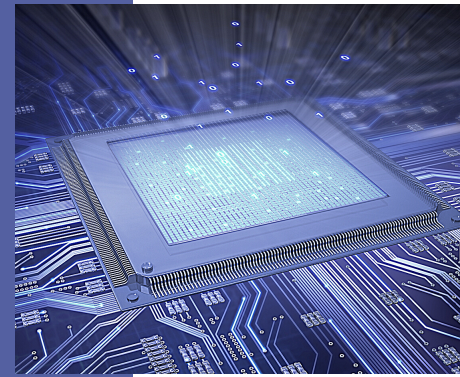# IIOT AND EMBEDDED SYSTEMS SERVICES

ABOUT US

Our expertise in complete end-to-end solutions positions us uniquely to cater to evolving customer needs in the digital era.

You can leverage Triniti's offerings spanning the physical layer to the cyber layer, including embedded systems design, integration, deployment and maintenance.

We are a business and application consulting firm that enables enterprises to improve their performance through various data driven solutions.

Our services in embedded systems are designed to assist customers along the complete project lifecycle, from conceptualizing, architecting, design partitioning, development, verification, and validation. We also support deployment and maintenance services for system integration solutions, thus covering a complete delivery spectrum.

www.triniti.com

info@triniti.com

Get in touch today for a free consultation on how to get started

OUR EMBEDDED SYSTEMS SERVICES

SYSTEMS ENGINEERING & DESIGN

- System Level and Sub-System Level Requirements Specifications (Elicitation & Remediation)
- CPLD/ FPGA – Design & Verification
- Circuit Design, Analysis & Simulation
- ECAD (Schematic Entry & Layout)
- Signal Integrity Analysis (Pre & Post layout)
- Firmware/ Low-Level Device Driver Development
- Bootloader/ BSP Customization

NEW PRODUCT DEVELOPMENT (NPD)

- Product Concept to Architecture/ High-level Definitions
- Design Partitioning
- Critical Component Selection
- Design Implementation and Testing
- Prototyping Support
- Compliance Testing Support (including Test Planning, Issue Resolutions & Reporting)
- Post Release Maintenance and Support

VALUE ANALYSIS VALUE ENGINEERING (VAVE)

- Design Review & Analysis
- Redesign for Cost, Design Optimization
- Supply Chain Optimization

LIFE CYCLE ENGINEERING

- Product Sustenance/ Maintenance
- Issue/ Service/ Change Request Ticket Management System
- Component Obsolescence Management
- Product Lifecycle Management
- CPLD/ FPGA Retargeting/ Porting
- Quick Turnaround Redesigns

VERIFICATION AND VALIDATION

- Test Planning
- Product/ System Level and Design Level VnV
- Board/ Hardware Characterization
- EMI/EMC Test Planning and Support
- Environmental Test Planning and Support
- Safety Test Planning (Board Level and Product/ System Level)

HISTORY

We are a business and application consulting firm that enables enterprises to improve their performance through various data-driven solutions. With the advent of Industry 4.0 and Triniti's strong intent to help customers integrate business and operations data, we have ventured into value-adding Industrial Internet of Things (IIoT) solutions. Right from identifying the proper hardware to acquiring the operational data, data communication, data insights, analytics, and integration with the business systems, we provide end-to-end solutions and services.

DAIRY PLANT MONITORING SOLUTION

Smart IoT-powered monitoring in the perishable goods industry creates a transformational opportunity driven by advanced analytics and data-driven practices. These solutions, such as centralized plant level monitoring, Critical Control Point (CCP) monitoring and equipment utilization monitoring, strengthen the operational aspects of the industry and improves decision-making. It thus enhances the overall plant productivity and enhances brand value. Below are the features and value proposition of Triniti's Dairy Plant Monitoring Solution -

BENEFITS

Configurable online dashboards for entire plant processing chambers & silos (e.g., CCP parameters, door events, levels, etc.)

Energy utilization monitoring

Scalable solution for geographically distributed plants

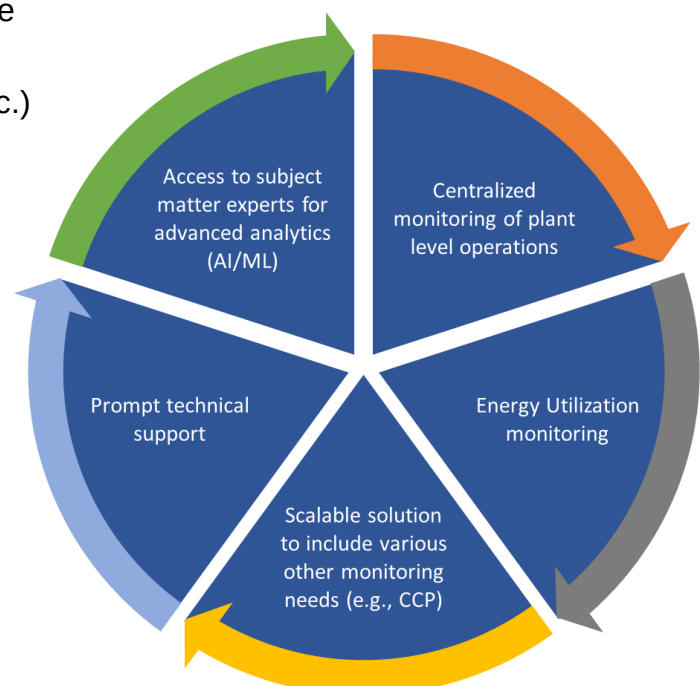Configurable alerts, smart alerts management and audit logs

User & role management for additional security

Custom analytics

VALUE PROPOSITION

Access to subject matter experts for advanced analytics (AI/ML)

Centralized monitoring of plant level operations

Energy Utilization monitoring

Scalable solution to include various other monitoring needs (e.g., CCP)

Prompt technical support

OIL CONDITION MONITORING SOLUTION

Our end-to-end industrial IoT solution captures lubricant oil quality parameters and provides continuous visibility. Lubricant oil's cleanliness is critical to machines' performance and life. If undetected, it can lead to unplanned downtime & unwanted machine failures. The Online Oil Condition Monitoring solution continuously **monitors oil health**, specifically **oil particle contamination**. We utilize advanced sensors that can easily integrate for overall oil condition monitoring.

Oil contamination caused due to small particles of size up to **4u, 6u & 14u** is challenging to detect through the naked eye and requires an advanced-level sensor. A manual oil sampling at periodic intervals through an oil sensor installed on the machine serves the purpose of contamination detection but it is time-consuming and prone to human errors.

Close monitoring of oil quality is imperative to avoid unplanned downtime & unwanted breakdowns.

OIL CONDITION MONITORING SOLUTION BENEFITS

Multiple Advanced Oil Quality Sensor Integration with Ease

Visual Oil Cleanliness Parameter Monitoring on Our *INSIGHTS PORTAL*

Various Alert Mechanisms Configured to Indicate Breaches

Reduced Dependency on Offline Oil Analysis

Reports for Historical Alerts Data Logs by Individual Machine

ENERGY MANAGEMENT SOLUTION

Energy Consumption Monitoring is one of the critical challenges for any manufacturing business. Electricity cost in most of the manufacturing processes is a significant contributor to the overall operational cost. Our Energy Management Solution lets customers optimize energy consumption and enhance operational efficiency.

SMART ENERGY MANAGEMENT SOLUTION BENEFITS

ELIMINATE INEFFICIENCIES

- Department wise sub-metering
- Specific energy monitoring
- Demand monitoring & insights
- Eliminate energy leakages by identifying inefficient systems/ appliances

PREVENT PENALTIES

- Reduce peak demand
- Reduce penalties due to reactive energy/ PF
- Reduce Time of Day tariffs

IMPROVE POWER QUALITY

- Perform phase balancing
- Monitor quality of power, i.e. frequency & power factor
- Identify voltage/ current fluctuations

REAL-TIME ALERTS & REPORTING

- Alerts on threshold crossing
- Identify malfunction or damage
- Configurable alerts for abnormal conditions of critical energy parameters
- Custom analytics based on AI/ ML with smart reporting

MEETING GOALS & COMPLIANCE

- Safer machines and people
- Energy KPIs & OPEX monitoring
- Energy Accountability

FEATURES OF ENERGY MANAGEMENT SOLUTION

- Real-time energy data monitoring and control

- Integrate multiple energy parameters.

- Obtain data charts and visualizations to identify and mitigate operational inefficiencies by taking strategic actions.

- Advanced data analytics gather and process data to develop energy consumption patterns, compare historical consumption, and predict future energy needs.

PLANT MANAGEMENT SOLUTION

Industrial Plant Maintenance is at the core of efficient output and asset productivity. Workflow efficiency and equipment readiness at any industrial plant depends on a top-notch professional program managed by the best preventive maintenance scheduling and inventory controls.

Triniti provides expert engineering services that support your plant operations and maintenance for continuous profitability and sustainable growth

PLANT MANAGEMENT SOLUTION BENEFITS

OEE insights – machine/ line/ plant level

Drill down to individual parameters

Web based interactive data entry

On-demand reports & customizable alerts

Historical data visualization

Multiple user levels for restricted access