

# MRA Research

Independent Investment Research

Research  
Update

United States  
Basic Materials  
Proprietary Recycled Materials

December 2, 2014

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Senior Research Analyst

## Axion International Holdings, Inc. (AXIH: OTCQB)

**Innovative Polymer Technology Drives Revenue Ahead of Entire Last Fiscal Year on Revenue Line – Revenue Already 82% Ahead of Prior FY**

**Reason for Report:**  
Research Update

**RATING: OVERWEIGHT/BUY**  
Price Target: \$5.00

### Recent Price:

**\$0.375**

#### Market Data

Market Capitalization (mln)	\$24.17
Fully Diluted Shrs Outstnd (mln)	70.48
Float (mln)	30.9
Ave. Volume (3 month 000)	31.54
Institutional Ownership	0.3%
Insider Ownership	24.8%
Exchange	OTCQB

#### Balance Sheet Data

Shareholders' Equity (000s)	\$(21.3)
Price / Book Value	1.75
Net Cash	\$2,772
Working Capital (000s)	\$155.9
Long-term Debt (000s)	\$24,288
Total Debt to Capital	1.0X

#### Revenue Data

	2013	2012
(FYE 06/30)		
Revenue (000's)	6,628	5,342

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### Summary and Investment Thesis

• Axion International Holdings, Inc. (AXIH: OTCQB) a green technology company, provides solutions to plastics manufacturers and infrastructure needs in the United States and internationally. The company operates in two segments, Engineered Products and Reprocessed Plastics. The Engineered Products segment manufactures, markets, and sells composite rail ties under the ECOTRAX brand name; and structural building products, such as heavy-and light-equipment construction mats, boards, pilings, I-beams, and T-beams under the STRUXURE brand name. The Reprocessed Plastics segment procures, recycles, reprocesses, and sells waste materials comprising raw materials, such as polypropylene and polyethylene, as well as various engineering grades of plastic scrap into resin pellets. Axion International Holdings, Inc. was founded in 2006 and is based in Zanesville, Ohio.

• Addition of a new CEO dramatically strengthens leadership; Mr. Brown worked with AXION as a strategic and technology advisor during all of 2013, joined the Company in January of this year as Chief Operating and Technology Officer, and was officially appointed President and CEO on August 4, 2014. Mr. Brown has held several senior-level positions in operations, engineering, research and new business for Norton, Saint-Gobain, Alcoa and Dow Chemical where he established operational and commercial strategies for various building products and managed materials research.

• Dramatic improvement in financial results signals traction taking hold. Last year, AXIH brought in record revenues of \$6.6 million and so far in 2014, has already bettered those results. The Company recently reported financial results for the three and nine month periods ending September 30, 2014, generating \$12.0 million in revenues surpassing 2013 total revenues by 82%. AXIH also reported \$3.1 million in revenue for the third quarter of 2014, representing a 145% increase over revenues of \$1.3 million for the same period from the prior year. This combination of advantages leads us to rate the shares *Overweight/Buy* with a price target of \$5.

Please see analyst certification and required disclosures at the end of this report.

**AXIH Technical Analysis**

**Axion Intl. Holdings, Inc.**

**Daily:** AXIH has been in a technical downtrend since a high volume spike in late 2013. Volume spikes have been minor and so far been unable to reverse trend. There is technical damage to repair but this could unfold as management implements its strategy.

- The most important near term issue for this chart is to have recent lows hold near \$0.35 and that a pattern of higher lows be established.
- There is resistance overhead at the declining 50 day moving average and overlapping Fibonacci resistance in the \$0.41-\$0.47 band. Above that area is major resistance in the \$0.62 area.
- Technical traders can consider long positions on a validation of support and rising volume in the \$0.40 area using a stop of \$0.33.
- Technical resistance \$17.00

**Axion International Holdings, Inc. Daily (AXIH \$0.35)**



**Company Background**

**Overview**

AXIH is a green technology company, which through two business segments deliver tested, proven and superior green solutions to plastics manufacturers and infrastructure needs around the globe. Through Axion International, Inc., the engineered products business segment, the Company manufactures, markets and sell:

ECOTRAX TM - composite rail ties.

STRUXURE TM - structural building products, such as heavy- and light-equipment construction mats, boards, pilings, I-beams, and T-beams.

Axion Recycled Plastics Incorporated, the reprocessed plastics business segment which was acquired by AXIH in November 2013 and repurposes waste plastics into re-useable plastic raw materials, which are sold to manufacturers or transferred to the engineered products facility for use in the production of engineered products. Both the ECOTRAX and STRUXURE products are based upon patented technology and are fully derived from common recycled plastics and high-density polymers, such as polyethylene, polystyrene and polypropylene. These recycled plastics, which are combined with recycled plastic composites containing encapsulated fiberglass, achieve structural thickness and strength and are resistant to changing shape under constant stress (or creep resistant). AXIH products, manufactured through an extrusion process, are eco-friendly, non-corrosive, impervious to moisture, do not leach chemicals and are resistant to insects and rot. AXIH engineered products possess superior lifecycles and generally have greater durability and require less maintenance than competitive products made from wood, steel or concrete.

## Management Team

AXIH has been very fortunate to add a new CEO with an impressive resume that appears very well equipped to bring the Company forward as a leading contender in its space. In the past two years AXION has brought in a new executive management team to focus on transitioning the Company from product development and testing into manufacturing and sales. As a result, revenues increased from \$1.4 million in 2009 to \$5.3 million in 2012. We highlight the new CEO as this appears to be the key and refer readers to the Company's filings with the SEC for more detail about the rest of the management team.

### **Claude Brown, Jr. President and Chief Executive Officer**

Mr. Brown worked with AXION as a strategic and technology advisor during all of 2013, joined the Company in January of this year as Chief Operating and Technology Officer, and was officially appointed President and CEO on August 4, 2014. He joined AXION because he sees a great company with an excellent leadership team, game-changing products for the transportation, construction and building materials markets, and extensive growth potential. Mr Brown has held several senior-level positions in operations, engineering, research and new business for Norton, Saint-Gobain, Alcoa and Dow Chemical where he established operational and commercial strategies for various building products and managed materials research, process refinement, product development, regulatory services, production engineering and commercialization. More recently, he was President of Eovations, LLC, a new business venture that was spun out of Dow Chemical. During his time at Eovations, Mr. Brown managed the development, production and commercialization of an innovative structural polymer technology. Given his broad background, operational knowledge, and business experience, his appointment as CEO represents a natural evolution for AXION. This was a strategic move to facilitate AXION's manufacturing, organizational and business growth. It is believed with his experience in the engineering, development, commercialization and manufacturing of innovative building materials, coupled with his knowledge of early stage company funding and leadership, the current team has a great opportunity to make this Company a huge success going forward. Last year, AXIH brought in record revenues of \$6.6 million and so far in 2014, has already bettered those results. The Company recently reported financial results for the three and nine month periods ending September 30, 2014, generating \$12.0 million in revenues surpassing 2013 total revenues by 82%. AXIH also reported \$3.1 million in revenue for the third quarter of 2014, representing a 145% increase over revenues of \$1.3 million for the same period from the prior year.

## Market Opportunities

### **Railroad Applications**

In 2011 the major railroads replaced a total of 15,063,539 ties. This represents a huge market that is growing due to the aging rail systems in the U.S. and around the world. While there are not many new miles of railroad track being built each year in the United States, the nation's railroads still must spend billions annually to repair and maintain the nation's network of 140,490 miles (operated by mainly freight companies). Replacing worn out rail ties is one of the industry's biggest ongoing expenses. Railroads have traditionally relied on using wood ties, but plastic rail ties, using the latest in plastic technology, offer advantages of lower long-term operating costs and several environmental benefits. Due to its durability and longevity, ECOTRAX rail ties are well positioned to take advantage of the spending on railroad infrastructure. Axion has been proving out its product through testing and adoption. Now, with the acquisition and integration of the new Zanesville, Ohio plant they are setting up to ramp production to meet growing demand.

- ECOTRAX rail tie products are targeted primarily towards North American railroad customers who are expected to significantly increase capital expenditures in the next several years. Similar trends are expected to emerge outside of North America as a result of increased infrastructure spending by both foreign governments and transportation companies.
- According to the Policy & Economics Department of the Association of American Railroads (ARA), over the 24 year period from 1980-2003, Class I railroads spent more than \$320 billion, a little more than \$13 billion per year (approximately 44% of their operating revenue), on capital expenditures and maintenance expenses related to infrastructure and equipment.

### **Structural Building Products**

STRUXURE building components are marketed for applications that are required to support heavy loads or withstand environmental conditions that generally result in higher maintenance and replacement costs. The success of these building products in the construction of pedestrian and heavy-load short-span bridges has been well documented. This is demonstrated

by the incorporation of Company products in the construction of several vehicular and heavy-load short-span bridges for the U.S. Department of Defense at Fort Leonard Wood, Missouri and Fort Bragg, North Carolina. These bridges have supported heavy armored vehicles, including tanks. The U.S. Department of Defense's evaluation of these structures resulted in a pronouncement that these bridges should last for 50 years with little maintenance, should be considered for current use by other Federal departments (including the U.S. Department of Transportation), and promote environmental goals.

Congress has mandated that the DOD consider corrosion prevention technologies in the acquisition process and establish a coordinated research and development program of the prevention and mitigation of corrosion of military equipment and infrastructure. In addition to supplying municipal government customers who plan to rebuild infrastructure, such as short span bridges, management believes the Company is well positioned to introduce the products as components with diverse applications in the recreational market. These include use in parks, golf courses and marinas that have routinely used traditional products for piers, bulk heads, boardwalks, light traffic and pedestrian bridges and similar applications.

- The potential applications for STRUXURE building products are diverse and can provide solutions across multiple industries. The intended client base is oil and gas pipeline supply companies, construction site management and supply companies, various Federal agencies, including the U.S. Department of Defense, as well as other local municipalities that look to rebuild public infrastructure.

- According to the U.S. Government Accountability Office (GAO), the U.S. Department of Defense spends \$22.5 billion annually on equipment and infrastructure as an impact of corrosion.

- The American Society of Civil Engineers has recommended that the U.S. spend \$17 billion a year on bridge maintenance, significantly more than the \$10.5 billion that is currently spent each year.

- Regarding docks, marinas, and piers, the GAO Report on Marine Transportation stated that 13 Federal agencies spent an average of \$3.9 billion annually on the construction and maintenance of federally authorized projects.

AXIH has assembled the ECOTRAX composite rail ties into equipment or construction mats. Historically, these mats have been constructed from traditional lumber. STRUXURE Mats can withstand the impact of heavy construction equipment of up to 110,000 pounds of both tire and tracks, and will last longer than traditional mats. Testing of STRUXURE Mats with multiple oil and gas pipeline contractors has proven successful and AXIH has begun to sell and ship truckload quantities.

## Products

AXIH licensed, patented technology allows for the installation and use of rail ties and standard building products not with engineered resins, but with recycled material formulations. This advantage secures not only a less expensive raw material but also improved performance.

Benefits include:

AXIH is currently selling ECOTRAX rail ties globally, for freight, transit and specialty (such as mining and industrial applications) rail systems whose cost-benefit analysis determined the utility of installing recycled, composite rail ties in high-stress, overheated and moisture laden areas.

The STRUXURE structural composite products, such as pilings, I-beams (patent pending), tongue-and groove Planking (patent pending) and other boards, are innovative products but have been in use for the past decade. In 2003, a predecessor licensee initially installed these products for a vehicular bridge over the Mullica River in the New Jersey Pine Barrens. In addition, an earlier bridge construction project was successfully completed at Fort Leonard Wood, Missouri in 1998. Based on a 2007 analysis performed by the U.S. Army Corps of Engineers, these bridges were determined to be as durable as they were when first installed and remarkably have required virtually no maintenance. In 2009, AXIH supplied the materials for, and participated in, the installation of the first two structural composite bridges designed for use by military tanks. These bridges can support over 70 tons for track vehicles and over 85 tons for wheeled vehicles.

- Both the tank and rail bridge projects were constructed almost entirely from proprietary materials including pilings, pile caps, girders, decking, rail ties (where applicable), rub rails and railings.

- Lifecycle savings based on lower maintenance, due to greater durability and longevity.

- Improved performance resulting from non-corrosive, rot and insect resistant and non-chemical leaching attributes of the products.

- A positive environmental impact.

STRUXURE Mats can withstand the impact of heavy construction equipment and will last longer than the traditional mats. STRUXURE Mats consist of solid seven-inch by nine-inch boards of various lengths that are bolted together using one inch or 1-1/4 inch galvanized carbon steel rods. Standard five-piece STRUXURE Mats are 16, 18 or 20 feet long, 45 inches wide and seven inches tall. STRUXURE Mats can also be made 49 inches wide and nine inches tall. AXIH five-piece STRUXURE Mats are typically used for equipment that is over 80,000 pounds and up to 110,000 pounds, with either tires or tracks. The seven piece STRUXURE Mats can handle heavier equipment. Testing of the STRUXURE Mats with multiple oil and gas pipeline contractors has proven successful and the company continues to raise awareness within this market.

The products were developed after years of research at Rutgers Center for Advanced Materials via Immiscible Polymer Processing, or AMIPP. The AMIPP Advanced Polymer Center is a group of collaborative researchers and stakeholders dedicated to exploring immiscible polymer blends and the novel structures and materials obtained by processing such blends. Founded as a Research Excellence Center by the State of New Jersey and Rutgers University, AMIPP depends on an interactive relationship with industry, government, and other universities to generate a steady stream of new technologies, materials, and products in an environment focused on research, development, and commercialization. The products' novel attributes result from the processes and formulations developed by AMIPP. The Rutgers scientists have developed a process using recycled encapsulated fiberglass that creates a 100% recycled plastic composite product with structural stiffness, strength, and creep resistance. The fiberglass blends thoroughly with a high-density polyethylene (or HDPE) solution, creating a validated load-bearing product. The immiscible polymer blending developed at Rutgers takes HDPE plastic (the second most common recycled plastic) as an input and blends it with fiberglass encapsulated within polypropylene (as found in automotive bumper scrap) in a manner that orients the glass fibers and results in properties that exceed the law of mixtures for the individual materials. This creates products with the best features of both, including the flexibility of HDPE and the stiffness and strength of fiberglass. The modulus and strength benefits have been well documented in research conducted at Rutgers over the past twenty years.

The benefits of the resultant products are many. The products neither contain nor leach harmful chemicals. They can withstand very hot and very cold temperatures and do not biodegrade or oxidize. In one series of tests, Company products were subjected to conditions that simulated decades of exposure to various weather patterns. This accelerated weather testing was stopped at 50 years, demonstrating that the products have the ability to last more than 50 years with minimal maintenance. Practical experience from landfills has suggested that HDPE and fiberglass will take thousands of years to decompose. Comparatively, wood placed outside in the presence of water begins to degrade quickly. Wood can also have knots, soft spots, and other imperfections not found in AXIH products.

The effect of ultraviolet (UV) rays on AXIH products, as demonstrated in a 2001 study, shows degradation of 0.003 inch per year, which is negligible when compared to the effect of UV rays on wood, or the effect of rust on steel. Carbon black pigment, a natural compound, can be added to AXIH products to reduce the degradation caused by UV rays. AXIH products have a melting temperature of 125 degrees Celsius and freeze at -125 degrees Celsius; neither temperature is observable under natural conditions on Earth's surface. The inherent strength and flexibility of the material greatly reduce any concerns of a catastrophic failure.

AXIH products are virtually impervious to moisture absorption and retain key mechanical properties in humid and wet environments. In addition, AXIH products are resistant to attack by insects such as marine borers that have been shown to destroy the integrity of marine wood structures. The products also have a high resistance to the abrasion that may occur in marine environments due to sand and salt content found in the water environment. The sand and salt-water resistance comes from the fact that HDPE is one of the more resistant polymer materials, as demonstrated by Taber abrasion tests as well as chemical resistance tests. For these reasons, AXIH material is ideal for the harshest of marine conditions.

The extrusion molding process developed by Rutgers creates a product with a grain-like appearance that is rough to the touch. This characteristic makes the products less susceptible to slipping compared to other composite, plastic-based products with smooth surfaces.

AXIH products are also resistant to creep. According to ASTM D2990, creep is the permanent deformation resulting from prolonged application of stress below the elastic limit. Creep is influenced by the magnitude of the load, the time the load is applied, and temperature. Testing consists of applying a load to a test specimen and measuring the strain after a specified time. Tensile creep is the strain produced by a specified tensile load after a specified time of application. Flexural creep is the outer fiber strain produced by a specified flexural load after a specified time of application. AXIH products are designed for 600-psi allowable tensile, compressive and flexural stress. That means that one could park a 71-ton tank on a bridge constructed with

AXIH products for 25 years, then drive off the bridge, and the bridge would regain its original shape. The strain for AXIH structural products is 3% or more, which is over four times the fracture strain of wood, at 0.7% strain.

Utilizing 100% recycled plastics and plastic composites, AXIH products have the distinct advantage of being environmentally friendly. In the processes they:

- Divert plastic from the waste stream.
- Do not use any natural products (such as wood) in AXIH products.
- Do not use any chemicals or toxins to manufacture AXIH products.
- Develop and sell products that can be recycled again at the eventual end of their useful lives.

### Engineered Products Business Segment

ECOTRAX rail ties have been extensively tested, both domestically and internationally, and have garnered initial market acceptance, with in excess of several hundred thousand rail ties installed in track that were produced based on AXIH unique formulations. The Company continues to receive a growing number of orders from an expanding customer base.

The strength and durability of AXIH STRUXURE building products have been well documented through their initial use in the construction of three short-span bridges at Fort Bragg, North Carolina, designed to support the extreme tonnage requirements for armored military vehicles such as tanks, and two at Fort Eustis, Virginia, designed to support high-load railroad traffic. AXIH has issued a standards guide, drafted by Parsons Brinkerhoff, for short-span bridges. Two short-span bridges within the U.S. highway system, one in Maine and one in Ohio, have been constructed based on this standards guide.

Management has assembled the ECOTRAX composite rail ties into heavy equipment or construction mats. Historically, these mats have been constructed from traditional lumber. AXIH STRUXURE Mats can withstand the impact of heavy construction equipment and will last longer than the traditional mats. The STRUXURE Mats consist of solid seven-inch by nine-inch boards of various lengths that are bolted together using one inch or 1-1/4 inch galvanized carbon steel rods. Testing of the STRUXURE Mats with multiple oil and gas pipeline contractors has proven successful and management continues to raise awareness within this market. Other markets where AXIH feels its products provide an advantage include golf courses, municipalities and parks and recreation departments for applications such as boardwalks, short-span light vehicular and pedestrian bridges and various applications within the marina sector.

The combination of the materials that are extruded which result in the products AXIH sells is based upon patents which Rutgers University holds and which have been exclusively licensed to us for North and South America, the Caribbean, South Korea, Australia, Saudi Arabia, United Arab Emirates, Russia, Africa (except for South Africa) and China (where the Company is a co-licensee). There is one additional licensee of the patents with whom management works in cooperation within the territories not subject to AXIH license, particularly in Europe, India, Southeast Asia and South Africa. Currently, AXIH is the only manufacturer of ECOTRAX and STRUXURE products and work in collaboration with the other license holder. Under a license, Management can grant sublicenses for territories and product applications that the Company may not exploit. From time to time, Rutgers expands the patent portfolio upon which the AXIH license is based, which serves to enhance AXIH position in the market. AXIH association with Rutgers' Center for Advanced Materials via Immiscible Polymer Processing provides access to their scientists to provide timely research for the products and composition of products AXIH desires to produce, thereby eliminating much of the cost associated with internal research and development (or R&D) efforts and reducing overall R&D expenses.

Scientists associated with Rutgers developed the technologies that underlie the patents starting in the 1980s. This technology combines recycled consumer and industrial plastic wastes, that would otherwise be discarded into landfills, with encapsulated recycled fiberglass, and transforms these materials through an extrusion process into structural products which are more durable, have a substantially greater useful life and offer more flexible design features than traditional products made from wood, steel and concrete. AXIH products also resist rot and damaging insects without the use of chemical treatments and require significantly less maintenance throughout their lifecycles than traditional wood, steel or concrete products. In addition, beyond the use of recycled products as part of AXIH manufacturing process, AXIH recycled composite products are environmentally friendly, in part because they sequester carbon and do not contain creosote, a carcinogen used to coat conventional wood cross-ties.

## Recent Developments

### **AXION Reports Third Quarter 2014 Financial Results Company Sees Increase in Demand for its STRUXURE® Construction Mats**

ZANESVILLE, Ohio, Nov. 14, 2014 /PRNewswire/ -- [AXION International Holdings, Inc. \(AXIH\)](#), a leader in structural polymer solutions, including ECOTRAX® rail ties and STRUXURE® construction mats, today announced its financial results for the third quarter ended September 30, 2014. Third Quarter Highlights:

- \$3.1 million in revenue for third quarter 2014, of which \$1.7 million of revenue was attributed to our engineered products, representing a 31% increase over third quarter 2013
- Saw continued growth in international business and market penetration with multiple purchase orders for ECOTRAX® rail ties
- Expanded interest in STRUXURE® heavy construction and temporary road mats with signing of distribution agreement with a major Canada-based corporation in the oil and gas industry
- Acceleration of vertical integration strategy with conversion of Zanesville facility to increase capacity for engineered products

AXION's Chief Executive Officer Claude Brown Jr. said, "During the quarter, we adopted several corporate initiatives to bolster our operational performance and financial results. The conversion of our Zanesville, Ohio, facility has been progressing well and moving forward this will enable the growth of our STRUXURE® construction mat line and help us focus on strengthening margins through increased production capacity."

Mr. Brown continued, "Our ECOTRAX® products continue to penetrate the global markets with orders in Europe and Australia. Regarding our STRUXURE® products, we have seen increasing market demand for both our heavy construction mat and temporary road mats. Our distribution agreement with Hydra Energy Solutions Ltd., a Canadian company in the oil and gas industry, is significant as Canada presents one of the largest energy industries in the world."

"We remain confident in our plans on moving forward with the objective of growing our engineered products and manufacturing and production capacity, creating efficiencies in our production, improving our margins and continuing the penetration of our product lines in global markets. We continue to grow our sales, diversify and expand our customer base, and believe we are aligning our corporate decisions with the interest of our shareholders to ensure that our fundamental goal is increasing long-term total shareholder returns."

### **AXION Receives Purchase Order for ECOTRAX 100% Recycled Composite Rail Ties from Major West Coast Transit Line Company To Upgrade One Of The Largest West Coast Transit Railroads; Commences After Successful Year Long In-Track Testing**

ZANESVILLE, Ohio, Oct. 22, 2014 /PRNewswire/ -- [AXION International Holdings, Inc. \(AXIH\)](#), a leader in recycled plastic and plastic composite technologies used to produce ECOTRAX® rail ties/sleepers and STRUXURE® building products, and a vertically integrated re-processor and supplier of recycled plastic, announced today that it has received a purchase order from a major West Coast based transit line. The purchase order calls for approximately \$377,000 switch ties for the upgrading of 26 timber turnouts on one of the busiest and oldest lines in this transit system.

After the successful completion of one year in-track testing, the Company is set to start upgrading existing wooden rail ties with its ECOTRAX® 100% Recycled Rail Ties that are superior to alternatives and offer a longer lifecycle, reduce costs for the client, will not rot or absorb moisture, and are impervious to insect infestation. The major transit network is one of the largest in the West Coast and is one of the busiest systems in North America.

Cory Burdick, Global Manager ECOTRAX Rail Division of AXION said, "We are extremely excited about this particular order as it provides us with the chance to make one of the largest West Coast transit railroads more sustainable with AXIH products. Due to strict regulations in certain states, it has become increasingly difficult and costly to dispose creosote soaked wood after its useful life, an issue not faced when installing ECOTRAX ties given that they are 100% recyclable. There are

also difficulties faced by many railroads to procure timber in longer lengths of quality and ECOTRAX ties are consistent in quality no matter the length. After the successful completion of one year in-track testing, AXIH ECOTRAX® Rail Ties have demonstrated ability to provide long term value over other tie alternatives. Additionally, AXIH rail ties provide long term benefits to the environment. This order will recycle over 350k lbs. of plastic that would otherwise end up in the oceans or landfills and are completely recyclable after their useful life, making ECOTRAX ties a completely closed loop sustainable product."

ECOTRAX® ties have proven to be resilient and impervious to climate changes, offering proven durability, longevity, and lifecycle cost saving over traditional ties while providing environmental benefits and meeting and exceeding all industry standards. ECOTRAX® ties are a viable solution for replacing wood ties, as needed, and are impermeable to rot and insect damage and reduce the harvesting of trees.

### **AXION Receives Purchase Order for ECOTRAX 100% Recycled Composite Rail Ties from Russian Transit Line Company Receives Fourth Order from Russia, The Second Largest Rail Network in the World**

ZANESVILLE, Ohio, Oct. 7, 2014 /PRNewswire/ -- [AXION International Holdings, Inc. \(AXIH\)](#), a leader in recycled plastic and plastic composite technologies used to produce ECOTRAX® rail ties/sleepers and STRUXURE® building products, and a vertically integrated re-processor and supplier of recycled plastic, announced today that it has received a purchase order for ECOTRAX® rail ties to be shipped and installed in Russia's transit system. This is the Company's fourth order from Russia, signifying strong international demand.

This purchase order, which consists of 1,000 rail ties, was sold to AXION's in-country distributor and business partner, TVEMA, an international group of companies based in Moscow whose subdivisions are involved in the design, manufacture, and project development of rail diagnostic equipment. Over the past two years, AXION has been working diligently with TVEMA to introduce composite rail ties in Russia.

AXION's Vice Chairman Steve Silverman said, "We are delighted with our relationship with TVEMA and the traction we received through the continuous and consistent purchase orders from Russia. Russia is the second largest rail network in the world and it is notable that they are rapidly adopting our technology."

Russia's railway system is the country's key mode of transportation, with an operational length of over 85,000,000 kilometers, making it the second largest rail network in the world. According to Railway Technology, a current rail modernization plan in Russia calls for the construction of up to 20,000 kilometers of new routes, the upgrade of 13,800 kilometers of freight lines for heavy axle loads, among other improvements, at an estimated cost of \$353 billion by 2030. The European Bank for Reconstruction and Development (EBRD) has invested more than \$1.6 billion in 13 Russian rail projects since 2001.

## **Financial Overview**

### **Third Quarter 2014 Financial Summary**

AXION reported \$3,122,912 in revenue for the third quarter of 2014, a 145% increase over revenues of \$1,272,689 for the third quarter of 2013. Revenue from the sale of its engineered products was \$1.7 million and \$1.3 million for the third quarter of 2014 and 2013, respectively. As the Company transitions its Zanesville facility to provide increased production capacity for its engineered products, revenue from the sale of reprocessed plastics is expected to decrease.

The Company continued to operate at a negative gross margin, as sustained profitability will be achieved with planned increases in production volume and higher sales revenue. Total operating expenses were \$1.2 million and \$1.1 million for the third quarter ended September 30, 2014, and 2013, respectively. Other income and expenses, consisting of interest expense, amortization of discounts associated with debt securities and the change in the fair values of the various derivative liabilities primarily associated with the Company's convertible debt, resulted in other income of \$5.1 million for the third quarter ended September 30, 2014 compared to other income of \$407,185 for the same period in 2013. Primarily as a result of the gain recognized from the change in fair value of our derivative liabilities, net income for the third quarter ended June 30, 2014 was \$2.7 million, as compared to net loss of \$951,297 for the corresponding period of 2013.



### Nine Months Ended September 30, 2014 Financial Summary

AXION reported \$12 million in revenues for the nine months ended September 30, 2014, an increase from \$4.5 million for the same period in 2013, of which \$6.6 million was attributable to the engineered products division. The remainder was attributable to reprocessed plastics sales. The negative gross margin for the nine months ended September 30, 2014 of \$4.5 million compares to a negative gross margin of \$7,474 for the nine months ended September 30, 2013. The Company continued to operate at a negative gross margin due to the nature of both its reprocessed plastics segment and its engineered products segment which require higher volume of production than the Company has been able to achieve to date. Total operating expenses were \$23.2 million and \$3.6 million for the nine months ended September 30, 2014 and 2013, respectively. The increase was a result of higher general and administrative expenses during the quarter. Other income and expense for the nine months ended September 30, 2014 and 2013, was other income of \$13.6 million and other expense of \$703,560, respectively. For the nine months ended September 30, 2014 and 2013, net loss was \$14.1 million and \$4.3 million, respectively. As of September 30, 2014, the Company had 69,167,050 common shares outstanding.

### Balance Sheet

#### AXION INTERNATIONAL HOLDINGS, INC. CONSOLIDATED BALANCE SHEETS

	September 30, 2014 (Unaudited)	December 31, 2013
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 2,771,856	\$ 883,936
Accounts receivable, net of allowance	1,088,558	888,214
Inventories	4,525,250	3,955,515
Prepaid expenses and deposits	205,212	280,140
Total current assets	<u>8,590,876</u>	<u>6,007,805</u>
Property and equipment, net	8,223,970	7,899,486
Goodwill	1,492,132	1,492,132
Intangible assets	5,000	610,000
Total assets	<u>\$ 18,311,978</u>	<u>\$ 16,009,423</u>
<b>LIABILITIES AND STOCKHOLDERS' DEFICIT</b>		
Current liabilities:		
Accounts payable	\$ 1,841,523	\$ 1,879,760
Accrued liabilities	1,541,326	896,740
Derivative liabilities – 8% convertible promissory notes	3,983,000	17,190,000
12% convertible promissory notes, net of discounts	881,800	-
Current portion of long term debt	187,287	185,347
Total current liabilities	<u>8,434,936</u>	<u>20,151,847</u>
8% convertible promissory notes, net of discounts	13,677,111	11,030,913
12% revolving credit agreement, net of discounts	1,994,059	1,873,716
4.25% bank term loans	4,400,000	4,400,000
5% bank promissory note	4,000,000	-
Other debt	214,134	300,127
Fair value of 10% convertible preferred stock warrants	52,720	296,194
Total liabilities	<u>32,772,960</u>	<u>38,052,797</u>
Commitments and contingencies		
10% convertible preferred stock, no par value; authorized 880,000 shares; 682,998 and 694,623 shares issued and outstanding at September 30, 2014 and December 31, 2013, respectively, net of discounts	6,829,980	6,724,844
Stockholders' deficit:		
Common stock, no par value; authorized, 250,000,000 shares; 69,167,050 and 31,168,905 shares issued and outstanding at September 30, 2014 and December 31, 2013, respectively	52,120,356	30,500,445
Accumulated deficit	<u>(73,411,318)</u>	<u>(59,268,663)</u>
Total stockholders' deficit	<u>(21,290,962)</u>	<u>(28,768,218)</u>
Total liabilities and stockholders' deficit	<u>\$ 18,311,978</u>	<u>\$ 16,009,423</u>

## Statement of Operations

**AXION INTERNATIONAL HOLDINGS, INC.**  
**CONSOLIDATED STATEMENTS OF OPERATIONS**  
**FOR THE THREE MONTHS ENDED SEPTEMBER 30,**  
**(Unaudited)**

	<u>2014</u>	<u>2013</u>
Revenue	\$ 3,122,912	\$ 1,272,689
Costs of sales:		
Production	3,902,250	1,189,172
Excess capacity & inventory adjustments	369,806	293,941
Gross margin (loss)	<u>(1,149,144)</u>	<u>(210,424)</u>
Operating expenses:		
Product development and quality management	52,219	213,525
Marketing and sales	126,047	202,106
General and administrative	1,069,672	732,427
Total operating expenses	<u>1,247,938</u>	<u>1,148,058</u>
Loss from operations	( 2,397,082)	(1,358,482)
Other (income) expenses:		
Interest expense	478,496	190,318
Amortization of debt discount	1,196,807	132,497
Impairment of intangible assets	545,750	-
Fair value of common shares issued in excess of fair value of warrants tendered	(54)	-
Change in fair value of derivative liabilities	(7,337,983)	(730,000)
Total other (income)	<u>( 5,116,984)</u>	<u>(407,185)</u>
Net income (loss)	2,719,902	(951,297)
Accretion of preferred stock dividends and beneficial conversion feature	(152,237)	(405,936)
Net income (loss) attributable to common shareholders	<u>\$ 2,567,665</u>	<u>\$ (1,357,233)</u>
Weighted average common shares -		
Basic	69,066,096	30,307,925
Diluted	127,971,683	30,307,925
Net income (loss) per share -		
Basic	\$ 0.04	\$ (0.04)
Diluted	0.02	(0.04)

## Statement of Cash Flow

**AXION INTERNATIONAL HOLDINGS, INC.**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**  
**FOR THE NINE MONTHS ENDED SEPTEMBER 30,**  
**(Unaudited)**

	2014	2013
Cash flow from operating activities:		
Net loss	\$ (14,142,655)	\$ (4,313,032)
Adjustments to reconcile net (loss) to net cash used in operating activities:		
Depreciation and amortization	781,232	147,605
Amortization of identifiable intangible assets	59,250	-
Amortization of convertible debt discount	2,055,894	414,525
Change in fair value of derivative liabilities	(18,142,504)	(294,576)
Change in fair value of 10% convertible preferred stock warrants	(243,474)	40,641
Change in allowance for doubtful account	74,025	-
Interest expense paid in shares of common stock	1,069,537	-
Share-based compensation	666,601	142,654
Fair value of common stock issued in excess of fair value of warrants tendered	19,957,800	-
Impairment of intangible assets	545,750	-
Changes in operating assets and liability:		
Accounts receivable	(274,369)	(246,935)
Inventories	(569,735)	(536,868)
Prepaid expenses and deposits	74,928	65,265
Accounts payable	(38,237)	364,028
Accrued liabilities	675,695	389,743
Net cash used in operating activities	<u>(7,450,262)</u>	<u>(3,826,950)</u>
Cash flows from investing activities:		
Purchase of property and equipment	(1,105,716)	(1,165,521)
Net cash used in investing activities	<u>(1,105,716)</u>	<u>(1,165,521)</u>
Cash flows from financing activities:		
Proceeds from issuance of 8% convertible promissory notes, net	5,527,951	2,150,001
Proceeds from 12% convertible promissory notes, net	1,000,000	-
Proceeds from 5% bank term loans	4,000,000	-
Recovery of shareholder short swing profits	-	3,095,308
Repayments of other debt	(84,053)	-
Net cash provided by financing activities	<u>10,443,898</u>	<u>5,245,309</u>
Net increase in cash	1,887,920	252,838
Cash and cash equivalents at beginning of period	883,936	346,905
Cash and cash equivalents at end of period	<u>\$ 2,771,856</u>	<u>\$ 599,743</u>
Supplemental disclosures of cash flow information:		
Cash paid for interest	\$ 221,824	\$ 1,971
Conversion of 10% convertible preferred stock and debt	116,250	39,000
Dividends on 10% convertible preferred stock	496,229	533,569
Amortization of 10% convertible preferred stock discount	221,386	684,704
Fair value of warrants issued with 8% convertible promissory notes	391,365	249,151
Fair value of conversion option of 8% convertible promissory notes	4,544,139	545,425
Fair value of common stock issued in exchange for warrants tendered and cancelled	24,824,069	-

### Summary/Conclusion

We view AXIH as a compelling play on new emerging polymer add recycling technologies that could disrupt the market for green building materials going forward. The declining state of the infrastructure in the United States presents enormous opportunities for AXIH two product lines, ECOTRAX and STRUXURE. Conditions affecting standard building materials such as corrosion, crumbling, material rot, the application of toxic chemicals to retard product failure and maintenance and repair concerns such as painting, staining, rust treatments, and, replacement and downtime costs can be reduced or eliminated by the use of recycled structural composite building products. The two product lines are aimed at different markets, each of which presents unique opportunities.

- According to the U.S. Government Accountability Office (GAO), the U.S. Department of Defense spends \$22.5 billion annually on equipment and infrastructure as an impact of corrosion.

- The American Society of Civil Engineers has recommended that the U.S. spend \$17 billion a year on bridge maintenance, significantly more than the \$10.5 billion that is currently spent each year.
- Regarding docks, marinas, and piers, the GAO Report on Marine Transportation stated that 13 Federal agencies spent an average of \$3.9 billion annually on the construction and maintenance of federally authorized projects.

While there are not many new miles of railroad track being built each year in the United States, the nation's railroads still must spend billions annually to repair and maintain the nation's network of 140,490 miles (operated by mainly freight companies). Replacing worn out rail ties is one of the industry's biggest ongoing expenses. Railroads have traditionally relied on using wood ties, but plastic rail ties, using the latest in plastic technology, offer advantages of lower long-term operating costs and several environmental benefits. Due to its durability and longevity, ECOTRAX rail ties are well positioned to take advantage of the spending on railroad infrastructure.

Financial results are trending in the right direction with increasing revenues suggesting building traction and strong customer interest. One of management's primary challenges will be to maintain adequate levels of funding for working capital and investment while the strategic plan and vision are implemented to capitalize on what appears to be a very dynamic high growth and potentially very profitable enterprise on a longer term basis. Due to the strong revenue ramp, innovative technology multibillion dollar available market and products already selling into the market we rate the shares **Overweight/Buy** with a *price target of \$5*. We believe this is reasonable over a 12-18 month horizon as the current Price/Sales multiple of 1.75 grows in parallel with improving financial metrics.

## Risk Factors

For a list of Risk Factors affecting Axion International Holdings, Inc. and its common stock, readers are directed to the Company's SEC filings on <http://www.sec.gov/search/search.htm>. Investors should carefully consider the risk factors discussed in this report and consider all other information in the Company's public filings before making an investment decision.

## Appendix

### Our Rating System

We rate enrolled companies based on the appreciation potential we believe their shares represent, and the "riskiness" we perceive in our ratings. The business results of those companies "NOT RATED" are often highly dependent on some future event, such as FDA drug approval or the option of a new key technology.

### Explanation of Ratings Issued by MRA Research

<b>OVERWEIGHT/BUY</b>	Overweight (O or Over) - The stock's total return is expected to exceed the total return of the relevant country Index average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis over the next 12-18 months.
<b>EQUAL WEIGHT/HOLD</b>	Equal-weight (E or Equal) - The stock's total return is expected to be in line with the total return of the relevant country Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis over the next 12-18 months.
<b>NOT RATED</b>	Not-Rated (NR) - Currently the analyst does not have adequate conviction about the stock's total return relative to the relevant country Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
<b>UNDERWEIGHT/SELL</b>	Underweight (U or Under) - The stock's total return is expected to be below the total return of the relevant country's equity indices and/or the total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

### Analyst Certification

I, Michael Anderegg, hereby certify that the view expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the

recommendations or views expressed in this research report.

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This report may contain certain forward-looking statements and information, as defined within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, and is subject to the Safe Harbor created by those sections. This material contains statements about expected future events and/or financial results that are forward-looking in nature and subject to risks and uncertainties. Such forward-looking statements by definition involve risks, uncertainties and other factors, which may cause the actual results, performance or achievements of mentioned company to be materially different from the statements made herein.

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