

## The Company

Enjet Aero manufactures jet engine precision machined and fabricated components and assemblies for the industry's most respected names including GE Aviation, Rolls Royce, Pratt & Whitney (UTC), Parker Aerospace, Honeywell, and many others.

## What Enjet Provides

There are eight manufacturing plants in North America, located close to customers. Enjet Aero has the equipment and capabilities below, and more:

- Milling
- Palletized CNC multi-task turning and five axis milling cells
- EDM drilling (sinker, wire & hole drilling)
- Fabricating (hydroformed, brake, shear, CNC Spinning and roll form)
- Assembly (tig welding, laser, and resistance welding, brazing, and riveting)
- Inspection (semi-auto, CMM's with optical inspection & airflow testing)
- Multi Axis laser cutting

## Enjet Aero's Mantra and Differentiation

Enjet Aero **invests in leading technology to drive improvements in manufacturing productivity, high product quality and on-time delivery.**

## The Challenge

To achieve benchmark performance and ensure customer responsiveness, Enjet understood there were areas for improvement in their current operations to:

- 1 Gain real-time visibility and accurate metrics to optimize shop floor performance.** Previously employees recorded data from floor processes in spreadsheets which was time-consuming and labor-intensive. Metrics were estimates, making it difficult



Investing in **VIMANA's Industrial Analytics software** is just the next step in ensuring continuously increasing efficiency, disruption management, and adaptation to customer changes.

With investment in scalable technology like VIMANA, Enjet Aero is

**“ Ready, Willing, and Able ”**

**- Perry Pecaut**

*Vice President of Manufacturing Enjet Aero - Washington, MO*

to exceed customer demands and deliver World Class Manufacturing:

### Ready

Significant investments in new technology, automation, and skilled technicians allow us to expand capacity and increase stability.

### Willing

We are prepared to take on and manage risk, enhance process efficiencies, and take the initiative as a proactive supply chain partner.

### Able

Our vast industry knowledge and expertise gives us the ability to work higher in the Bill of Materials and deliver complex assemblies.

to understand their actual performance. Reporting was not real-time, restricting their ability to make day-to-day process improvements.

### 2

**Improve low asset and production line utilization across production sites.** They needed to measure, manage, and increase utilization to drive enhanced manufacturing capacity, flexibility, and profitability.

**3 Understand the root causes of production losses to help production managers increase utilization beyond 60% .** Managers did not know why machines stopped or why part cycle times varied by operator.

**4 Take advantage of market opportunities.** Strategic company investments presented an opportunity to increase profitability and business expansion: increasing process capabilities, capacity, and responsiveness to pandemic recovery.

### Enjet's Investment in VIMANA's Industrial Analytics

Enjet saw the need to invest in new analytics technologies to reduce cost, increase capacity, and customer responsiveness.

#### Enjet's Selection Criteria for Analytics Software

Enjet's software selection criteria included:

- A proven, scalable, smart manufacturing analytics platform.
- Integration with ERP System (Epicor)
- Use case-driven solutions for real-time machine monitoring.
- Customer support from implementation to business value, lead by discrete manufacturing experts.

### Enjet's Selection, Implementation Process, and Demonstrable ROI

VIMANA met these requirements and was down-selected with several other vendors to implement a pilot in their Indiana plant. VIMANA's pilot solution offered automated real-time data collection and advanced analytics. The VIMANA Services team led them through implementation, delivered a productivity baseline analysis, and delivered ongoing support for critical use cases. The pilot successfully demonstrated improvements in asset utilization, insight into workforce productivity, and downtime. Enjet Aero chose VIMANA over the competition and scaled the solution to other manufacturing plants in North America.

## VIMANA's Industrial Analytics Solution

Enjet's operational model relies on real-time KPIs and management of asset utilization, scrap, and labor costs to achieve world-class manufacturing. VIMANA's manufacturing analytics provides real-time data and metrics to achieve high-level goals.



#### Automated Real-Time IoT Data Collection

With VIMANA's IoT Connectivity, IoT Data Collection, Data Enrichment

VIMANA automated connectivity and data collection from diverse assets and processes. VIMANA's Remote Device Management connected assets in in short order from various vendors (Okuma, Mazak, Makino, Doosan, Tsugmai Swiss, Haas, and Makino EDMs, expanding soon to legacy assets, welders, and CMMs). Automated data collection eliminates the time and resources needed to collect the data manually.



#### Optimizing Utilization Across Multiple

**Plants.** With VIMANA's Real-time KPI Metrics and Performance Management

VIMANA brings real-time visibility to critical KPIs and machine monitoring to help Enjet run its business across all manufacturing locations. Enjet established performance targets for utilization (actual run time) per asset type and shift and part production.

Custom dashboards provide real-time visibility of data to view and monitor performance actuals vs. targets and are used by Facility Presidents, Finance teams, and shop floor employees to drive continuous improvement in utilization, part cycle time, and part production.

Enjet's goal is to achieve **World-Class Manufacturing status**, which is defined as producing **17.2** hours per day/**350** days per year, or **6000** hrs/year on certain cells.

Finance managers use VIMANA's automated daily reporting and integrate with other key manufacturing metrics to provide performance insight by day, week, month and year by asset and shift to general managers and finance leaders. Every morning an email is sent that shows the percent uptime for each piece of equipment. This helps determine where improvements need to be made and what actions to take.

Production Managers measure, manage and control performance via VIMANA's real-time dashboards for real-time decision-making and day-to-day process improvement. Critical assets and production line utilization are easily managed from anywhere to ensure targets are being met. It's the real truth about performance, not estimations, and it's helping them improve day-to-day operations. VIMANA helps them 'see how they are doing' everyday.

VIMANA provides insight into actual part cycle time (actual time spent to make a part) and the number of parts produced. The part metrics and programs bring clarity to the production duration across different program numbers, helping to drive improvement.



### **Improves Workforce Productivity and Performance.** With VIMANA's Real-time and Historical Reports. Predictive Analytics.

VIMANA provides real-time insight into planned and unplanned downtime, the duration, and comparison to the baseline. It reveals what is affecting production loss. Is it lack of utilization, shift variation, i.e., the 3rd shift does not have enough operators, or the impact of preventive maintenance or equipment failure. Automated and operator-driven classifications provide deep insights into downtime reason codes and help plan the next steps accordingly.

Predictive insights and alerts help control processes and proactively manage operational risk. Automated machine learning and advanced data analytics provide insights beyond what can be seen by the human eye for data-driven decisions and predictions for early action.



### **Improves Workforce Productivity and Performance.** With VIMANA's: Operator Control Panel, Dashboards, and Shift Analysis

Operators use real-time performance dashboards to manage and control daily work and productivity.

VIMANA brings visibility to unattended run hours more accurately by tracking productivity and comparing baseline metrics of lights out producing time to optimize run time.

VIMANA shift analysis and comparisons provide insight into significant variations in productivity across shifts revealing operator training needs as well as rewarding and standardizing best practices.

VIMANA's analytics helps define the resources needed, assessing if orders require one shift vs. multiple (reducing required resources) to be produced on time.



### **Drive Proactive Management** With VIMANA's Predictive Analytics and Alerts

Automated alerts communicate risk to production. Enjet uses Alerts and notifies appropriate teams if machines are operating at lower speeds, unknown downtime exceeds 30 minutes, or if machines have not been producing for more than 2 hours.

Machine alarms trigger automated alerts to notify the proper department as soon as warnings or faults occur.

Alerts based on machine alarms help track machine health. VIMANA helps prioritize alerts by sorting based reason code, the number of alerts, and the most significant downtime duration.

Enjet compiles alarm data weekly so leaders can dive in on asset or coding problems.

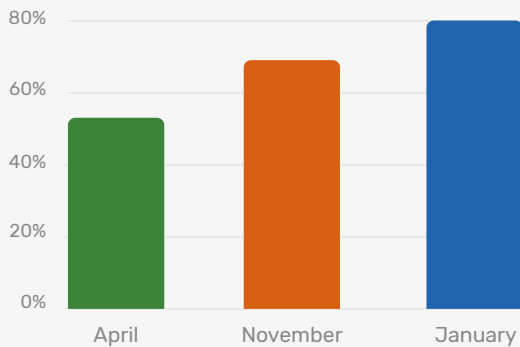
Operators augment automated reasons codes with their expertise to uncover more profound insights into downtime.

## VIMANA Delivers Real Business Outcomes

VIMANA has helped Enjet navigate change (disruption from Covid, supply chain issues, labor shortages, volatile demand) and transform their manufacturing operations to achieve World-Class manufacturing and enable the flexibility needed to exceed customers' expectations.

**Increased utilization.** This improvement resulted in less equipment and labor required to produce the same parts, driving profitability and competitiveness upward.

**Improved utilization of critical assets** from 53% in April to 69% in November and 80% in January.



- Invested **\$7M** on **4** machines in one line. This line must run to be profitable and without Vimana alone you can fool yourself into thinking you have the line fully utilized.

**Reduce asset unplanned and planned downtime**, which enabled increased capacity and availability in 6 months by 35%.

- Producing hours increased from 1272 hours to 1821 hours monthly (improvement by **43%**).

### Improved Workforce performance and productivity

- Improved employee morale: Two operators overachieved performance targets and received a \$1-2/ per hour increase in salary.
- Improved unmanned asset productivity by managing against targets and increasing production during operator breaks.

- Monitor cycle time by part serial number.

### Reduced costs by

- Optimizing asset footprint - consolidating machine tools and related costs. They are doing the same job with fewer resources.
- Increasing profitability and revenues by acquiring the best among small operators for a unified company with their core competency of making multi-part assemblies.

**Enjet has expanded their manufacturing** processes to include hydroforming, CNC Spinning lasers and added new strategic customers to their base.

- Using VIMANA contributed to investing in 2 new manufacturing plants and improved processes and efficiency across the operation.



**"We would not be where we are today without VIMANA. You have to run machines to be profitable; VIMANA helps us do that. We're excited about VIMANA and their response time; it's a game-changer."**

**IMPROVE YOUR MANUFACTURING OPERATIONS TODAY**

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