



TURI Continuing Education Conference

UEM

November 2019

Umicore Electrical Materials USA Inc.



Facts and Figures:

- Number of Employees in 2017:
 - Glens Falls: 48
 - Attleboro: 40
- Size of owned property in Glens Falls: 30,000 m² (~7.5 acres)
- Attleboro site rented
- Size of Shop Floor:
 - Glens Falls: about 6,500 m² (70,000 ft²)
 - Attleboro: about 4,000 m² (43000 ft²)
- ISO 9001 certified
- ISO 14001 certified 2



UTMNA Products



■ Main Product Groups:

- Contact Materials incl. Clad Metals, Tapes, Buttons, Absorber Rods, AgCl products
- Brazing Materials

■ Main Product Forms:

- Wire (Dia.: 0.01 – 0.60 inch)
- Strip (Thick.: 0.0007 – 0.250 inch)
(Width: 0.047 – 14.50 inch)
- Rods (Dia.: up to 2 inch)
(Length: up to 12 feet)
- Clad Metals/ Tapes/ Buttons
(Custom Design)
- Powder and Grain

Leading US materials producer for technical applications mainly in the Electrical Industry...

Successful as a diversified niche player due to strong opex performance...

Description

Business:

- Leading materials producer of engineered products and solutions for applications used in a variety of growth markets
- Combines in-depth material expertise with advanced engineering and production capabilities to design and manufacture a broad range of high-precision metal components
- Produces predominantly silver-based electrical contact materials, brazing alloys and other specialized metallurgical products, which are typically used in contactors, relays and circuit breakers primarily in the LV market.
- Additionally, the Company produces Silver Chloride for saltwater batteries and has qualified Silver-based Absorber Rod capability for the Nuclear Power Industry

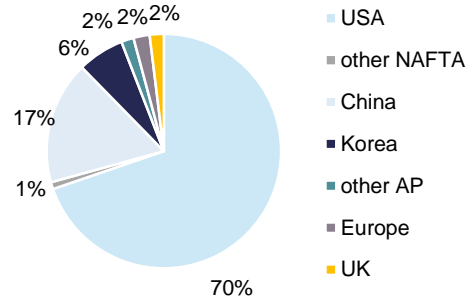
Customers:

- More than 150 customers including global OEMs as well as regional specialist players
- Supplies primarily to the NAFTA region, but also serves customers from Europe and Asia Pacific (e.g. China & Korea)

■ **Output:** Approx. 160mt p.a. (of which ~60% silver)

■ **Organization:** Employs approx. 90 people

Sales NPM⁽¹⁾⁽²⁾⁽³⁾ by geography



Site overview

Glens Falls, NY



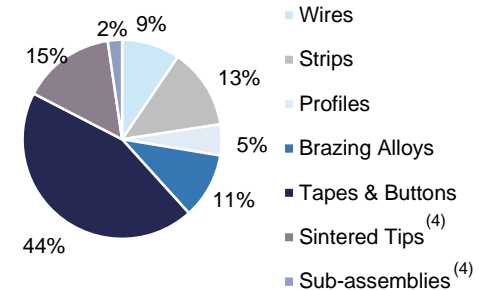
- Glens Falls site is owned by Umicore
- Casting, extrusion, rolling, wire drawing, bonding and graining
- Serving semi-finished materials to fabricators & OEMs. Also serves as the raw materials supplier for Attleboro
- 70,000 sq. ft

Attleboro, MA

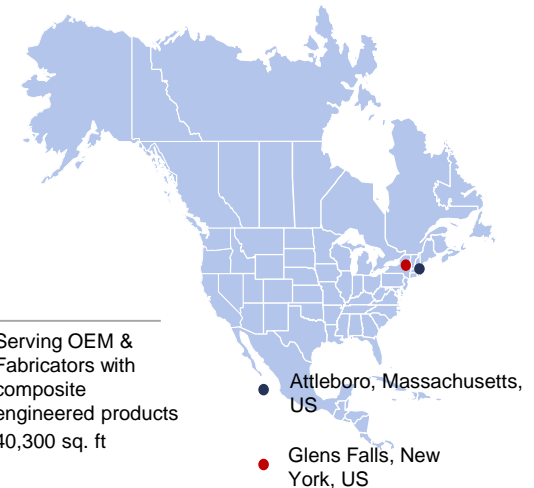


- Attleboro site is leased
- Metal-to-metal bonding, stamping and form rolling
- Serving OEM & Fabricators with composite engineered products
- 40,300 sq. ft

Sales NPM⁽¹⁾⁽²⁾ by product line



Geographical footprint













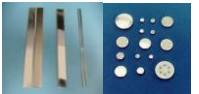







(1) Sales revenues excluding precious metals. (2) Indicative breakdown. (3) Refers to end-user markets. (4) UTMNA acts as regional sales agent for Umicore Brazil in the NAFTA market. The sales NPM equivalent has been included in this overview, since UTMNA only records the commission income under SG&A.

...with an extensive product range complemented by value-added services...

...complemented by value-added products, services and customer intimacy

Selected overview

| Manufactured Products | Applications | Markets |
|---|---|--|
| Wires  | Circuit breakers  | Industrial  |
| Strips  | Switches  | Residential  |
| Profiles  | Contactors  | Electrical & mechanical sector  |
| Brazing alloys  | Tooling  | Construction & mining  |
| Tapes & buttons  | Car components  | Sensors & controls  |
| Silver Chloride  | Saltwater batteries for sonar buoys  | Defense  |

Value-added services

BESPOKE PRODUCTS, CUSTOMIZATION AND CO-DEVELOPMENT WITH CUSTOMERS

APPLIED TECHNOLOGY & ENGINEERING SUPPORT FOR PROBLEM RESOLUTION

VENDOR MANAGED INVENTORY & KANBAN PROGRAMMES

WAREHOUSING & IMPORT/EXPORT LOGISTICS SERVICES

CUSTOMER PRECIOUS METAL & POOL ACCOUNT MANAGEMENT

UEM – we stand for ...

Openness

Respect

Innovation

Teamwork

Commitment



- UEM Attleboro has two chemicals of concern
- Just our luck that both are considered HHS substances
- The facility uses cadmium compounds and Perchloroethylene (PCE)
- The chemical UEM was looking to replace was the PCE
- PCE was used in a PERO vacuum enclosed degreaser
- The machine held 2000 pounds of PCE and the manufacturer's recommendation was that the machine be changed out annually
- This meant that, no matter what, the site would trip for over 1000 pounds of PCE use annually
- After consultation with PERO and tracking usage it was determined that the facility could change out the PCE every 18 months
- The facility would therefore reduce the use of PCE from 6000 pounds to 4000 pounds over 3 years

Driver of Change

- UEM started to look at alternatives to PCE as soon as the facility relocated from RI to MA in the 2010-2011 time frame.
- The PERO machine being used was bought used from a local company in Attleboro that was eliminating a product line that UEM was interested in pursuing.
- Every year after when it was budget time and the EHS department was asked what they needed the answer was a new degreaser.
- The answer was always “it’s not in the budget for this year”.
- Then the strangest thing happened, in October/November of 2018 when it was budget time EHS asked for a new degreaser.
- The arguments had gotten stronger, the old degreaser was having issues, parts were getting harder to find, the site was spending more annually on upkeep, and lo and behold a new degreaser purchase was approved

New Machine

- The UEM facility decided to stay with the PERO Company and purchased a new degreaser from PERO in the spring of 2019.
- UEM worked with PERO and chemical manufacturer Kyzen to identify a modified alcohol solvent cleaning blend called Metalnox M6386
- This material is non-hazardous, biodegradable organic solvent blend.
- It contains no CFCs or HAPs, and has a flash point of 142 degrees F
- UEM was able to take customer parts down to the PERO facility in CT.
- There the parts were run and sent out for testing to confirm that the cleanliness met required levels
- The parts were tested at both Kyzen and the TURI Lab for comparison to the parts cleaned using the PCE. The results were at least as good and on some tests better than using PCE
- Once the new machine was in place at UEM parts were run and once again sent out to the Kyzen lab to confirm cleanliness. The results were the same as the previous testing

Cost Savings

- It is hard to tell exactly what the cost savings will be since the machine has only been in place for three months
- Cost savings on the chemicals:
 - PCE \$29.40/gallon old 165 gallons = 4851.00
 - Stabilizer to maintain acidity \$964/gallon 2.5 gallons = \$2410.00 yearly
 - Over the past 3 years of use \$7230.00
- Recommended to change annually
 - Metalnox \$34.20/gallon 80 gallons = \$2736.00
 - Booster @ \$123.00 for a 1 gallon container
- PCE changed annually over 3 years \$14,553.00
- Metalnox shelf life 3 years in machine \$4851.00
- Savings over 3 years
 - Chemical costs \$10,000
 - Booster savings \$7107.00
 - **Total of \$17,107.00**

Cost savings

- There will also be a cost savings on energy as the new machine is much more energy efficient than the old.
- Hopefully UEM will be able to share more info on that after I get certified as an RC TURP planner next year!!!!

Obstacles

- Eight year wait for approval
- Still getting employees trained on use and maintenance of new equipment