Growing Montana’s Economy by Helping Manufacturers Succeed

*Growth, Innovation & Profit Enhancement*

*Since 1996*

Accelerate Montana 12/17/19
What is Manufacturing?

- Manufacturing is when you take a physical thing that was grown, dug-up, or previously manufactured, and then you increase the value of it somehow.
What is MMEC?

- MMEC is part of the NIST-MEP (National Institute of Standards and Technology – Manufacturing Extension Partnership)
- There is a MEP in every state and Puerto Rico with various names.
- MEP funding is based on the number of manufacturers in each state.
- MEP funding can only be used to help manufacturers that have less than 500 employees.
- MEPs are based at universities, are stand-alone 501c3s, or are part of the state government.
- MMEC is an MSU College of Engineering Center approved by the Board of Regents in 1996.
- All MEPs are public-private partnerships
  - 1/3 budget from NIST-MEP (1-1 Match) (federal)
  - 1/3 budget from State of Montana Legislature (state)
  - 1/3 budget from Montana Manufacturers who pay for services (private)
- $2.0 million total budget
MMEC Business Model

– MMEC has 6 business advisors strategically located throughout the state.

– Each has a region and regularly calls on prospective clients in the hopes of assisting them in solving typical business, manufacturing, or engineering problems.

– If the business advisor and the company representative decide that there is a project that needs addressing, the MMEC business advisor will develop a detailed scope of work, price it and present it to the company representative.

– If both parties agree, the project proceeds.

– MMEC’s business advisors may do all the work that the project requires, or they may call in pre-qualified partners or subject matter experts to assist with the project.
MMEC Pricing

- MMEC tries to price projects on a firm fixed basis with consideration to the financial return that the company will see, within reason and when possible. AKA Value Pricing
- MMEC services are priced at about 50% of the current market value
- When value pricing is not possible, MMEC prices tend to be around:
  - $1000-1500/day
Montana Manufacturing

- Montana has about 3300 manufacturers, 1500 that have employees
- MMEC has worked with about 1200 of them in the past 20 years.
- 75% of Montana’s manufacturers are in 9 counties
- 81% have less than 20 employees (very small)
- 68% are in rural counties
- 16% have been in business for less than 5 years (startups)
- Manufacturing jobs in Montana pay an average of 20% higher than the average wage in MT
Montana Manufacturing

• Each manufacturing job produces 2.58 jobs elsewhere in the economy
• 24,000 Manufacturing Jobs in Montana with 62,000 supporting jobs which totals 86,000 jobs in Montana due to manufacturing
• Manufacturing in Montana Accounts for $1.1 Billion or 81% of the State’s Exports
• Manufacturing in Montana accounts for 28% of the Gross State Product which ranks #32 in the nation.
• Idaho is the median at 38% of the Gross State Product
Montana Manufacturing Trends

• Montana’s manufacturers are behind in terms of Industry 4.0
• Manufacturers are desperate for qualified employees – starting to embrace automation
• Alcohol Manufacturing (aka Value Added Agriculture) Growing – Statewide
• Fabricated Metals Growing – Statewide
• Food Manufacturing (aka Value Added Agriculture) Growing – Statewide
• Photonics Growing – Bozeman Area
• Firearms Declining – Kalispell Area
• Outdoor & Sewn Products Growing – Bozeman Area
• Lumber is Down, Engineered Lumber is Up
• Baby Boomers Transitioning = RISK
• Large Corporations are buying Montana Manufacturers
• # of Montana Manufacturers has grown by 40% in the past 20 years
• US Manufacturing Employment has declined by about 13% since 2004
• MT Manufacturing Employment has increased by about 5% since 2004
75% of Montana’s Manufacturers - 2019

9 Counties
<table>
<thead>
<tr>
<th>Rank by #s</th>
<th>NAIC</th>
<th>Industry</th>
<th>2008</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Average Growth</th>
<th>Total Growth</th>
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<tr>
<td>1</td>
<td>332</td>
<td>Fabricated metal</td>
<td>184</td>
<td>248</td>
<td>264</td>
<td>265</td>
<td>3.4%</td>
<td>44.0%</td>
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<td>2</td>
<td>339</td>
<td>Miscellaneous</td>
<td>160</td>
<td>170</td>
<td>178</td>
<td>184</td>
<td>1.3%</td>
<td>15.0%</td>
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<tr>
<td>3</td>
<td>311</td>
<td>Food</td>
<td>173</td>
<td>164</td>
<td>172</td>
<td>174</td>
<td>0.1%</td>
<td>0.6%</td>
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<tr>
<td>4</td>
<td>321</td>
<td>Wood Products</td>
<td>185</td>
<td>141</td>
<td>144</td>
<td>148</td>
<td>-2.0%</td>
<td>-20.0%</td>
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<tr>
<td>5</td>
<td>337</td>
<td>Furniture &amp; Related Products</td>
<td>142</td>
<td>134</td>
<td>143</td>
<td>146</td>
<td>0.3%</td>
<td>2.8%</td>
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<td>6</td>
<td>312</td>
<td>Beverages and Tobacco</td>
<td>42</td>
<td>103</td>
<td>114</td>
<td>132</td>
<td>11.0%</td>
<td><strong>214.3%</strong></td>
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<td>7</td>
<td>327</td>
<td>Nonmetallic Minerals</td>
<td>94</td>
<td>98</td>
<td>102</td>
<td>108</td>
<td>1.3%</td>
<td>14.9%</td>
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<td>8</td>
<td>325</td>
<td>Chemical Manufacturing</td>
<td>46</td>
<td>56</td>
<td>59</td>
<td>65</td>
<td>3.2%</td>
<td>41.3%</td>
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<td>9</td>
<td>333</td>
<td>Machinery Manufacturing</td>
<td>41</td>
<td>50</td>
<td>59</td>
<td>58</td>
<td>3.2%</td>
<td>41.5%</td>
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<tr>
<td>10</td>
<td>334</td>
<td>Computers &amp; Electronics</td>
<td>40</td>
<td>47</td>
<td>53</td>
<td>55</td>
<td>2.9%</td>
<td>37.5%</td>
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<td>11</td>
<td>336</td>
<td>Transportation Equipment</td>
<td>40</td>
<td>39</td>
<td>43</td>
<td>48</td>
<td>1.7%</td>
<td>20.0%</td>
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<tr>
<td>12</td>
<td>316</td>
<td>Leather Products</td>
<td>17</td>
<td>21</td>
<td>25</td>
<td>29</td>
<td>5.0%</td>
<td>70.6%</td>
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<td>13</td>
<td>326</td>
<td>Plastics &amp; Rubber Products</td>
<td>17</td>
<td>23</td>
<td>22</td>
<td>23</td>
<td>2.8%</td>
<td>35.3%</td>
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<tr>
<td>14</td>
<td>335</td>
<td>Electrical Equipment</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>0.0%</td>
<td>0.0%</td>
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<tr>
<td>15</td>
<td>331</td>
<td>Primary Metals</td>
<td>22</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>-3.4%</td>
<td>-31.8%</td>
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<tr>
<td>16</td>
<td>315</td>
<td>Clothing</td>
<td>6</td>
<td>9</td>
<td>13</td>
<td>12</td>
<td>6.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>17</td>
<td>324</td>
<td>Petroleum &amp; Coal</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>-0.9%</td>
<td>-9.1%</td>
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<tr>
<td>18</td>
<td>322</td>
<td>Paper</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-11.8%</td>
<td>-75.0%</td>
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</table>
MMEC Surveys

- Approximately 6 months after a project has been completed, the client is surveyed by an independent third party. The results are sent to NIST-MEP. If MMEC does not hit a minimum threshold, corrective actions from NIST-MEP will be initiated.
Survey Results

Reasons for choosing MMEC

1. Staff Expertise – 85%
2. Reputation for Results – 29%
3. Knowledge of the industry – 24%
4. Fair and Unbiased Advice/Services – 20%
5. Cost/Price of Services – 10%
6. Lack of Other Providers – 7%
Survey Results

Future Challenges

1. Ongoing Continuous Improvement/Cost Reduction – 63%
2. Employee Recruitment and Retention – 59%
3. Identifying Growth Opportunities – 56%
4. Product Innovation/Development – 41%
5. Managing Partners and Supplies – 24%
6. Sustainability in Products and Processes – 22%
7. Financing – 12%
8. Exporting/Global Management – 10%
9. Technology Needs – 9%
MMEC’s Economic Impact

• Since 2000 through 2019-3 (as reported by customers)
  – 5,979 New and Retained Jobs
  – $1.32 Billion in New and Retained Sales
  – $319 Million in Capital and Workforce Investment
  – $153 Million in Cost Savings & Avoidance
  – Worked in 54 of the 56 counties
Annual Publications and ROI

• The State of Manufacturing by BBER
• Montana Manufacturers Survey by BBER
• Economic Impact of MMEC by BBER
  – According to BBER, MMEC provides the State of Montana with a 793% ROI ($7.93 for each $1 invested)
  – According to BBER, MMEC provides the Federal Treasury with a 980% ROI ($9.80 for each $1 invested)
Startup Assistance

- Business Plans
- Feasibility Studies
- Market Research
- New Idea Discovery, Definition and Management
- New Technology Development/Technology Transfer
- Small Business Innovation Research Grants
- Technology Scouting
- Product Design (3d Modelling)
- Lean Product Development (Quicker to Market)
- Rapid Prototyping (3d Printing, etc.)
- Intellectual Property Protection/Management
- Financing Options
- Manufacturing Process Development
- Supply Chain Development
- Equipment Selection
- Facility Design/Layout
- Machinery Design & Development

- Marketing/Sales Plan Development & Implementation
- Marketing Your Technology
- Export Plans
- Product Commercialization Strategies
- Technology Driven Market Place Intelligence
- Customer Surveys (Voice of the Customer)
- Qualified/Vetted Sales Leads
- Food Safety Training & Certifications
- CE Marking
- ERP Software Selection (Enterprise Resource Planning)
- CRM Software Selection (Customer Relationship Management)
- Cybersecurity
- Automation on the Production Floor
- Waste/Energy/Water Use Reduction
- OSHA/EPA/USDA/FDA Compliance
- ITAR Compliance
- Tax Implications
- Accounting Assistance
Alistair Stewart
Southwest Montana

- 35 years in Manufacturing
- 4 years with MMEC
- Former Director of Business Development, Chicago MEP
- Formerly with Baxter Healthcare and British Gas
- BS Maritime Studies, University Plymouth, 1983
- MS Managerial Communications, Northwestern, 1997
- Montana’s Only Certified Exit Planning Advisor, 2016
- Nationally known M&A, Business Growth, Supply Chain, Lean Environmental Expert
Dave Allard
Statewide

- 31 years in Manufacturing
- 4 years with MMEC
- Former COO, Qatar Solar Technologies
- Former Plant Manager with Lattice
- Materials, REC Silicon, Air Liquide
- BS Chemical Engineering, MSU 1988
- Nationally known high-tech manufacturing expert
- Intellectual Property Advisor
- Food safety and food manufacturing expert
Shane Cantrell  
West Central Montana

- 15 years in Manufacturing
- 2 years with MMEC
- Formerly with Reliable Granite
- BS Industrial Engineering, MSU, 2002
- MS Industrial Engineering, MSU, 2006
- Manufacturing Workforce Development Expert
Doug Roberts
North Central Montana

• 35 years in Manufacturing
• 1 year with MMEC
• BS Engineering Technology, State University of New York, 1984
• MBA, Business Administration, Ohio State University, 1990
• Former CEO and Vice President
• Formerly with Whirlpool, Howell Munitions, etc.
• Product Development Expert
Sheri Bartz
Eastern Montana

- 33 years in Manufacturing
- 1 year with MMEC
- BS, Mechanical Engineering Technology, Montana State University, 1986
- MS, Environmental Sciences, Friend’s University, 2006
- Former General Manager with Boeing, Spirit AeroSystems
- Leadership Expert
- Machining Expert
Jeff Pierce
Northwest Montana

- 23 years in Manufacturing
- 1 year with MMEC
- BS, Management and Organizational Leadership, George Fox University, 2002
- MBA, Business Administration, George Fox University, 2006
- Formerly with Hewlett Packard, Spika Manufacturing
- Experience in Electronics, Food, Medical, Metal Fabrication, Outdoor Products, etc.
- Theory of Constraints Expert
Jolene Cram
Food Safety Project Manager

- 2 years with MMEC
- Based in Boise, leads collaboration efforts with MEP centers in Idaho and Washington
- BS, Biology, Boise State University
- 23 years of experience in food industry
- Multiple food safety certifications
- Formerly with J.R. Simplot, HB Specialty Foods, and Kraft Heinz
Kathy Rich
Business Manager

- Joined MMEC in 2019
- BS, Business Administration, University of Denver
- 7 years with MSU, working concurrently with the Energy Research Institute, Center for Biofilm Engineering, and the Western Transportation Institute
- Expertise in grant accounting and fiscal management
- 12 years in hospitality sales and operations
Jenni West
Associate Director

• 14 years in Manufacturing
• 5 years with MMEC
• BA, Spanish, Western Carolina University, 1992
• MA, Latin American Studies, University of Kansas, 1994
• Formerly with Gulfstream Aerospace, Ulster Carpets, American Institute of Baking, and Export Trade Service
• Former Board President, Prospera Business Network
• Former Chairperson of Montana District Export Council
• Member of NIST MEP national working group on Cybersecurity
Paddy Fleming  
Center Director

- 28 years in Manufacturing
- 15 years with MMEC/MilTech
- Former General Manager with International Paper, Tenneco, Pactiv, BW Paper Systems
- BS Mechanical Engineering, MSU 1990
- MBA Business Management, ONU, 1999
- Former Small Business Owner
- Department of Defense, P&L, Additive Manufacturing and SBIR experience
- Former Vice Chair, Montana District Export Council
MMEC Business Advisors - 2019

West Central
Shane Cantrell, Missoula

Northwest
Jeff Pierce, Kalispell

North Central
Doug Roberts, Great Falls

Eastern
Sheri Bartz, Billings

Statewide
Dave Allard, Bozeman

Southwest
Alistair Stewart, Bozeman

9 Counties = 75% of Montana’s Manufacturing
Advisory Board

• 20 Members
  – 12 Montana Manufacturers (Voting)
  – 4 Legislators
  – 1 Governor’s Office of Economic Development
  – 1 Montana Department of Commerce
  – 1 Montana Department of Labor and Industry
  – 1 Two-Year Colleges
MMEC Advisory Board Members - 2019

- Great Falls: Ed Buttrey, Claude Smith
- White Sulphur Springs: Sarah Calhoon
- Miles City: Mike Preller
- Glendive: Laura Fleming

Columbia Falls: Jim Wright
Missoula: Kim Dudik, Stewart Hanson
Helena: Neal Blossom, Jenny Pelej, Galen Hollenbaugh, Ken Fichtler, Kirk Lacy
Butte: Jon Sesso
Bozeman: Scott Ogeka, Robert Gibson, Renee Sipple-Baker, Tracy Ellig
Billings: Jim Haider, Amanda Markle

Manufacturer Density:
- Blue - more than 10
- Yellow - less than 10
- Gray - 3 or fewer
(based on 2841 manufacturers)
More Information

- MMEC: www.montana.edu/mmec
- NIST-MEP: www.nist.gov/mep
## Native Seedster

**Objective:** Assist SBIR company in developing the Native Seedster via USDA SBIRs

**Status:** MMEC provided extensive assistance in the design of the product, supplier development and project management. Company is currently marketing the technology to farm implement manufacturers.

**Technology:** The Native Seedster was developed to harvest native seeds for use in reclamation of native grasslands. The technology leaves the harvested grass intact without damage.

**Participants:**
- USDA SBIR
- Arbuckle Ranch (Alzada, MT)
- Montana Manufacturing Extension Center

**Impact:**
- Increased Sales: $641,000
- Retained Sales: $411,000
- Jobs Created: 9
- Jobs Retained: 3
- Cost Savings: $177,000
- Additional Investments: $256,500
- Costs Avoided: $2.04 million
Problem:

Not having certification to Global Food Safety Initiatives (GFSI) and lacking the resources to fully implement compliant systems jeopardized existing sales and prevented expansion into new markets.

Solution:

Developed a project plan to accommodate a tight timeline, identified and provided external expertise, coordinated internal and external resources in the development of systems to meet organizational and GFSI requirements, and participated in the certification process.

Partners:

- Pasta Montana, Great Falls, MT
- Montana Manufacturing Extension Center
- Montana State University College of Engineering

NEEC Fees: Under $40,000

Benefits/Impact:

- Achieved the highest rating possible during certification (A rating)
- Completed project within a three month timeframe
- Retained $5 million in sales annually
- Increased sales by $1.5 million annually
- Cost savings in excess of $275,000
- New investments of over $300,000
Montana Specialty Mills

Problem:
Limited production capacity, pressure to relocate the facility, and lack of an analysis process threatened future operations and sales.

Solution:
Developed a decision making tool to compare sales forecast scenarios against different arrangements of potential equipment. The output of the analysis aided in equipment selection used to develop a facility design and capital budget for site relocation.

MMEC Fees: $4,000

Benefits/Impact:
- An analysis tool that organization continues apply
- A layout design used to develop architectural renderings
- Retained sales in excess of $8 million in sales annually
- Cost savings over $900,000
- New investments of over $900,000

Partners:
- Montana Specialty Mills, Conrad, MT
- Montana Manufacturing Extension Center
- Montana State University College of Engineering

Canola Oil made from Flathead Valley Canola
**Problem:** Applied Materials is a world leader in innovation and manufacturing of precision semiconductor manufacturing equipment. Overseas customers were demanding that the company become ISO 9000 certified in order to retain business.

**Solution:** Implement an auditable ISO 9000 Quality Management System. Required extensive employee training, mentoring, auditing and coaching.

**Partners:**
- Applied Materials – Semitool, Kalispell, MT
- Montana Manufacturing Extension Center
- Montana State University College of Engineering

**MMEC Fees:** $35,000

**Benefits/Impact:**
- $36,000,000 in retained sales
- 285 jobs retained
- $500,000 savings
- $1,120,000 invested
Problem: Growing backlog of orders and a non-lean production system was causing considerable rework, late deliveries to customers, and very long lead times to produce & finish guitars.

Partners:
• Gibson Guitars, Bozeman, MT
• Montana Manufacturing Extension Center
• Montana State University College of Engineering

Solution: Develop a lean production system that involves pull of the customer, limited work-in-process inventory, a leveled production schedule, supermarkets of parts for the assembly processes, and other best practices.

Gibson’s Sheryl Crow Southern Jumbo Special Edition

MMEC Fees: $10,000

Benefits/Impact:
- Inventory Turns doubled
- Direct labor per unit reduced 30%
- $500,000 in cash freed up, from inventories
- $100,000 invested in machinery (smaller)
- Sales increased by $10,000,000/year
- Production lead time reduced by 75%
Diversified Plastics

Problems:
1. Family-run business looking to better position the company for future opportunities.
2. In need of formal product development processes.
3. Customer coming for quality audit.

MMEC Fees: $12,000

Benefits/Impact:
- Strategic plan with buy in from management
- Formal process for product development
- Passed key customer audit
- Retained sales in of $545,000
- Cost savings over $380,000
- New investments of over $1M

Solution:
2-Day off site strategic planning session with company management. Developed strategic priorities and 3 month action plans that were status weekly. Instituted formal product development process with review and signoffs from key stakeholders.

Partners:
- Diversified Plastics, Missoula, MT
- Associated Employers
- Montana Manufacturing Extension Center
- Montana State University College of Engineering