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# Zacks Small-Cap Research

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## Midwest Energy Emissions (MEEC-OTCQB)

Midwest Energy Emissions launches redesigned website

Based on comparative analysis that utilizes the valuation metric of price-to-sales (P/S), a mid-second quartile industry P/S ratio of 2.74 on TTM sales through 3Q-2018 of $14.5 million indicates a share price target of $0.52

| | |
|---|---|
| Current Price (02/20/19) | $0.25 |
| **Valuation** | **$0.52** |

### OUTLOOK

Midwest Energy Emissions is well-positioned to benefit from the reduction of mercury emissions initiatives in the U.S, Canada and Europe. The company holds patents to SEA™ Technology for the reduction of mercury emissions by coal-fired electric generating units. In 2019, Europe offers significant prospects through a Licensing Agreement with Cabot Corp. Under the Industrial Emissions Directive (IED), 1,384 coal-fired EGUs in Europe will be required to achieve new mercury emission compliance standards by 2020. In addition, the company is pursuing a patent strategy in an effort to seek fair compensation for aspects its patented SEA technology adopted by certain domestic EGUs.

### SUMMARY DATA

| | |
|---|---|
| **52-Week High** | **$0.47** |
| **52-Week Low** | **$0.12** |
| **One-Year Return (%)** | **-11.40** |
| **Beta** | **1.70** |
| **Average Daily Volume (shrs.)** | **40,252** |
| **Shares Outstanding (million)** | **76,246** |
| **Market Capitalization ($ mil.)** | **$18.91** |
| **Short Interest Ratio (days)** | **0.03** |
| **Institutional Ownership (%)** | **15.3** |
| **Insider Ownership (%)** | **22.1** |
| **Annual Cash Dividend** | **$0.00** |
| **Dividend Yield (%)** | **0.00** |
| **5-Yr. Historical Growth Rates** | |
| **Sales (%)** | **N/A** |
| **Earnings Per Share (%)** | **N/A** |
| **Dividend (%)** | **N/A** |
| **P/E using TTM EPS** | **N/M** |
| **P/E using 2018 Estimate** | **N/M** |
| **P/E using 2019 Estimate** | **N/M** |

| | |
|---|---|
| **Risk Level** | **Above Average** |
| **Type of Stock** | **Small-Growth** |
| **Industry** | **Pollution Control** |

### ZACKS ESTIMATES

**Revenue**
(in millions of $)

| | Q1 (Mar) | Q2 (Jun) | Q3 (Sep) | Q4 (Dec) | Year (Dec) |
|---|---|---|---|---|---|
| 2017 | 5.43 A | 7.93 A | 8.45 A | 5.69 A | 27.50 A |
| 2018 | 2.12 A | 2.45 A | 4.21 A | 2.93 E | 11.71 E |
| 2019 | | | | | 14.50 E |
| 2020 | | | | | 17.50 E |

**Earnings per Share**
(EPS is operating earnings before non-recurring items)

| | Q1 (Mar) | Q2 (Jun) | Q3 (Sep) | Q4 (Dec) | Year (Dec) |
|---|---|---|---|---|---|
| 2017 | -$0.02 A | $0.00 A | $0.01 A | -$0.02 A | -$0.04 A |
| 2018 | -$0.03 A | -$0.02 A | -$0.01 A | -$0.01 E | -$0.06 E |
| 2019 | | | | | -$0.04 E |
| 2020 | | | | | $0.00 E |

Zacks Projected EPS Growth Rate - Next 5 Years % **7**

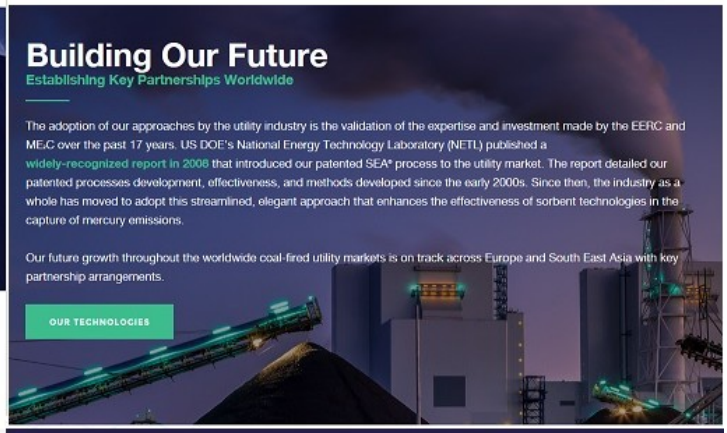
2016 EPS do not reflect non-re-occurring debt restricting charges.

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## EXECUTIVE SUMMARY

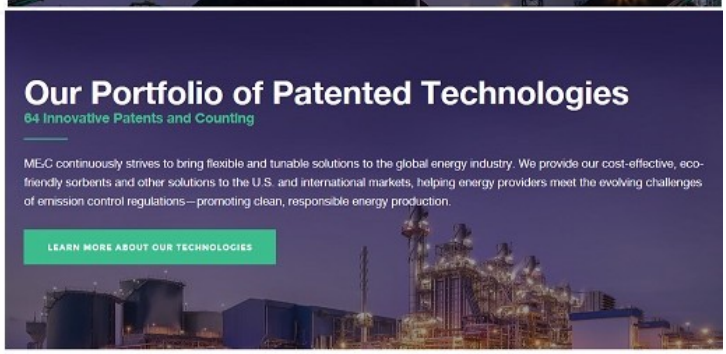
Recently, Midwest Energy Emissions launched a **redesigned website**. The home page has multiple informational sections (Our Story, Building Our Future, Our Portfolio of Patented Technologies, Leadership Team and Industry Experts-Proven Solutions) with links to further information that has been relayed previously by the company.

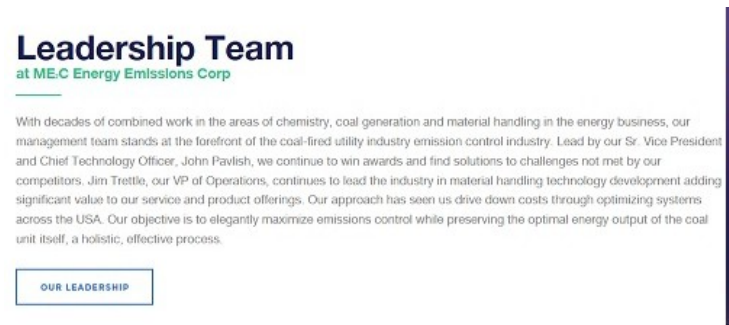


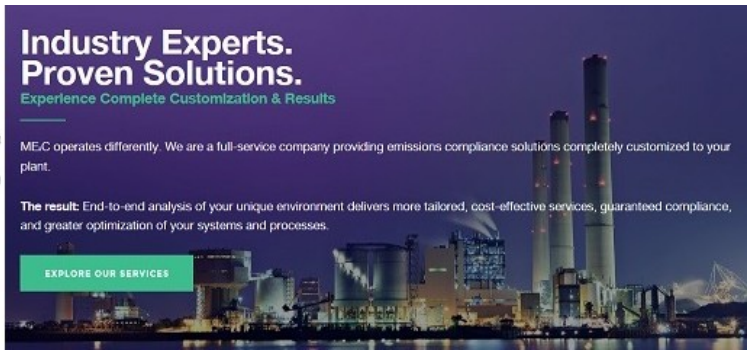







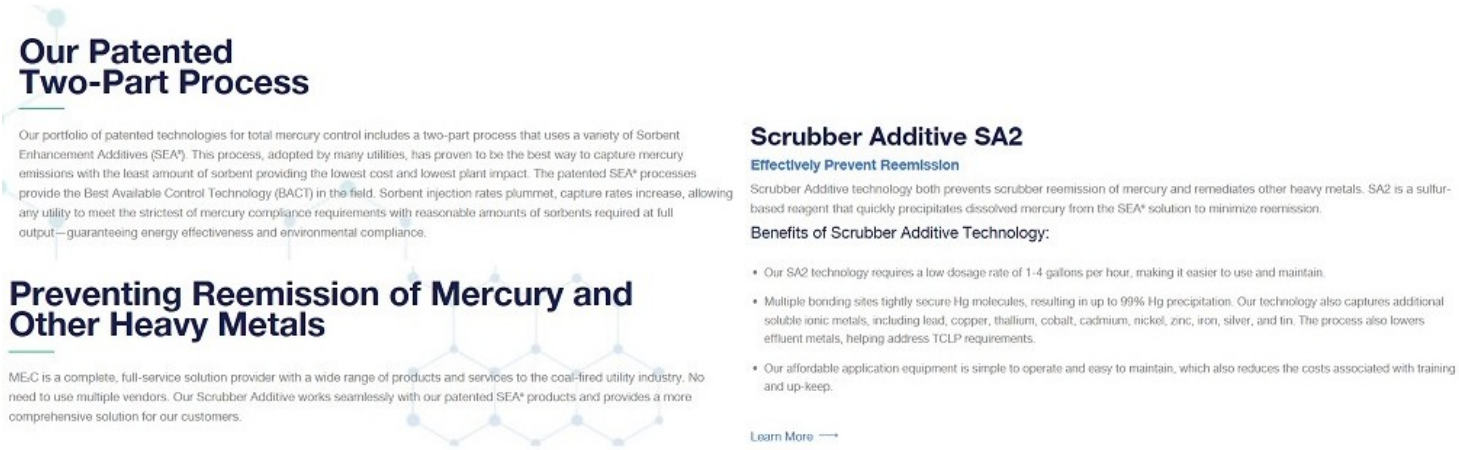



Further down the home page, the redesigned website delves into the details of the company **two-part process** that has been largely adopted by the electric utility industry. **Management's patent strategy** is attempting to monetize this infringement of intellectual property (IP). Midwest Energy Emissions is the leading company in the development of the two-part process with sophisticated analytics which can optimize mercury removal in terms of efficiency and costs.

Also, the new website has new content in the Preventing Reemission of Mercury and Other Heavy Metals section, along with a description of the company's new emerging product, SA2 (**Scrubber Additive2**). SA2 has been introduced to the company's existing base through testing programs. Management anticipates that its client base will adopt of this new sorbent additive.




## 2018 REVIEW

***Patent Strategy Announced***

In November 2018, management announced that Midwest Energy Emissions is **pursuing a licensing model** to benefit from its patented SEA™ Technology patent portfolio. As coal-fired EGUs sought to become compliant with MATS, many (the company believes over 100) have adopted aspects of the patented methods of SEA technology, particularly the enhancement of sorbent with a halide-based substance. Management has engaged Caldwell Cassady & Curry PC to analyze and validate the company's patent portfolio. As an IP (Intellectual Property) law firm, Caldwell Cassady & Curry will lead the effort to seek fair compensation. Potential resolutions include a licensing program with Midwest Energy Emissions or a supply contract by which Midwest would become the provider of the sorbent. A relationship with Midwest Energy Emissions also would provide certain other benefits. With a sophisticated understanding of mercury interactions with flue gas constituents and the knowledge of modifying the composition of sorbent based on coal type and the plant configuration, Midwest Energy has the expertise to further improve the operational efficiencies of these coal-fired systems.

***2018 Contract Announcements***

On October 16, 2018, the company announced that **the company's largest customer has expanded** the use of SEA® technologies **to two additional coal-fired boilers (EGUs)**. Management expects that this expansion will generate multi-million dollars annually in revenue over the course of three years. The customer was described as "one of the largest utilities in North America and a long-term customer."

On October 11, 2018, Midwest Energy Emissions announced that **the company's largest current customer extended its supply contract for an additional three years**. Under the multi-million dollar, Midwest Energy Emissions will continue supplying its proprietary Sorbent Enhancement Additive (SEA®) so that the customer can cost-effectively achieve the mercury capture requirements mandated by MATS.

In April 2018, Midwest Energy Emissions secured **another order** from the previously announced Canadian customer, this time to install SEA™ Technology **at an EGU in Alberta**. Midwest Energy has worked with this Canadian customer since 2011.

***European Licensing Agreement with Cabot Corporation***

On April 17, 2018, Midwest Energy Emissions announced that the company has entered into a multi□year European licensing agreement with **Cabot Corp**. (NYSE: CBT). Under the agreement, Cabot has exclusive access to Midwest Energy's patented SEA™ Technologies for the development of mercury removal solutions for coal-fired EGUs in Europe. Cabot will market and sell Midwest Energy's proven

**two□part mercury capture technology** and **proprietary scrubber additive technology** under the licensing agreement. Cabot has a strong presence in Europe and is expected to be a major player in the implementation of mercury emissions solutions that are required to achieve the European standards set forth by the Best Available Techniques (BAT) Reference Document (BREF) under the *Industrial Emissions Directive*. According to Midwest Energy Emissions, Europe's coal market includes a total of 1,384 coal□fired EGUs with 914 of those located in Eastern Europe.

Given the opportunities in Europe for Midwest Energy's mercury emissions control technologies, management (John Pavlish, Senior VP and Chief Technology Officer) made a presentation as a featured speaker at the **13th Annual MEC Workshop in Krakow, Poland**. The launch of the Midwest Energy Emissions-Cabot licensing arrangement in the European Union was jointly introduced at this meeting of international emission control experts. Midwest Energy Emissions has begun testing with major utilities across multiple EU member nations.

In October 10, 2013, 140 nations (including the US, Canada, China, Germany, Netherland and the U.K.) signed the **Minamata Convention** on mercury, an international treaty that recognized mercury is a chemical of global concern and addresses the reduction of emissions of mercury and mercury compounds. In Europe, under the **Industrial Emissions Directive (IED)** of 2010, a BAT (Best Available Technique) Reference (aka BREF) document has been published (the most recent in 2017) to cover the required emission prevention activities on installations rated 50 MW or more. The standards are expected to be fully in force across Europe by mid-2020 with demonstration activity beginning in 2018, installation of equipment & testing starting in 2019 and continuing until **full implementation in mid-2020**.

***Nexus Small Business Award***

In the first quarter of 2018, Midwest Energy Emissions received the Nexus Small Business Award by Vistra Energy at its Nexus Awards Recognition Reception. The Nexus Small Business Award is given to recognize excellent service and also for utilizing a diverse supply chain and workforce. Every year, Vistra Energy (the largest retailer and generator of electricity in Texas) recognizes companies that provide exceptional service to Vistra Energy and demonstrate a positive commitment to the community.

## CURRENT OVERVIEW

***Opportunities:***

- In April 2018, Midwest Energy Emissions secured another order from the previously announced Canadian customer, this time to install SEA™ Technology at an EGU in Alberta.
- **Vistra Energy** (NYSE: VST) awarded its **Nexus Small Business** Award
    - Midwest Energy Emissions estimates that the use of SEA Technology has saved Vistra almost $15 million in operating costs over the past three years.
    - Vistra Energy's merger with Dynegy (NYSE: DYN) closed on April 9, 2018.
        - The merger will add 13 coal-fired plants to Vistra's portfolio.
        - Despite retiring three coal-fired plants, Vistra's coal-fired capacity increases from 28% to 32% of its total portfolio after the merger.
        - Current contracts cover only 5 of the Vistra's prospective coal-fired 25 EGUs. For the last three years, Midwest Energy Emissions has been the sole source of mercury capture technology for Vistra Energy.
- Midwest Energy Emissions entered into a **licensing agreement with Cabot Corp**. for the development of mercury removal solutions for coal-fired EGUs in **Europe**. The agreement established the foundation for Midwest Energy to expand its footprint into Europe.

***Challenges:***

- Despite the pipeline of prospective customer opportunities, the anticipated closing of new contracts this summer did not materialize due to an **unexpected pricing response by incumbent suppliers of sorbent**. The competitive pricing response also impacted pricing in contract renewals.
- Revenue from **product (sorbent) deliveries declined 58% in the nine months of 2018**.
    - Company-initiated optimization efforts at each EGU have improved operating efficiencies resulting in less-than-expected product (sorbent) usage.
    - In addition, some customers lowered capacity factors, reducing the amount of product needed to achieve MATS compliance.
    - Some EGUs were shut down as a result of competitive disadvantages versus other EGUs in their service areas.

***Conclusion:***

Despite the challenges reflected in the financial results reported for the first nine months of 2018, particularly price competition by chemical companies (which are desperate to retain sorbent sales), Midwest Energy Emissions is well positioned to benefit from the reduction of mercury emissions initiatives in the U.S, Canada and Europe. It is important to remember that:

- Midwest Energy Emissions continues to generate revenues from its operationally-effective and cost-effective mercury emissions technology.
- The company announced **two multi-million dollar contracts in October 2018**.
    - A 3-year contract with its largest customer was renewed in October 2018
    - The same customer expanded its contract to extent to two additional EGUs
- Despite recent challenges, **the company has not issued any common shares** in the last two quarters, and currently management has no plans to seek capital through the issuance of equity.
- The company has **meaningful potential in Europe** beginning in 2019 as a result of mercury control standards at coal-fired EGUs being fully enforced across Europe by mid-2020 with installation of equipment & testing starting in 2019. In Europe, the barriers to entry should be significantly reduced since Cabot Corp. (with its established relationships) will be the sales point contact.
- The **licensing model** being pursued under management's patent strategy could provide significant top-line and/or licensing revenues, both of which would enhance the company's profitability.

## KEY POINTS

- **Environmental standards are being implemented globally**.
    - The U.S. Environmental Protection Agency's Mercury and Air Toxic Standards (MATS) created a multi-billion dollar market for mercury remediation solutions.
    - **Canada** signed the UNECE Protocol on Heavy Metals in June 1998 and the Minamata Convention in October 2013. Developed by the Canadian Council of Ministers of the Environment (CCME), nationwide **mercury reduction standards in Canada** has required a 60% reduction from the baseline year of 2003, though by early 2017 a 91% reduction had been attained.
    - In **Europe**, under the Industrial Emissions Directive (**IED**) of 2010, a BAT (Best Available Technique) Reference (aka **BREF**) document has been published (the most recent in 2017) to cover the required emission prevention activities on installations rated 50 MW or more.

- The standards are expected to be fully in force across Europe by mid-2020 with demonstration activity beginning in 2018, installation of equipment & testing starting in 2019 and continuing until full implementation in mid-2020.

- Midwest Energy Emissions is **well-positioned** to benefit from the implementation of MATS, the CCME standards and BREF.
  - The company **owns 42 issued patents and patents-pending** related to mercury removal processes developed by the Energy & Environmental Research Center, including SEA™ Technology.
  - SEA Technology provides an operationally-effective and cost-effective mercury emissions solution that is flexible to accommodate a broad range of configurations of coal-fired power plants fueled by varying coal types.
  - SEA Technology has been **successfully demonstrated over 50 times** at large operating power plants across the United States and Canada.
- Midwest Energy Emissions has won contracts that span at least **24 Electric Generating Units** (EGUs) across no less than ten power plants, although today many of the EGUs have been shut down or have lowered capacity factors due to competitive disadvantages.
  - a **West Coast utility** for two EGUs
  - a **major U.S. power producer** for 9 EGUs
  - two separate utility **cooperatives in the Southwest**, each with one EGU
  - a large **northern Midwest utility** for two EGUs
  - four additional EGUs contracts awarded in early 2016
  - 3-year contract secured at another electric utility in September 2016
  - 2-year contract with Midwest utility customer was renewed in April 2017
  - 3-year contract for 9 EGUs with its largest customer was renewed in August 2017
  - $700,000 purchase order for 4 Canadian EGUs in January 2018
  - 3-year contract with its largest customer was renewed in October 2018
  - a current customer expanded its contract for two additional EGUs in October 2018
- Midwest Energy Emissions has international **blue sky market opportunities** for the implementation of SEA Technology in **Europe, Canada** and **China**.
  - The **Minamata Convention** on Mercury should bolster international demand for the company's mercury remediation solutions.
  - Midwest Energy Emissions has entered into a multi□year European licensing agreement with **Cabot Corp**. (NYSE: CBT) to develop and market mercury removal solutions for coal-fired EGUs in Europe.
- Management presents at industry conferences
  - John Pavlish (Senior VP and Chief Technology Officer) presented at the MEC 13 Workshop (an international emission control conference) in **Krakow, Poland** on May 21, 2018.
  - John Pavlish also was a featured speaker and Session Chair of Session 6A (Mercury Measurement and Controls 2) at the MEGA Symposium (technical conference for particulate matter and mercury control) in **Baltimore, MD** on August 23, 2018.

## CORPORATE OVERVIEW

Headquartered Lewis Center, Ohio, Midwest Energy Emissions Corp. (MEEC) provides patented mercury capture solutions for coal-power plants whose mercury emissions exceed the U.S. Environmental Protection Agency's Mercury and Air Toxic Standards (MATS). **The company has successfully commercialized its Sorbent Enhancement Additive (SEA™) Technology**, which can achieve mercury removal levels that are compliant with MATS at a significantly lower cost than other methods while preserving the quality (and hence the marketability) of fly-ash, a by-product from the coal burning process. The company holds **42 issued patents and patents-pending** related to a mercury removal processes developed by the Energy & Environmental Research Center (EERC) and has a close and mutually beneficial relationship with the EERC Foundation, which aids in the commercialization

EERC's research efforts. The company's holistic **cost-competitive solution** for mercury emission control is a proven, effective technology that reduces mercury emissions to MATS-compliant levels over a wide range of plant configurations and coal types.

The EPA's **MATS have created a multi-billion dollar market for mercury remediation solutions**. MATS require that all coal-fired Electric Generating Units (EGUs) larger than 25 megawatts (MW) remove approximately 90% of mercury from their emissions beginning April 16, 2015. On a plant-by plant basis, power plant operators must find an economical feasible method to upgrade existing plants in order to comply with MATS; otherwise, non-compliant plants could be forced to be decommissioned, which will affect the capacity, reliability and supply attributes of the associated electric networks.

The process of commercializing any pollution control technology or method within the utility industry is a lengthy and expensive process, which involves the migration of a technology from the laboratory to commercial-scale demonstrations and then to contract signings, installations, testing and finally commercial operations. SEA Technology has been successfully demonstrated over 50 times at large operating power plants across the United States and in Canada.

Midwest Energy Emissions is deploying what appears to be the industry's most cost-effective solution for coal power plants to comply with MATS. Management and the EERC believe that the SEA Technology process with an optimized blend of sorbents is the most efficient, cost-effective manner to capture mercury. **SEA Technology provides an approach that optimizes the mercury capture process while minimizing the cost of injected materials**. As a result, SEA Technology lessens the total amount of sorbent injected, thereby reducing the cost of MATS compliance. **The technology is also flexible**, allowing Midwest Energy's consumable products to be formulated specifically for a coal-fired unit and its coal-fuel-type. Importantly, the process has less operational impact with minimal corrosion to the plant's equipment and preserving the marketability of fly ash, an important ancillary revenue stream for power plants.

In a **milestone event**, on April 24, 2017, Midwest Energy Emissions closed on the acquisition of all patents rights and patents pending related to the Sorbent Enhancement Additive (SEA™) Technology from the Energy & Environmental Research Center (EERCF) at University of North Dakota. The purchase price was $2,500,000 and 925,000 shares of MEEC common stock, of which 628,998 shares were issued directly to EERCF and 296,002 shares were issued to the inventors. The cash payment was funded by cash-on-hand, which includes a portion of the net proceeds from the private placement that closed in November 2016.

Midwest Energy Emissions owns the Technology, and therefore no longer is required to pay monthly license maintenance fees of $$25,000 ($300,000 annually) and annual running royalties of $100 per one megawatt (MW) of electronic nameplate capacity and $100 per three MW per hour at systems utilizing licensed products and/or processes. In 2017, royalty fees paid to EERCF decreased by $1.022 million.

SEA Technology, the company's **core IP**, provides an operationally-effective and cost-effective mercury emissions solution that is flexible to accommodate a broad range of configurations of coal-fired power plants fueled by varying coal types. Developed by researchers at the Energy & Environmental Research Center (EERC), SEA Technology utilizes the application of sorbent enhancement additives to promote the oxidation of elemental mercury in preparation for adsorption by uniquely formulated blends of sorbent products. Utilizing this Technology, Midwest Energy Emissions is able to offer at lower-cost option to utilities so that their coal-fired units can achieve compliance with MATS while maintaining the marketability of the fly ash by-product.

The portfolio of patents rights and patents pending is composed of **42 patents and patents-pending** related to mercury removal processes developed by the EERC. The patents in the United States include:

- Sorbents and Flue Gas Additives for the Oxidation and Removal of Mercury (7,435,286)
- High-Temperature Halogen Dissociation for Mercury Control in Coal-Fired Systems (7,615,101)
- Multifunctional Abatement of Air Pollutants in Flue Gas (7,628,969)
- Sorbents for the Oxidation and Removal of Mercury (8,168,147)

- Process for Regenerating a Spent Sorbent (8,173,566)
- Mercury Control Using Moderate-Temperature Dissociation of Halogen Compounds (8,312,822)
- Process for Regenerating a Spent Sorbent (Continuation) (8,440,585)
- Sorbents for the Oxidation and Removal of Mercury (Continuation) (8,652,235)

The patent and patents pending portfolio also includes international **blue sky market opportunities** with SEA Technology patents in **Europe, Canada** and **China**. SEA Technology has been successfully demonstrated for a few large utilities in Canada, where raising mercury capture regulations is being contemplated. Since 2012, a nationwide **mercury reduction agreement in Canada** has required a 60% reduction, though by early 2017 a 91% reduction had been attained.

China has promulgated emission regulations, but has yet to implement mercury reductions. In October 10, 2013, 140 nations (including the US, Canada, China, Germany, Netherland and the U.K.) signed the **Minamata Convention** on mercury, an international treaty that recognized mercury is a chemical of global concern and addresses the reduction of emissions of mercury and mercury compounds. Long-term, there is **blue sky potential** for international demand for the company's mercury remediation solutions.

Midwest Energy Emissions has demonstrated a **technical competitive advantage** by bringing EGUs to MATS compliance in a cost-effective manner. As many coal-fired utilities are having difficulties, ranging from encountering prohibitive costs in achieving a 90% reduction in mercury emissions to having to de-rate (lower the capacity of) boilers to attain compliance, management is focused on further penetrating the fleets of existing customers as well as securing new clients (electric utilities) which are challenged and are seeking an economical solution to comply with MATS.

**Midwest Energy Emissions is unique** in that it has a singular focus (the mercury emissions control market), holds the patents on processes, has achieved market penetration through the commercialization of SEA™ Technology and is positioned to take advantage of further opportunities afforded by the implementation of MATS.

**Many coal-fired utilities are having difficulties**, ranging from encountering prohibitive costs in achieving a 90% reduction in mercury emissions to having to de-rate (lower the capacity of) a boiler to attain compliance. Electric utilities with challenged EGUs have sought out solutions to achieve compliance with MATS.

## VALUATION

The valuation methodology for pollution control/environmental remediation companies usually is based on the use of EV-to-EBITDA (Enterprise Value/Earnings Before Interest, Taxes, Depreciation and Amortization) reflecting the industry's characteristics of profitability and cash flow generation. However, if a company is experiencing negative profitability, either due to adverse fundamental circumstances or being in the early phases of the company's life cycle, **the applicable valuation metric becomes Price-to-Sales (P/S)**.

Finding comparable companies to Midwest Energy Emissions is challenging. The company is unique in that it has a singular focus (the mercury emissions control market), holds the patents to SEA Technology processes, has achieved market penetration through the commercialization of SEA Technology and is positioned to take advantage of further growth opportunities afforded by the implementation of MATS. Many companies involved in the air pollution control industry range from companies that provide commodity chemicals and/or equipment to divisions of large, diversified companies where emission controls is just a small part of total operations. These types of companies are generally valued in the

lower-to-middle portions of the valuation continuum rather than in the higher-end of the spectrum where highly-focused companies with patented treatment processes tend to trade.

For example, competing mercury emission control technologies are largely being commercialized by subsidiaries of large, diversified firms where mercury emission remediation is a small part of the total company. For example, TOXECON™ is being brought to market by Hamon Research-Cottrell, a subsidiary of Hamon & Cie International SA (aka Hamon Group), a publicly-traded Belgium-based engineering, procurement and contracting company (HAMO.BR) while Mer-Cure™ is being offered by US Power Plant Laboratories and URS Group, both subsidiaries of Alstom SA (ALO.PA and ALSMY OTC Pink), a publicly-traded France-based power generation, power transmission and rail infrastructure company. Also, the Air Pollution Control business unit of FMC Environmental Solutions, a division of FMC Corp. (FMC: NYSE), offers methods of mercury emission control as an adjunct to its use of hydrogen peroxide- and sodium bicarbonate-based methods to prevent or remediate contamination of air by power utility and manufacturing industries. FMC Corp. is a diversified chemical company. Mitsubishi Hitachi Power Systems, a merger of thermal power generation businesses of Mitsubishi Heavy Industries, Ltd. (7011) and Hitachi, Ltd. (HTHIF), is dedicated to the engineering, design and service of SCR systems for the control of NOx and SO2, and its SCR system solutions also have mercury oxidation capabilities.

We believe that the **valuation comparables** of Midwest Energy Emissions should Albemarle (ALB), Cabot Corp. (CBT), CECO Environmental (CECE) and IDEX (IEX). For example, CECO Environmental provides engineering, manufacturing and construction services. Also, comparable pollution control and value-added specialty chemical companies have comparable business models to Midwest Energy Emissions and achieve higher-than-average gross margins, generally in the 30% range, which is management's targeted margin for fully functional contracts.

The appropriate valuation methodology for Midwest Energy Emissions is based on price-to-sales (P/S) due the character of the company's enterprise, namely a small-capitalization company, currently with negative profitability, but with an expected sales profile that should grow and expand as the company's SEA Technology processes are deployed within the coal-fired utility industry and the company's patent-protected sorbent is sold into the operating customer base. Ultimately, the growing revenue stream should manifest itself into positive EBITDA and later, positive earnings when the break-even point is surpassed.

| ***Industry Comparables*** | **Pr Chg YTD** | **P/E CFY** | **EPS Gr 5Yr Est** | **Gross Margin** | **Price/ Book** | **Price/ Sales** | **Price/ CF** |
|---|---|---|---|---|---|---|---|
| **MIDWEST ENERGY EMISSIONS** | 4.2 | N/M | 7.0 | 58.6 | N/M | 1.3 | N/M |
| Industry Mean | 10.0 | 16.9 | 13.0 | 34.6 | 2.9 | 2.2 | 12.2 |
| Industry Median | 19.0 | 12.2 | 10.4 | 28.8 | 2.3 | 1.8 | 9.4 |
| S&P 500 | 2.3 | 16.9 | 10.8 | N/A | 8.8 | 4.0 | 18.3 |
| ALBEMARLE CORP. | 7.9 | 13.6 | 16.2 | 35.0 | 2.4 | 2.7 | 12.9 |
| CABOT CORP. | 9.2 | 10.7 | 10.5 | 22.5 | 2.2 | 0.9 | 5.9 |
| CECO ENVIRONMENTAL | 9.8 | 18.5 | 15.0 | 35.9 | 1.5 | 0.8 | 7.9 |
| IDEX CORP. | 12.9 | 24.9 | 10.2 | 45.2 | 5.5 | 4.4 | 21.9 |
| **Recent Industry Acquisition** | | **Acquiror** | | | | | |
| CALGON CARBON | | Kuraray | 16.0 | 30.0 | 2.7 | 1.8 | 17.1 |
| CYTEC INDUSTRIES INC. | | Solvay SA | 16.0 | 30.0 | 3.6 | 2.6 | 14.4 |
| PALL CORP. | | Danaher | 12.5 | 50.2 | 8.3 | 4.8 | 19.3 |

Comparable companies trade in a P/S valuation range between 0.81 and 4.42.

Also, as a reference,

- Cytec Industries was acquired by Solvay SA at 2.6 times TTM revenues (19.7 EV/EBITDA)
- Pall Corp. was acquired by Danaher (DHR) at 4.8 times TTM revenues (20.3 EV/EBITDA) and
- Calgon Carbon was acquired by Kuraray SA at 1.8 times TTM revenues (16.1 EV/EBITDA).

Utilizing a mid-second quartile industry average P/S ratio of 2.74 on TTM sales through 3Q-2018 of $14.47 million, our **share price target is $0.52**.

**We are optimistic the ultimate success of Midwest Energy Emissions**. The company should experience increases in revenues over the next few years as the coal-fired plants (both in North America and Europe) utilize Midwest Energy's SEA Technology to control mercury emissions in order to become compliant with the EPA's mercury emissions reduction regulations.

## RISKS

- The industry addressing the reduction of mercury emissions is a market driven by governmental regulation. Any reduction in the EPA's regulations concerning mercury emissions or the timing of enforcement would significantly impact the demand for the company's products and services.
- Investors should be aware of the potential dilution from options, warrants and convertible notes as the company becomes profitable. The fully diluted share count is higher than the 76,246,113 shares outstanding (as of September 30, 2018) with an additional 9,012,289 shares exercisable through options at a weighted average exercise price of $1.17 and 5,823,322 shares exercisable through warrants.
- Recent quarters have demonstrated that the demand for SEA Technology faces certain challenges. Company-initiated optimization efforts at each EGU have improved operating efficiencies and have resulted in less-than-expected product (sorbent) usage. In addition, some customers lowered capacity factors, reducing the amount of product needed to achieve MATS compliance. And some EGUs were shut down as a result of competitive disadvantages versus other EGUs in their service areas.

## BALANCE SHEET

| Midwest Energy Emissions Corp. | | | | | | |
|---|---|---|---|---|---|---|
| Year ending December 31st | 12/31/2013 | 12/31/2014 | 12/31/2015 | 12/31/2016 | 12/31/2017 | 9/30/2018 |
| **ASSETS** | | | | | | |
| Cash and cash equivalents | 509,605 | 7,212,114 | 1,083,280 | 7,751,557 | 2,418,427 | 449,546 |
| Accounts receivable | 383,859 | 410,950 | 1,150,602 | 3,553,096 | 2,931,353 | 1,776,867 |
| Inventory | - | 5,784,905 | 2,715,91 | 609,072 | 659,57 | 468,328 |
| Prepaid expenses and other assets | 63,132 | 140,559 | 161,81 | 199,49 | 210,53 | 418,242 |
| **Total Current Assets** | **956,596** | **13,548,528** | **5,111,608** | **12,113,220** | **6,219,894** | **3,112,98** |
| Property and Equipment, net | 173,072 | 255,33 | 1,243,450 | 2,569,35 | 2,728,99 | 2,513,096 |
| Deferred tax asset | - | - | - | 500,000 | - | - |
| Patents & patent rights, net | 70,589 | 64,70 | 58,825 | 52,94 | 2,934,862 | 2,783,962 |
| Prepaid expenses and other assets | 23,539 | 13,79 | 4,058 | - | - | - |
| Debt issuance costs, net | 700,011 | 2,285,696 | - | - | - | - |
| Customer acquisition costs | - | 1,156,521 | 897,428 | 642,20 | 172,33 | 68,933 |
| **TOTAL ASSETS** | **1,923,807** | **17,324,581** | **7,315,369** | **15,877,722** | **12,056,08** | **8,478,974** |
| **Liabilities and Stockholders' Equity** | | | | | | |
| Accounts payable and accrued expenses | 275,145 | 688,73 | 1,235,162 | 4,363,55 | 1,795,70 | 2,638,475 |
| Accrued legal and consulting fees | 365,348 | 86,304 | - | - | - | - |
| Accrued salaries and benefits | 377,213 | 399,48 | - | - | - | - |
| Deferred revenue | - | 5,808,301 | 2,281,76 | - | 517,060 | - |
| Customer credits | - | 936,500 | 936,50 | 590,20 | 167,00 | 167,000 |
| Current portion of equipment notes payable | - | - | - | 39,499 | 61,17 | 63,359 |
| Other current liabilities | 261,036 | 250,00 | - | - | - | - |
| Accrued interest | 247,696 | - | - | - | - | 42,597 |
| Advances payable - related party | 4,167 | - | - | 78,750 | 77,50 | - |
| Convertible note payable | 50,000 | - | - | - | 1,461,417 | 907,322 |
| Notes payable | 300,000 | 3,080,376 | 2,497,114 | 1,500,000 | 2,500,000 | 2,875,000 |
| Current liabilities of discontinued operations | - | - | - | - | - | - |
| Note payable - related party of disc. ops. | - | - | - | - | - | - |
| **Total Current Liabilities** | **1,880,605** | **11,249,698** | **6,950,536** | **6,572,008** | **6,579,85** | **6,693,75** |
| Notes payable | - | - | - | 11,678,669 | 9,733,361 | 9,021,256 |
| Convertible notes payable | 4,675,673 | 4,724,598 | 3,175,085 | 1,142,154 | - | 760,000 |
| Warrant liability | - | 5,597,011 | 9,854,40 | - | - | - |
| Accrued interest | 273,877 | 337,99 | 169,20 | - | - | - |
| Equipment note payable | - | - | 111,144 | 143,13 | 167,65 | 120,361 |
| **TOTAL LIABILITIES** | **6,830,155** | **21,909,306** | **20,260,367** | **19,535,966** | **16,480,868** | **16,595,370** |
| Common stock | 35,299 | 40,228 | 47,194 | 73,510 | 76,246 | 76,246 |
| Additional paid-in-capital | 13,789,473 | 19,113,724 | 25,008,016 | 49,838,469 | 42,165,620 | 42,721,987 |
| Accumulated deficit | (18,731,120) | (23,738,677) | (38,000,208) | (54,883,223) | (46,666,652) | (50,914,629) |
| **Total Stockholders' Equity** | **(4,906,348)** | **(4,584,725)** | **(12,944,998)** | **(4,971,244)** | **(4,424,786)** | **(8,116,396)** |
| **TOTAL LIABILITIES & STOCKHOLDERS' EQUITY** | **1,923,807** | **17,324,581** | **7,315,369** | **14,564,722** | **12,056,082** | **8,478,974** |
| Shares outstanding | 35,299,429 | 40,228,123 | 47,194,118 | 73,509,663 | 76,246,113 | 76,246,113 |

## PROJECTED INCOME STATEMENT

# Midwest Energy Emissions Corp.

Income Statement

| Period ending | 2013<br>12/31/2013 | 2014<br>12/31/2014 | 2015<br>12/31/2015 | 2016<br>12/31/2016 | 2017<br>12/31/2017 | 2018 E<br>12/31/2018 |
|---|---|---|---|---|---|---|
| **Revenues** | **1,668,472** | **2,794,206** | **12,631,919** | **32,345,540** | **27,499,080** | **11,708,123** |
| **Costs and operating expenses:** | | | | | | |
| Cost of goods sold | 370,635 | 1,483,379 | 8,629,570 | 23,030,404 | 19,016,932 | 8,766,095 |
| Operating expenses | 886,949 | 904,914 | 1,812,355 | - | - | - |
| License maintenance fees | 1,075,000 | 300,000 | 300,000 | - | - | - |
| Marketing and development | 338,379 | - | - | - | - | - |
| Selling, general & administrative exp. | 1,622,657 | 2,208,546 | 2,967,146 | 5,185,828 | 5,585,083 | 6,575,443 |
| Settlement charges | - | - | 1,335,394 | - | - | - |
| Depreciation and amortization | 176,394 | 387,123 | 390,828 | 913,000 | 1,354,000 | - |
| Professional fees | 565,851 | 678,725 | 672,269 | - | - | - |
| Stock-based compensation | 855,256 | 3,318,759 | 213,273 | 1,158,617 | 1,532,013 | - |
| Impairment of fixed assets | - | - | - | - | - | - |
| Impairment of goodwill | - | - | - | - | - | - |
| **Total operating expenses** | **5,891,121** | **9,281,446** | **16,320,835** | **30,287,849** | **27,488,028** | **15,341,538** |
| **Operating gain (loss)** | **(4,222,649)** | **(6,487,240)** | **(3,688,916)** | **2,057,691** | **11,052** | **(3,633,415)** |
| **Other income (expense):** | | | | | | |
| Interest (expense) | (711,647) | (2,724,506) | (6,213,897) | (3,816,855) | (2,154,570) | (1,040,669) |
| Letter of credit (fees) | - | - | - | (226,000) | (219,333) | (29,000) |
| Gain (loss) on disposal of fixed assets | - | - | - | - | - | - |
| Gain (loss) on forgiveness of liabilities | 80,656 | - | - | - | - | - |
| Gain (loss) on debt restructuring | - | - | - | (14,105,076) | - | - |
| Change in value of warrant liability | - | 4,204,189 | (3,194,189) | - | - | - |
| Debt conversion costs | - | - | (1,123,380) | - | - | - |
| Other income (expense) | - | - | - | - | - | - |
| **Total other income (expense)** | **(630,991)** | **1,479,683** | **(10,531,466)** | **(18,147,931)** | **(2,373,903)** | **(1,069,669)** |
| **Net loss before taxes** | **(4,853,640)** | **(5,007,557)** | **(14,220,382)** | **(16,090,240)** | **(2,362,851)** | **(4,703,084)** |
| Income tax benefit (expense) | - | - | (41,149) | 472,669 | (540,422) | 0 |
| **Net Gain (Loss) from Continuing Ops.** | **(4,853,640)** | **(5,007,557)** | **(14,261,531)** | **(15,617,571)** | **(2,903,273)** | **(4,703,084)** |
| Net gain (loss) from discontinued ops. | - | - | - | - | - | - |
| **Net Income (Loss)** | **(4,853,640)** | **(5,007,557)** | **(14,261,531)** | **(15,617,571)** | **(2,903,273)** | **(4,703,084)** |
| **Net loss per share:** | | | | | | |
| Basic and diluted loss per share | **(0.14)** | **(0.13)** | **(0.32)** | **(0.31)** | **(0.04)** | **(0.06)** |
| Wgted avg. shares - basic & diluted | 34,283,631 | 39,140,243 | 44,160,298 | 50,646,328 | 75,061,800 | 76,246,113 |
| **Adjusted EBITDA** | **N/A** | **N/A** | **(1,200,000)** | **4,129,000** | **2,897,000** | **(2,358,000)** |

# Midwest Energy Emissions Corp.

| Income Statement<br>Period ending | 2016<br>12/ 31/ 2016 | 1Q 2017<br>3/ 31/ 2017 | 2Q 2017<br>6/ 30/ 2017 | 3Q 2017<br>9/ 30/ 2017 | 4Q 2017<br>12/ 31/ 2017 | 2017<br>12/ 31/ 2017 |
|---|---|---|---|---|---|---|
| **Revenues:** | | | | | | |
| Product sales | 28,920,051 | 5,284,234 | 7,112,722 | 8,075,510 | 5,577,566 | 26,050,032 |
| Equipment sales | 2,699,051 | 7,160 | 776,946 | 2,975 | 7,125 | 794,206 |
| Demonstration and consulting services | 726,438 | 136,000 | 41,500 | 369,482 | 107,860 | 654,842 |
| **Total revenues** | **32,345,540** | **5,427,394** | **7,931,168** | **8,447,967** | **5,692,551** | **27,499,080** |
| **Costs and operating expenses:** | | | | | | |
| Cost of goods sold | 23,030,404 | 3,785,922 | 4,995,776 | 5,509,204 | 4,726,030 | 19,016,932 |
| Selling, general & administrative expenses | 7,257,445 | 2,694,282 | 2,313,357 | 1,910,020 | 1,553,437 | 8,471,096 |
| Settlement charges | - | - | - | - | - | - |
| **Total operating expenses** | **30,287,849** | **6,480,204** | **7,309,133** | **7,419,224** | **6,279,467** | **27,488,028** |
| **Operating gain (loss)** | **2,057,691** | **(1,052,810)** | **622,035** | **1,028,743** | **(586,916)** | **11,052** |
| **Other income (expense):** | | | | | | |
| Interest (expense) | (3,816,855) | (540,475) | (544,918) | (541,855) | (527,322) | (2,154,570) |
| Letter of credit fees | (226,000) | (60,000) | (60,667) | (52,667) | (45,999) | (219,333) |
| Gain (loss) on disposal of fixed assets | - | - | - | - | - | - |
| Gain (loss) on forgiveness of liabilities | - | - | - | - | - | - |
| Gain (loss) on debt restructuring | (14,105,076) | - | - | - | - | - |
| Change in value of warrant liability | - | | - | - | - | - |
| Debt conversion costs | - | - | - | - | - | - |
| Gain on legal settlements | - | - | - | 379,000 | - | - |
| Other income (expense) | - | - | - | - | - | - |
| **Total other income (expense)** | **(18,147,931)** | **(600,475)** | **(605,585)** | **(215,522)** | **(573,321)** | **(2,373,903)** |
| **Net loss before taxes** | **(16,090,240)** | **(1,653,285)** | **16,450** | **813,221** | **(1,160,237)** | **(2,362,851)** |
| Income tax benefit (expense) | 472,669 | 0 | 0 | 0 | (540,422) | (540,422) |
| **Net Gain (Loss) from Continuing Ops.** | **(15,617,571)** | **(1,653,285)** | **16,450** | **813,221** | **(1,700,659)** | **(2,903,273)** |
| Net gain (loss) from discontinued ops. | - | - | - | - | - | - |
| **Net Income (Loss)** | **(15,617,571)** | **(1,653,285)** | **16,450** | **813,221** | **(1,700,659)** | **(2,903,273)** |
| **Net loss per share:** | | | | | | |
| Basic and diluted loss per share | **(0.31)** | **(0.02)** | **0.00** | **0.01** | **(0.02)** | **(0.04)** |
| Wgted avg. shares - basic & diluted | 50,646,328 | 73,585,727 | 74,493,909 | 75,865,678 | 76,624,335 | 75,061,800 |
| **Adjusted EBITDA** | **4,129,000** | **152,000** | **1,232,000** | **1,572,000** | **(59,000)** | **2,897,000** |

## Midwest Energy Emissions Corp.

| Income Statement<br>Period ending | 2017<br>12/ 31/ 2017 | 1Q 2018<br>3/ 31/ 2018 | 2Q 2018<br>6/ 30/ 2018 | 3Q 2018<br>9/ 30/ 2018 | 4Q E 2018<br>12/ 31/ 2018 | Estimate 2018<br>12/ 31/ 2018 |
|---|---|---|---|---|---|---|
| **Revenues:** | | | | | | |
| Product sales | 26,050,032 | 2,059,819 | 2,414,951 | 4,113,890 | 2,841,368 | 11,430,028 |
| Equipment sales | 794,206 | 9,146 | 0 | 28,252 | 0 | 37,398 |
| Demonstration and consulting services | 654,842 | 52,147 | 36,600 | 66,950 | 85,000 | 240,697 |
| **Total revenues** | **27,499,080** | **2,121,112** | **2,451,551** | **4,209,092** | **2,926,368** | **11,708,123** |
| **Costs and operating expenses:** | | | | | | |
| Cost of goods sold | 19,016,932 | 1,708,315 | 1,882,612 | 3,009,656 | 2,165,512 | 8,766,095 |
| Selling, general & administrative expenses | 8,471,096 | 1,781,368 | 1,709,763 | 1,364,312 | 1,720,000 | 6,575,443 |
| Settlement charges | - | - | - | - | - | - |
| **Total operating expenses** | **27,488,028** | **3,489,683** | **3,592,375** | **4,373,968** | **3,885,512** | **15,341,538** |
| **Operating gain (loss)** | **11,052** | **(1,368,571)** | **(1,140,824)** | **(164,876)** | **(959,144)** | **(3,633,415)** |
| **Other income (expense):** | | | | | | |
| Interest (expense) | (2,154,570) | (513,501) | (516,082) | (471,086) | 460,000 | (1,040,669) |
| Letter of credit fees | (219,333) | (29,000) | 0 | 0 | 0 | (29,000) |
| Gain (loss) on disposal of fixed assets | - | - | - | - | - | - |
| Gain (loss) on forgiveness of liabilities | - | - | - | - | - | - |
| Gain (loss) on debt restructuring | - | - | (44,036) | - | - | - |
| Change in value of warrant liability | - | - | - | - | - | - |
| Debt conversion costs | - | - | - | - | - | - |
| Gain on legal settlements | - | - | - | - | - | - |
| Other income (expense) | - | - | - | - | - | - |
| **Total other income (expense)** | **(2,373,903)** | **(542,501)** | **(560,118)** | **(471,086)** | **460,000** | **(1,069,669)** |
| **Net loss before taxes** | **(2,362,851)** | **(1,911,072)** | **(1,700,942)** | **(635,962)** | **(499,144)** | **(4,703,084)** |
| Income tax benefit (expense) | (540,422) | 0 | 0 | 0 | 0 | 0 |
| **Net Gain (Loss) from Continuing Ops.** | **(2,903,273)** | **(1,911,072)** | **(1,700,942)** | **(635,962)** | **(499,144)** | **(4,703,084)** |
| Net gain (loss) from discontinued ops. | - | - | - | - | - | - |
| **Net Income (Loss)** | **(2,903,273)** | **(1,911,072)** | **(1,700,942)** | **(635,962)** | **(499,144)** | **(4,703,084)** |
| **Net loss per share:** | | | | | | |
| Basic and diluted loss per share | **(0.04)** | **(0.03)** | **(0.02)** | **(0.01)** | **(0.01)** | **(0.06)** |
| Wgted avg. shares - basic & diluted | 75,061,800 | 76,246,113 | 76,246,113 | 76,246,113 | 76,246,113 | 76,246,113 |
| **Adjusted EBITDA** | **2,897,000** | **(847,000)** | **(908,000)** | **97,000** | **(700,000)** | **(2,358,000)** |

## HISTORICAL STOCK PRICE



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