

# MERLIN on Every Machine

## Improves Plant's OEE by over 100%

### ROSE INTEGRATION PROFILE

Founded in 1980, Rose Integration is a major supplier of precision machined components and complex mechanical assemblies to the defense, drilling, mining, nuclear, aerospace, rail, and communication markets. Headquartered in Carleton Place, ON, Rose Integration operates

24/7 to serve customers located in U.S. Northeast, Ontario and Quebec. Rose Integration is renowned throughout the industry for machining medium to high complexity components and specializes in working with difficult and rare materials such as Monel, Orkot, Inconel and Titanium.

### BUSINESS SITUATION

Rose Integration is certified to the AS9100 Revision C and ISO 9001 quality standard. The company prides itself in maintaining a legendary reputation for high quality product and excellent product traceability. So much is Rose Integration's commitment to quality that Continuous Improvement (CI) has become an integral part of the company's quality culture. The process of ensuring accuracy and precision for each job begins with an Advanced Quality Planning, followed by process inspection and ending with a final inspection.

Furthering this initiative, Rose Integration has adopted the philosophy of "Support the Internal Customers". Thereby recognizing their internal customers, the machine operators, as the focal point for maintaining and improving the efficiency for the entire plant.

### TECHNICAL SITUATION

Rose Integration was a traditional manufacturing company that had 30 machines all operating independently as islands of automation. There was no network on the shop floor and very little visibility on what was going on at each machine.

As a major supplier of complex mechanical assemblies and with many different high-component products being manufactured, Rose Integration needed a technology platform that would improve machine productivity and accurately track cycle time. This would allow its team to measure exactly what was happening in production.

New management realized that a change was needed to improve machine productivity. They decided to focus on precision manufacturing and deploying tools to assist in achieving the highest quality product possible, all the while maintaining stellar manufacturing efficiency.

The team also wanted a system that could track performance, allowing them to improve their estimating abilities and cost accuracy, all through Continuous Improvement and lean value-stream mapping techniques. In addition, they preferred the capability to monitor performance remotely.



MERLIN is an IIoT Shop-Floor-To-Top-Floor communications platform that provides manufacturing analytics in Real-Time.

## SOLUTION

MERLIN by providing local memory, embedded software, high speed network connectivity, real-time automatic machine state and utilization data collection, enables connectivity across a shop floor or multiple shop floor resulting in enhanced and improved machine tools. MEMEX's MERLIN shop-floor-to-top-floor communication platform matched all the requirements stipulated by Rose Integration, which led the company to deploying:

- MERLIN software for OEE dashboard and reporting metrics
- MERLIN Ax9150 Universal Machine Interface connected to a control for OEE Machine Monitoring
- MERLIN Ax750 I/O Link Fanuc Interface Board for ease of installation on Fanuc i-Series Controls
- Handheld HMI for downtime recording

Rose Integration, in 2009, initially installed MERLIN on six machines to learn how to interpret the new efficiency data and improve production processes with it. An analysis of the MERLIN metrics from the nightshift revealed that because the shift was unsupervised, operators were less driven to improve output. MERLIN allowed the manufacturing team to legitimately question and keep track of this shift. They saw a 20% gain in efficiencies within a week of installation, and then saw another gain across the board over the course of a year. This resulted in MEMEX becoming the trusted supplier for OEE and connectivity. The company after witnessing such dramatic positive changes scaled up the entire plant and increased OEE by over 100%.

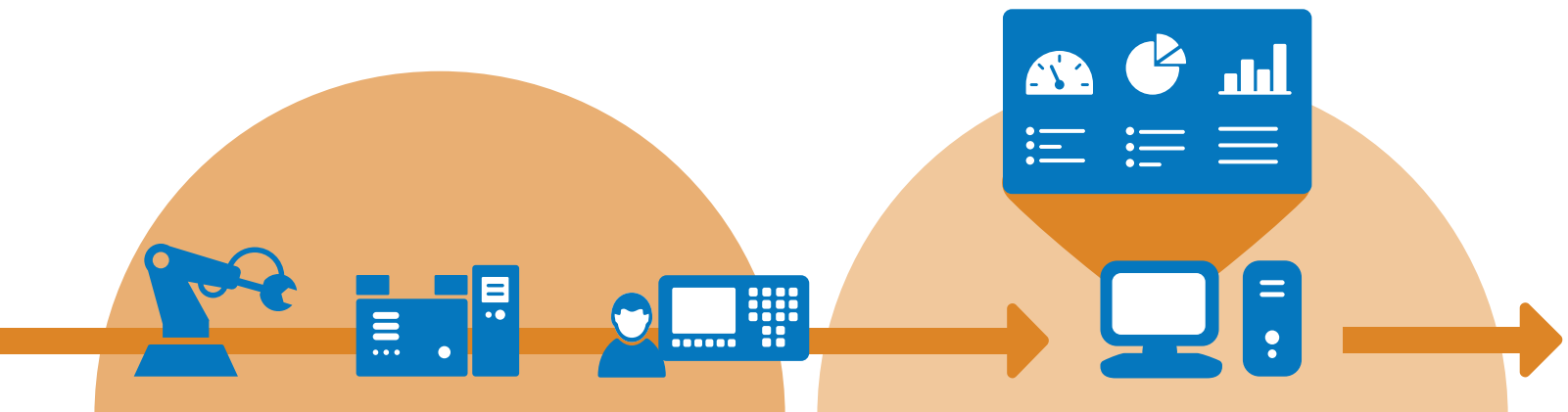
MERLIN allowed Rose Integration's management team to track availability, performance, and quality with a full traceability of the exact clock for all the defined events on the machine, enabling a detailed log of exactly what happened.

Some of the MERLIN-enabled improvements included:

- Establishment of a fully connected manufacturing nervous system that provides Real-Time visibility of production and the ability to adapt and react quickly to control each machine
- Every machine tool being monitored from any network or remote based computer
- Advanced reporting with text and email alerts to key management, alerting them when a machine has breached a pre-set operating parameter
- Traceability of the complete manufacturing process now documented in a report
- A hand-held unit tracks key performance indicators like user-defined time loss categories such as unscheduled maintenance, downtime reason codes, or setup
- Standardized on one OEE solution throughout the plant

**MEMEX is an IIoT leader  
that offers MERLIN,  
an Industrial Internet of Things  
software communications platform  
that provides  
manufacturing analytics  
in Real-Time.**

## Data-Driven IIoT Manufacturing



## BENEFITS

Internetworked machine monitoring typically leads to an increase in shop floor efficiency, or Overall Equipment Effectiveness (OEE). The effective deployment of Real-Time OEE automated data collection with MERLIN has resulted in the following benefits at Rose Integration:

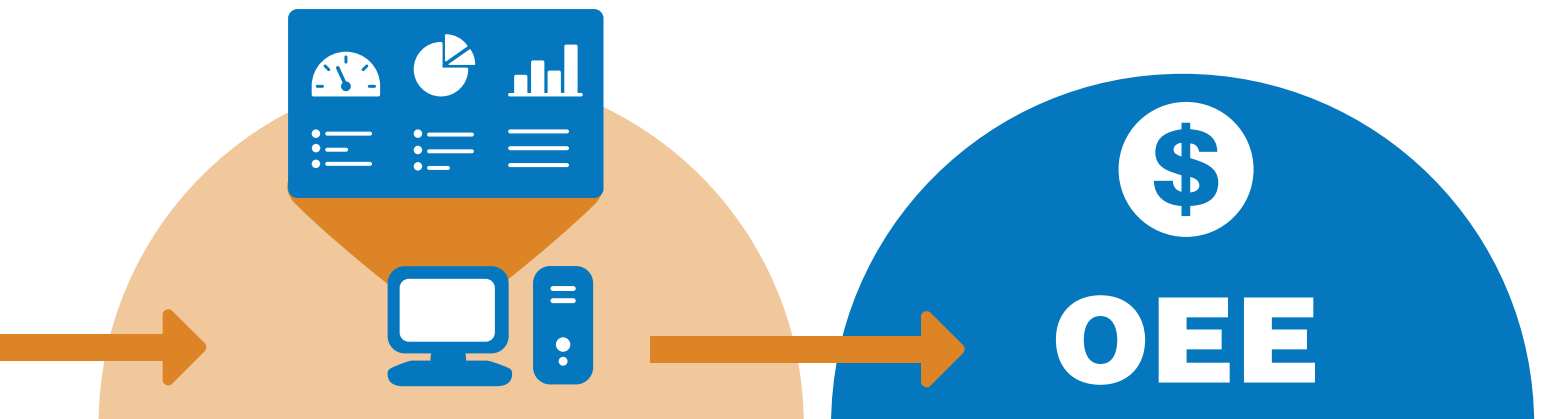
- Over 100% improvement in shop floor efficiency as measured by OEE, therefore improving capacity and saving the need to buy additional CNC machines, representing significant cost savings and saving on physical space
  - A clear traceability and logging of all machine operations ensures that the process has been validated and recorded, building confidence with their customers and generating more business
  - Comprehensive shop floor visibility with a dashboard of metrics on wireless PC tablets, allowing for Real-Time evidence-based decisions to be made right at the machine or the cell
  - 20% reduction in down time due to first off part inspection time before release to production
  - 24/7 shop floor accountability / visibility for all shifts and a culture of supporting the operator's processes. Operator's paid bonus based on machine utilization as tracked automatically by MERLIN
  - Rose Integration went from 40% OEE to 82% OEE plant wide
- Monitoring of important profit centered metrics automatically in the background, such as OEE, quantity of setup time, machine idle time, operator performance, and more
  - Emails sent automatically from the machine or operator when actual Real-Time shop floor data is outside the present limits, which allows for immediate corrective action to be taken with various departments such as Quality, Engineering, Maintenance, Shipping, Tooling, Materials and Programming
  - Unified objective data collection and reporting across disparate machines and processes
  - Part counts are all automatic at the machine with no operator involvement, ensuring accuracy of information to operations and product standard planning groups
  - Tracking accurate cycle time of the machines allowing exact production measurement
  - Tracking performance that improves estimating abilities and cost accuracy, all through continuous improvement and lean value-stream mapping techniques



*“MEMEX’s customer service people are very fast at responding night or day and they stay on it until an issue is resolved.”*

*- Ryan Bishop, Operations Manager, Rose Integration*

## From Shop-Floor-To-Top-Floor



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## ABOUT MEMEX™

The Industrial Internet of Things (IIoT) powered by machine to machine (M2M) connectivity coupled with software capable of collecting, analyzing, and intelligently presenting streams of manufacturing data represents no less than the next Industrial Revolution. MEMEX with its visionary attitude has been on the leading-edge of the convergence of the industry trends in Computing Power, Connectivity of Machines, Industry Standards, Advanced Software Technology, and Manufacturing Domain Expertise. Leading this transformation is MEMEX Inc., the developer of MERLIN, an award winning IIoT technology platform that delivers tangible increases in manufacturing productivity in Real-Time.

MEMEX, with its comprehensive understanding of the manufacturing industry, is the global leader in machine to machine connectivity solutions.

Committed to its mission of “Successfully transforming factories of today into factories of the future” and encouraged by the rapid adoption and success of MERLIN, MEMEX is relentlessly pursuing the development of increasingly innovative solutions suitable in the IIoT era. MEMEX envisions converting every machine into a node on the corporate network, thereby, creating visibility from shop-floor-to-top-floor.

MEMEX, with its deep commitment towards machine connectivity, offers solutions that are focused on finding hidden capacity by measuring and managing Real-Time data. This empowers MEMEX’s customers to effectively quantify and manage OEE, reduce costs and incorporate strategies for continuous lean improvement.



### PRODUCTIVITY

10%-50% average productivity increase



### PAYBACK

payback in less than four months with an Internal Rate of Return (IRR) greater than 300%



### PROFITS

20% + profit improvement based on just a 10% increase in OEE



### CONNECTIVITY

connects to any machine, old or new

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Contact MEMEX to implement IIoT data-driven manufacturing now.



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**MEMEX**  
Measuring Manufacturing Excellence™

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