 percent, from 4.57 percent"

- Overall U.S. home prices increased 5.3% from Q4 2016 - Q4 2017, adjusted for seasonality

- The home market drives 72.6% of total sales for PPSI

- Raw Material Costs

- Represented 60% of 2016 revenues
- Primarily the use of steel, copper wire, aluminum, and insulation
- "Limited sources of supply for electrical core steel and transformer oil"

Competition

- Many competitors are able to focus on a niche market segment, and are "small, highly specialized, or focused on a certain geographic market area or customer"

- ABB Ltd., Carte International, Inc., Eaton Corporation plc, General Electric Company, and Schneider Electric SA all have more financial and technical capabilities than Pioneer Power Solutions

- PPSI's Critical Power segment competes with similar established competitors, including Caterpillar, Cummins, and Kohler

- PPSI has placed a specific emphasis on "responsiveness and flexibility in providing custom-engineered solutions to satisfy customer needs"

- Some proprietary capabilities have been established, which include "a number of special designs and libraries of programming code for our equipment that were engineered and developed specifically for our customers"



III: Thesis & Catalysts

COLUMBIA UNIVERSITY Sources:

IN THE CITY OF NEW YORK

Pioneer is unable to continue pursuing strategic M&A transactions due to the high level of debt that it currently has, and previous transactions have not provided as strong of synergistic benefits as expected, with many metrics worsening over time.

Lack of M&A Capabilities & Synergy Execution

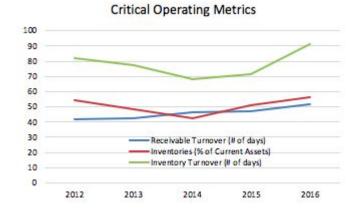
Lack of M&A Capabilities

- Unable to further lever up and make strategic acquisitions due to worsening liquidity metrics

- Owners will likely not be willing to sell the company (PPSI) if bidders appear as the majority of the shares are owned by insiders

- A liquidity event is likely to occur due to the \$24M in short-term debt and current portion of long-term debt, and there have already been covenant breaches under the current loan agreement

- Payroll tax expense violations occurred under the previous loan agreement, and a waiver was extended to obtain a \$5M loan to PPSI's Canadian subsidiary



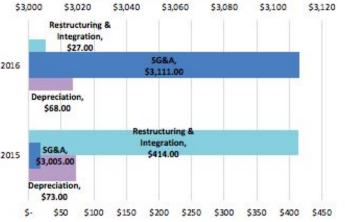
Top Ten Owners							
Firm	% Ownership						
Provident Pioneer Partners, LP	52.26						
A Lawrence Carroll Trust	8.13						
Kennedy Capital Management	5.59						
North Start Investment Managemen	5.07						
Heartland Advisors Inc.	4.02						
First Wilshire Securities	3.35						
Perrit Capital Management	1.58						
Klink Thomas	1.15						
Vanguard Group	0.55						
Blackrock	0.25						
Total: Top Ten Owners	81.95						

Expense Control

- Despite the restructuring efforts, the ability to control expenses is limited and is shown by the increase in unallocated corporate overhead SG&A between 2015-2016, when effects should have materialized from the restructuring

- Other operating metrics have worsened, including receivable turnover and inventory turnover

Unallocated Corporate Overhead Expenses





COLUMBIA UNIVERSITY Sources: PRNewswire, BusinessWire IN THE CITY OF NEW YORK

IV: Valuation

COLUMBIA UNIVERSITY

IN THE CITY OF NEW YORK

		Valuation Methodo	logy Summ	nary for Pioneer Pow	er Solutions	(Nasdaq: PPSI)							
Valuation Methodology Summary for Pioneer Power Solutions (Nasdaq: PPSI)		DCF:	EV/EBITDA Termi	inal Multiple Method		DCF: Perpetuity Growth Method							
		Terminal EV/EBITDA Multiple	10.00	12.00	14.00			Present Value of Termin	al FCF	116.92			
DCF Perpetuity Growth Method Share Price	8.77	Terminal EBITDA	8.63	8.63	8.63			Total Present Value Proj	jected Year FCF	25.83			
Upside (Downside) %	46.22%	Terminal Value	86.31	103.57	120.83			Terminal Value/Total Va	alue	81.90%			
EV/EBITDA Multiple Method - Bear	6.00	Present Value of Terminal Value	60.68	72.82	84.95			Enterprise Value		142.76			
Upside (Downside) %	-61.20%	Enterprise Value	86.51	98.65	110.79			Net Debt		66.20			
EV/EBITDA Multiple Method - Base	3.72	Net Debt	66.20	66.20	66.20			Minority Interest		0.00			
Upside (Downside) %	-38.02%	Implied Equity Value	20.31	32.45	44.59			Implied Equity Value		76.56			
EV/EBITDA Multiple Method - Bull	5.11	Total Shares Outstanding	8.73	8.73	8.73			Total Shares Outstandin	ng	8.73			
Upside (Downside) %	-14.84%	Share Price	2.33	3.72	5.11			Share Price		8.77			
P/FCF Multiple Method - Bear	1.56	Current Share Price	6.00	6.00	6.00			Current Share Price		6.00			
Upside (Downside) %	-73.94%	Upside (Downside)	-61.20%	-38.02%	-14.84%			Upside (Downside)		46.22%			
P/FCF Multiple Method - Base Upside (Downside) %	5.65 -5.92%												
P/FCF Multiple Method - Bull	7.11	DC	DCF: EV/FCF Terminal Multiple Method					Comparable Companies Method					
Upside (Downside) %	18.54%	Terminal P/FCF Multiple	9.00	10.50	12.00	Metric	PPSI Estimate	Weighting	Valu	e from Metric			
Comparable Companies Analysis	6.51	Terminal FCF	8.54	8.54	8.54	EV/EBIT	12.28		0.1	1.23			
Upside (Downside) %	8.53%	Terminal Value	76.82	89.62	102.43	EV/Sales	14.42		0.15	2.16			
Average Share Price from Valuation	5.55	Present Value of Terminal Value	54.01	89.62	102.43	EV/EBITD	A 8.65		0.1	0.87			
Methodologies	5.55	Enterprise Value	79.84	115.46	128.26	P/S	9.60		0.15	1.44			
Current Share Price for Pioneer Power	6.00	Net Debt	66.20	66.20	66.20	P/TB	1.63		0.5	0.82			
Solutions	6.00	Implied Equity Value	13.64	49.26	62.06		Estimated Shar	e Price		6.51			
Upside (Downside) %	-7.43%	Total Shares Outstanding	8.73	8.73	8.73		Upside (Downs	ide)		8.53%			
oparae (Downarde) //	-7370	Share Price	1.56	5.65	7.11								
		Current Share Price	6.00	6.00	6.00								

-5.92%

18.54%

Upside (Downside)

-73.94%



Comparable Companies Analysis for Pioneer Power Solutions (Nasdaq: PPSI)												
Company Name	Ticker	EV/EBIT	EV/Sales	EV/EBITDA	P/S	P/Tangible Book	Gross Margin	EBITDA Margin	Operating Margin	Net Debt/EBITDA	Beta	EV
Hammond Power Solutions, Inc.	HMDPF	8.68	0.42	5.98	0.36	1.24	24.66	7.42	5.25	22.4		125.6
Broadwind Energy, Inc.	BWEN	26.27	0.34	32.15	0.16	0.73	5.56	1.6	-5.07	1.6		
Capstone Turbine Corporation	CPST		0.73		0.55	2.72	14.56	-10.88	-12.35		0.28	61.70
NL Industries, Inc.	NL	283.02	1.84	44,85	3.35	1.22	31.05	7.15	31.05	-40.53	1.83	206.4
American Superconductor Corpo	r AMSC		1.86		1.86	2.24	21.33	-12.37	21.33		1.4	95.1
Intricon Corporation	IIN	66.18	1.68	33.49	1.54	18.63	30.3	8.02	4.85	2.47	0.81	148.7
Emerson Electric Co.	EMR	18.08	2.89	14.25	2.75	68.35	41.98	21.47	17.18	0.51	1.15	45770.4
Pioneer Power Solutions, Inc.	PPSI	7.38	0.58	6.08	0.52	12.92	22.2	9.59	7.91	4.99	0.39	86.4
Mean		15.10	1.39	8.77	0.83	3.51	23.96	4.00	8.77	-1.43	0.98	6642.04
PPSI Estimates		12.28	14.42	8.65	9.60	1.63						



COLUMBIA UNIVERSITY Sources: IN THE CITY OF NEW YORK

V: Appendices

COLUMBIA UNIVERSITY

IN THE CITY OF NEW YORK

