

Beyond Efficiency:

Transforming Automotive Manufacturing
with High-Impact Energy Savings &
Sustainability

3rd Annual Sustainability in
Manufacturing Summit
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Nashville, TN

Doug Myers

*Senior Business Development Director,
Automotive & Transportation*



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Who is EWI



Advanced Engineering Services



Columbus
OHIO

Joining
Forming
Materials Engineering
Structural Integrity

Modeling
Inspection
Polymers
Testing



Buffalo
NEW YORK

Additive Manufacturing
Automation
Data Science
Metrology

90+

Technical Experts
14 PhD, 28 MS, 37 BS

\$40M+

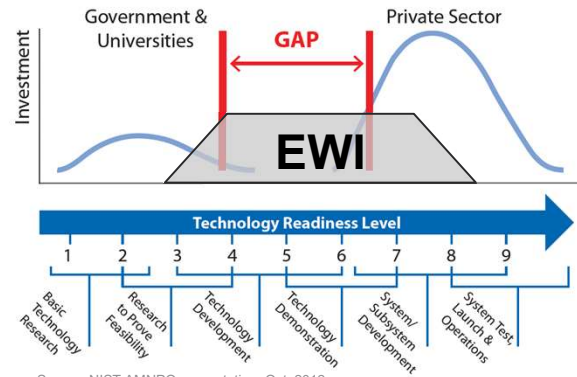
Capital Equipment

160,000

Total Square Feet

2

Where EWI Fits



EWI spans the gap between research and implementation
serving commercial, government, and university clients



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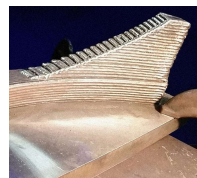
EWI Technologies



Materials
Joining



Forming



Additive
Manufacturing



Structural
Integrity



Inspection
Technologies



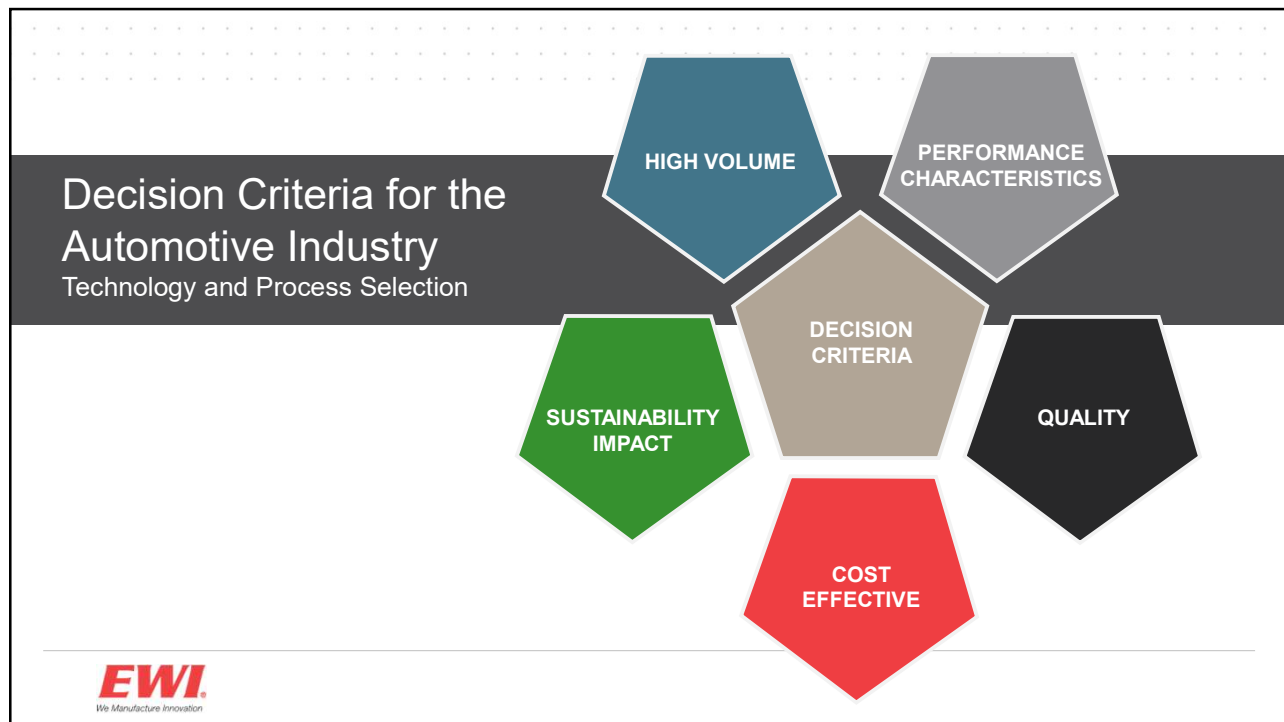
Testing &
Characterization



Advanced
Automation



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In the Past.... Program/Platform Launches

- Capital/Infrastructure investments made in Manufacturing prior to launch
- Development and Manufacturing Engineering driving changeover/launch
- Manufacturing given annual cost reduction targets over the life of the platform
- Very little room for additional “in plant” investments.

Now

- Sustainability initiatives are driving/funding significant changes in Manufacturing
- Large budgets reside both at the Corporate level as well as the Operations level

EWI.
We Manufacture Innovation

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Impact with EWI Developments

Situation

- **Global OEM** Increase in Aluminum for BIW designs for new platforms



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Impact with EWI Developments

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Challenge

- Aluminum sheet metal welding very challenging
 - Welds not meeting quality and performance requirements
 - Electrodes need to be tip dressed after ~ 70 welds
 - Weld spatter not manageable for Class A panels



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Solution

- Polarity Switching DC Welding
 - Weld quality and strengths exceeding targets
 - 2000/3000 welds made with out electrode tip dressing
 - Spot Weld time between 2-3 seconds
 - No need to water cool the electrodes



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ESG Benefits

- 80%+ reduction in energy consumed
- Eliminate plumbing and water for electrode cooling
- Reduction of copper consumables

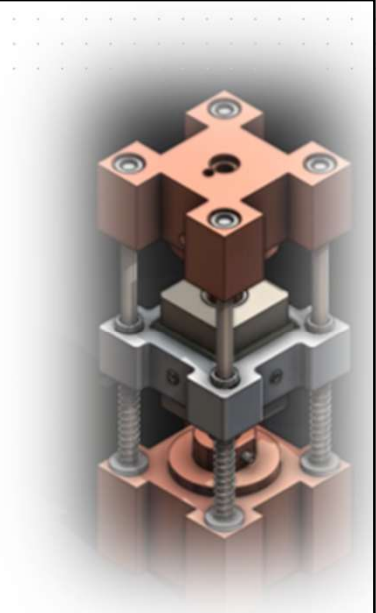


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Impact with EWI Developments

Situation

- Global Tier 1 needing to pivot towards EV related products
- Developing new applications for metal matrix composites



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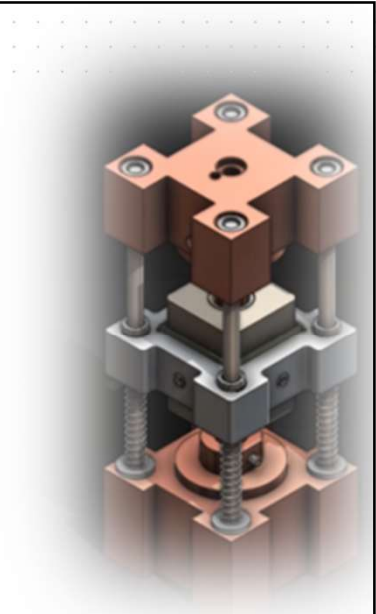
Impact with EWI Developments

Situation

- Global Tier 1 needing to pivot towards EV related products
- Acquired one of the largest graphene suppliers in the world

Challenge

- Develop new advanced products for Electric Vehicle market
- Create new technology and processes to leverage graphene powder



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Impact with EWI Developments

Situation

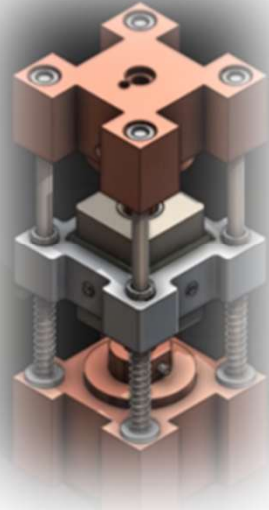
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Solution

- Resistance Based Sintering
 - Replaces press and sintering operations
 - Fully consolidated parts with 99%+ density
 - 2 second process time for near net shaped parts
 - Leverages conventional resistance-based welding equipment



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Impact with EWI Developments

Situation

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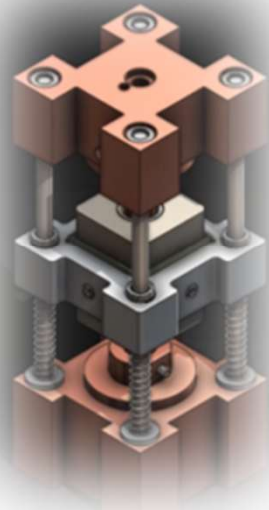
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ESG Benefits

- 90%+ reduction in energy consumed. Eliminates batch based sintering furnaces
- Replaces copper components with metal matrix composite components which are lighter, cheaper and higher conductivity
- 1-2 second cycle time



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What is ISO 50001/SEP – EnMS?

- ISO 50001 – a **voluntary international framework** for management of energy
- **SEP** – Superior Energy Performance Certification **Prominent in US.**
- Assists organizations in **reducing energy**
 - Utilization of best practices
 - Promoting energy efficiency within the supply chain
- Will assist organizations in improving their **energy performance**
- Energy performance leads **to reduced GHGs** and operational costs



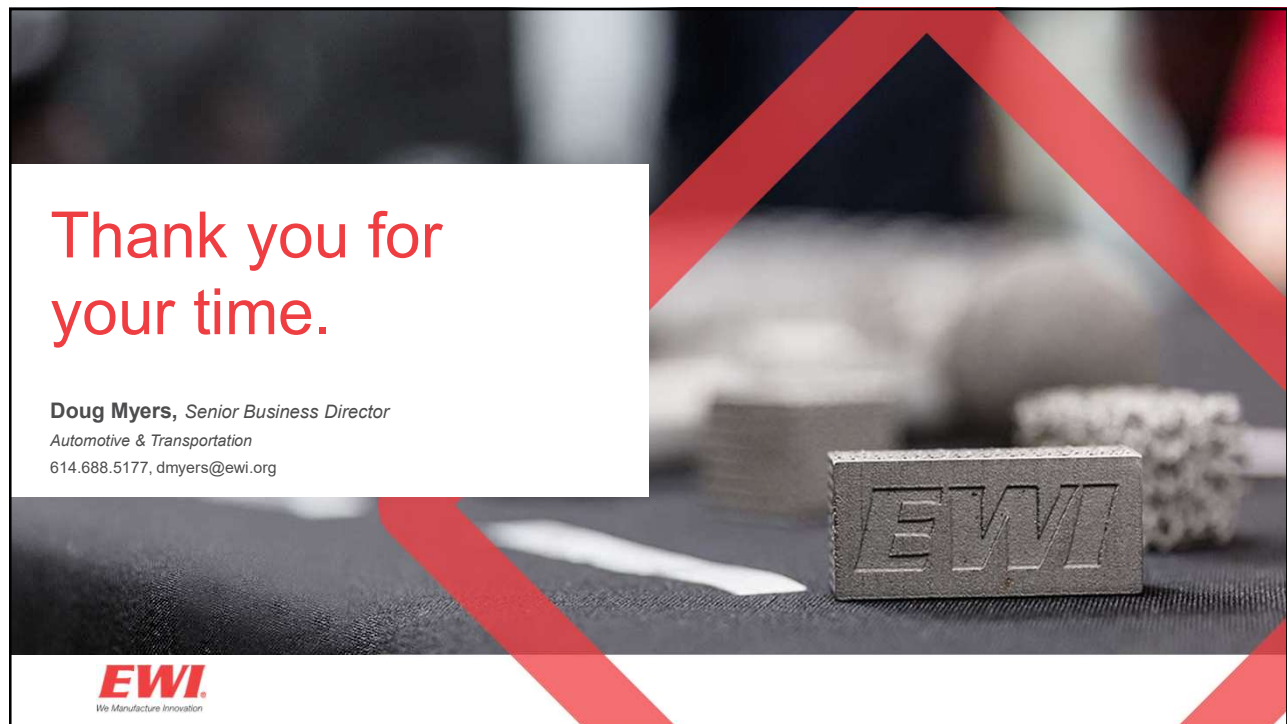
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EWI/CWB Advantage

- Independent feedback on conformity and effectiveness of your EnMS system
- Projects/Programs include sustainability measurements and reporting
- Linking process improvements with EnMS goals and objectives
- Qualified auditors with relevant certification for EnMS audits.
- Certification for ISO 50001 and SEP



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Thank you for
your time.

Doug Myers, *Senior Business Director*
Automotive & Transportation
614.688.5177, dmyers@ewi.org

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