

The Aerospace & Defense Forum

**Santa Clarita Valley Chapter Meeting  
April 25, 2023**

**"Presentation and Tour of FMI Aerostructures"**

*Tim Mickael – CEO  
Chris Grapsas – VP of Business Development*

7:15 – 9:00 AM

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The Aerospace & Defense Forum

**Who We Are...**

- An 11-year-old global aerospace and defense leadership community of over 2,400 professionals that facilitates communication, collaboration, and commerce relative to the business of A&D
- Nine chapters – Los Angeles, San Fernando Valley, Santa Clarita Valley, South Bay, Orange County, San Diego, Arizona, Dallas-Ft. Worth, and Ventura County.
- Conduct monthly meetings with presentations, panels and tours with industry leaders focused on some aspect of the business of A&D
- Our practice is to make copies of the business cards and provide them to the attendees. If you wish to do so, please place your cards in the basket



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The Aerospace & Defense Forum

**Santa Clarita Valley Economic Development Corporation  
Santa Clarita Valley Chapter  
Host and Sponsor**



scvedc.org

Holly Schroeder  
President & CEO  
SCVEDC

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The Aerospace & Defense Forum

**"Presentation and Tour of FMI Aerostructures"**



TIM MICKAEL  
CEO



CHRIS GRAPSAS  
VP Business Development

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**WHERE VISION TAKES SHAPE**




FMI Aerostructures | 27756 Avenue Mentry, CA 91356 | Office (661)257-0231 | Fax (661)257-4338  
www.forrestmachining.com

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**FMI OVERVIEW**

**Mission and Value Proposition**

MISSION	VALUE PROPOSITION
Become the <b>Partner of Choice</b> for critical structural components and assemblies for the A&D industry, by delivering <b>Best Value</b> and <b>Least Risk</b> through operational excellence, continuous improvement and reinvestment.	<p><b>FULL SERVICE</b> Provide "One Stop Shop" with Full-Service Solutions for Our Customer's Complex Parts and Supply Chain Challenges - Machining, Engineering, Assembly, Forming, Supply Chain Management</p> <p><b>RELIABILITY</b> Deliver Consistent and Reliable Performance through Operational Excellence</p> <ol style="list-style-type: none"> <li>1- Quality</li> <li>2- Delivery</li> <li>3- Service- Proactive End to End Problem Solving</li> </ol> <p><b>RISK MITIGATION</b> Focus on Human Capital &amp; Maintain Strong Financial and Asset Condition to Reduce Risk for Our Customers</p> <ul style="list-style-type: none"> <li>- Workforce is our Most Valuable Asset</li> <li>- Capacity for Growth, Pull Ins and Blue Streak Work</li> <li>- Redundant Capability for all Equipment and Personnel</li> <li>- Healthy Financials and Strong Balance Sheet</li> </ul>

Company Confidential

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### ABOUT US

FMI Aerostructures is not a typical machine shop. FMI has grown into one of the largest independent manufacturing businesses serving the A&D Industry and has built a reputation over 40 years as a trusted supply chain partner for critical structural components and complex assemblies.

Through continuous improvement and significant investment in its equipment and employees, FMI has developed full-service capabilities for the most complex and critical structures across a wide range of aerospace platforms. FMI's services include complex machining, unique large part capability, in-house programming, engineering, tooling design, advanced assembly, forming, close tolerance drilling, and supply chain management.

With 31 large bed multi-spindle gantries and 130 available spindles, FMI has capacity for growth and flex capacity to support AOG and blue streak requirements for its customers. FMI is proud to serve key A&D customers such as Lockheed Martin, Northrop Grumman, Boeing, Spirit Aerosystems, Blue Origin, SpaceX, U3, PPG and many more.

### KEY FACTS

- Established: 1978
- 240,000 SQFT
- Over 240 Employees
- 130+ Active Spindles
- 3 to 6 Axis Capability
- AS9100 Rev. D
- ITAR Certified
- BACS114 Approved
- FSMA Capability

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### MACHINING CAPABILITIES



#### Large Part Capability

FMI has developed extensive and unique capabilities to manufacture large, close tolerance components. FMI has 30 bridge gantries with 3 to 6 axis capability and table lengths up to 160 feet. Additionally, FMI has nine 6 axis mills with up to 23 ft by 10 ft machining envelope.

FMI has decades of experience machining large aluminum bulkheads for the DF program as well as very large longerons, frames, panels, spars, wing slats, and stringers for various programs including the F22, F35X, C130, New Glenn, P-8, Boeing 787 and more.

#### Hard Metal Expertise

Over four decades, FMI has built world class hard metal machining expertise enabling us to machine tight tolerance and complex hard metal structural components and assemblies.

FMI currently has 18 multi spindle hard metal gantries and over 100 spindles dedicated to titanium, Inconel, and stainless-steel manufacturing.

FMI was involved in the development phase of hard metal components for the latest generation fighters and bombers and produces components on the 787.

- FMI manufactures a wide variety of complex components and assemblies covering most alloys and parts of any size
- We machine components from alloys such as: titanium, aluminum, ceramics, Inconel, stainless steel, and copper beryllium
- Approved to BACS114 (full size determinant assembly)
- Entire 240K SQFT facility environmentally controlled
- Approved for fracture, durability, and maintenance critical components
- 3, 4, 5, & 6 axis vertical and horizontal machining
- 30 multi-axis gantries up to 160' length
- High speed machining up to 18,000FPM
- Redundant Capability for every machine



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### MACHINING EQUIPMENT



#### OUR MACHINES

With a total of 3 gantries and 130 spindles available, FMI has capacity for large programs and the flexibility to support quick turns and development projects.

- **5-Axis Gantry and Machining Centers**
  - 27 Gantry and 73 spindles for parts up to 160' in length
  - 24 Single-spindle machine centers
- **4-Axis Machining Centers**
  - 4 4-axis single-spindle machines
- **3-Axis Gantry and Machining Centers**
  - 4 Gantry and 10 spindles
  - 8 Machining centers and 16 spindles
- **5 Axis & 6 Axis Machining Centers with 360° Nutating Spindle Heads**
  - 10 5 and 6-axis nutating head machines
  - 1 6 axis trunnion table machine



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### ENGINEERING, NC PROGRAMMING & SOLID MODELING

#### DESIGN AND BUILD EXPERTISE



As a design and build to print partner, we can provide both time and cost savings to our customers.

- Develop design configurations
- Reduce machined and sheet metal components
- Reduce assembly time
- Minimize CNC set up
- Reduce manufacturing lead time

#### SOFTWARE

- Catia Version 5 Design and Manufacturing - Latest Rev.
- Unigraphics NX - Latest Rev.
- Mastercam X - Latest Rev.
- iCAM Cam post - Latest Rev.
- Vericut - Latest Rev.
- Wolium II
- Vericut Force
- Caba Enovia

In addition to our manufacturing capabilities FMI provides expert engineering support, from NC programming, 3D tooling design, design for manufacturability to 3D inspection of completed parts.







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### ASSEMBLY

FMI specializes in assembled components and has dedicated design, fixturing, and tooling engineering and programming to support simple to complex assemblies.

FMI's in-house capabilities include bushing install, reaming, bonding, complex cold working, sealants, coatings, and bracket, nut plate, click bond install.


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### OUR QUALITY GUARANTEE

FMI's Quality Policy is Zero Defects through quality by design, continuous improvement and employee engagement. FMI has developed a robust Total Quality Management System (TQM), including real time SPC, performance metrics, and advanced quality tools such as CMM and laser volumetric calibration.

#### SOME OF OUR TOOLS


- **SOFTWARE**
  - PC-DIMS (CMM)
  - VERICUT (LASER TRACKER & FAD ARMS)
- **EQUIPMENT**
  - **PORTABLE FAD ARMS**
    - FAD ARM GAGE 3FT
    - FAD ARM QUANTUM 4FT (SCANNING HEAD)
    - FAD ARM QUANTUM 6FT
    - FAD ARM QUANTUM 9FT
  - **CMMs**
    - DEA QUANTY TABLE 300 X 90W
    - DEA EPSILON TABLE 270 X 90W
    - BROWN AND SHARPE GLOBAL ADVANTAGE TABLE 200 X 90W
    - BROWN AND SHARPE EXCEL TABLE 120 X 90W
    - DEA GLOBAL ADVANTAGE TABLE 207 X 90W
  - **LASER TRACKERS**
    - AR RADIAN LASER TRACKER
    - PROBE FAD LASER TRACKER
    - PROBE LEICA LASER TRACKER




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**Recent Investment**  
*FMI is committed to deploy capital to expand capabilities and capacity and develop its People, Processes, and Systems*

CAPITAL EQUIPMENT	QUALITY INVESTMENT
<b>Nutating Head Capability</b> - SNK RB200 (x2) - SNK RB250 <b>5 Axis Machining:</b> - 7 Multi Spindle Gantries - SNK FSP120 - GROB G751 (Trunnion Table with 6 <sup>th</sup> Axis) <b>High Speed Aluminum:</b> - 2 Aerostar 18k RPM Nutating Head <b>Automated Horizontal Machining Cell:</b> - 3 Mega 5 800 HMC's - 20 cell palletized system <b>Installation of newly acquired Gantries:</b> - 5 Axis – 3 spindle	<b>Environmental Controls throughout entire 240K SQFT facility</b>  <b>Upgrading all Equipment to OEM standards</b>  <b>New CMM, Laser Tracker and Farro Arm</b>  <b>New Dedicated Metrology Cell</b>



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**The Aerospace & Defense Forum**

**Upcoming Chapter Webinars/Meetings**

- May 4: **“Building for the Digital Future of the Aerospace & Defense Enterprise”**, Bob Deragisch, Senior Digital and IT Manager (IT Regulatory Compliance and Engineering Systems), Parker Aerospace | Orange County Chapter Meeting
- May 16: **Skunkworks X-59 Supersonic Demonstrator**; Eric Schrock | Santa Clarita Chapter meeting
- May 17: **“How Boeing and Airbus Deliveries and Orders are Faring in Advance of Paris Air Show”**, George Ferguson IV, Senior Aerospace/Defense & Airline Analyst | Research Team Leader, Bloomberg Intelligence | National Online Forum webinar
- May 19: Richard Aboulafia, Managing Director, AeroDynamic Advisory | Los Angeles Chapter webinar

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**The Aerospace & Defense Forum**

**Upcoming Chapter Webinars/Meetings**

- June 20: **Tour of Aircraft Component Repair, Inc.**, Dennis Suedkamp, CEO | Santa Clarita Chapter meeting
- July 6: Garrett Reim, Aviation Week | Los Angeles Chapter meeting
- July 19: **“Aerospace & Defense M&A Market Trends & Valuations”**, Managing Director, Janes Capital Partners | National Online Forum webinar
- November 17: Jonna Doolittle Hoppes, Author – **“Calculated Risk: The Extraordinary Life of Jimmy Doolittle | Aviation Pioneer and World War II Hero”** and **“Just Doing My Job: Stories of Service from World War II”** | Los Angeles Chapter meeting

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**The Aerospace & Defense Forum**

- Individual Membership is \$350/year and provides free attendance at all A&D Forum meetings and webinars. Membership is free for those not located near one of the nine operating chapters.
- Recordings of over 250 chapter and webinar presentations are available for download by A&D Forum members.
- You can join the mailing list of any chapter for free, which will also provide you the monthly A&D Forum Newsletter.
- Opportunities to sponsor chapters or webinars are available.
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*For more info: <https://aerospacedefenseforum.org/>*

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*Thank You*

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**Q&A**

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