

Achieve Operational Excellence



Work with Emerson's Operational Certainty Consultants to develop a digital blueprint that ensures your path from vision to measurable success is clear.



Many organizations invest in systems to improve their operations, but they often fail to realize the expected return on those investments: Up to 70% of initiatives fail.¹ So, how do you succeed? Connect your systems together, effectively embed them within their standard operating procedures, utilize the systems' full capabilities, and work with the right team.

What sets Emerson's Operational Certainty Consulting team apart? We understand the broad opportunities the implementation of advanced technologies represents, we demonstrate the application and industry-specific expertise to develop pragmatic solution architectures that leverage existing infrastructure and accelerate returns. Operational Certainty Consultants possess the specialization and have resources for end-to-end execution required to fully realize a successful digital transformation, providing guidance with the ability to deliver.

Through proven, flexible, yet repeatable methodologies we bridge visioning, change management, IT/OT convergence, and system architecture. Operational Certainty Consulting helps clients quantify their business improvement opportunity and create a scalable, achievable roadmap, and we stay involved from proof of concept to enterprise roll-out to ensure that your initiatives are successful.

This collaboration results in a digital infrastructure that empowers workers with higher quality, faster decision-making capabilities to accelerate value creation. Beyond the enabling infrastructure, we will also develop a thorough assessment of the organizational changes that are required for full realization of the benefits, ensuring best-in-class behaviors are adopted.

Operational Certainty Consulting can lead you to Top Quartile Performance:

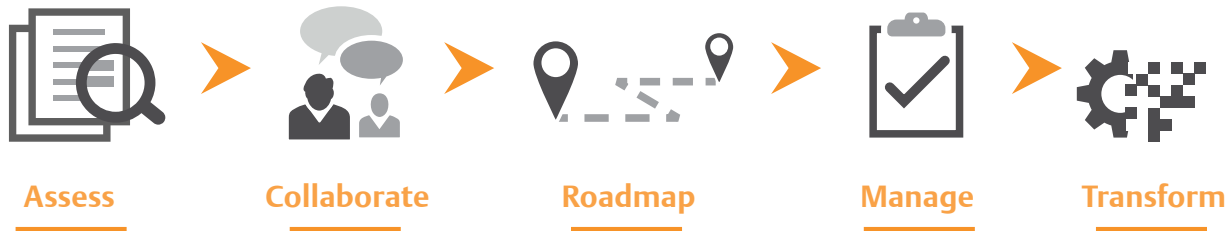
- Develop a roadmap to navigate to digital transformation
- Discover how to integrate IIoT technologies
- Establish the best approaches for Top Quartile reliability, production, and sustainability
- Update organizational work practices

Navigate your digital transformation

Digital transformation can be an ambiguous topic. In surveys of business leaders two factors for smart investment stand out:

- Start with a thorough understanding of current capabilities across the organization versus “best in class”.
- Create a clear, actionable roadmap: with unique and prioritized investments based on business objectives increase the probability of success.

Our consultants use their expertise, a proven methodology, and proprietary intellectual property to lead you to operational excellence. Our team assesses your current state, influencing business drivers, and includes ongoing projects. Working with your leaders we will help outline your desired end state, evaluating your capability requirements and aligning outcomes in support of business strategies. Each journey is unique with seed projects, phased implementations, and integration with major events and interdependencies. Finally, it is important to remember that this is a journey, and although the end point may remain firm, the path will not be static: new and changing technologies, personnel changes, and changing business climates can be guided and adjusted by our experienced engagement teams providing joint program management.



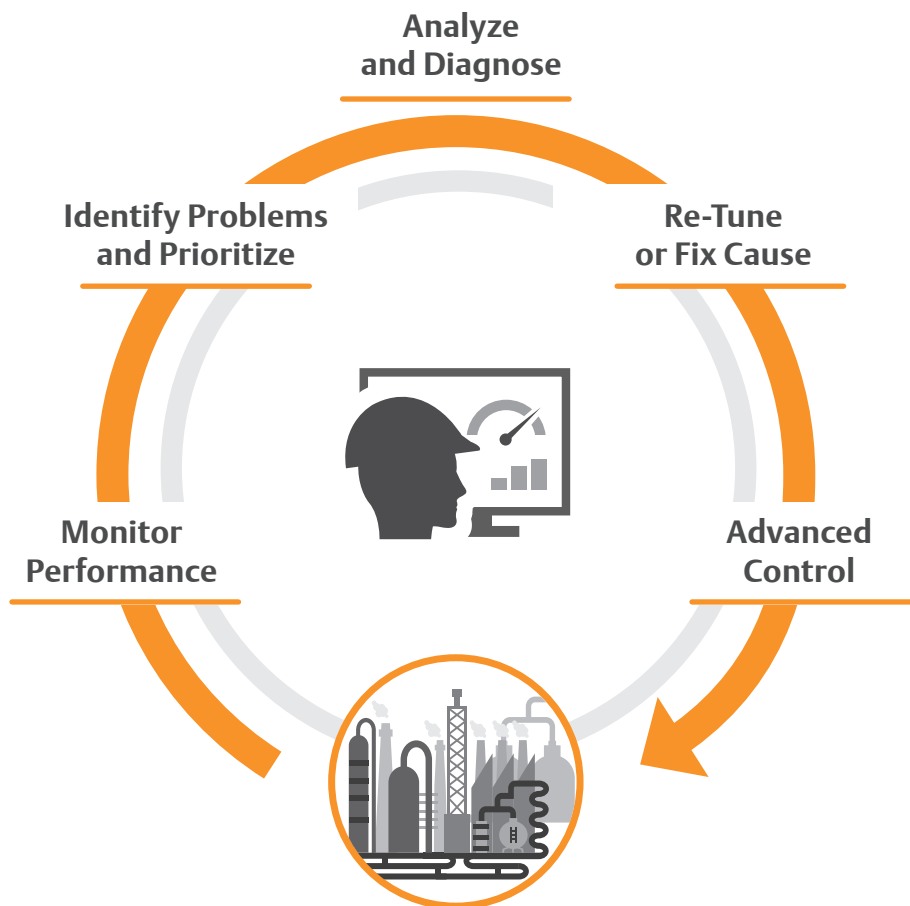


Integrate IIOT technologies

Strong data management expertise is essential to address digital transformation needs with automation and software content; such projects require solution architecture and data integration capabilities. Our consultants specialize in designing, implementing, and supporting real-time, historian based, reporting and integration solutions. We specialize in system design, reporting and analyses, tool implementations, production data integration solutions and customer software development. Our focus is to help your organization use real time data to monitor and manage performance and identify optimization opportunities. Our implementations allow clients to make educated, site-specific production and operational decisions based upon the analysis of real time data from integration of plant systems. Our expertise is key to developing a repeatable, programmatic approach and for consistent delivery.

Optimize production performance

Some of the unique behaviors of Top Quartile (in the top 25 percent of their industry peers) production performers include control performance metrics rigorously tied to production and business KPIs, accountability using real-time techniques, embedded expertise such as real-time continuous production planning and decision support tools in closed loop control. No single solution set fits all needs and our Operational Certainty Consultants can help you assess which behaviors will minimize variable operating costs, while improving your economic yield, rates and agility for effective production and to produce the necessary inventories for your processes.

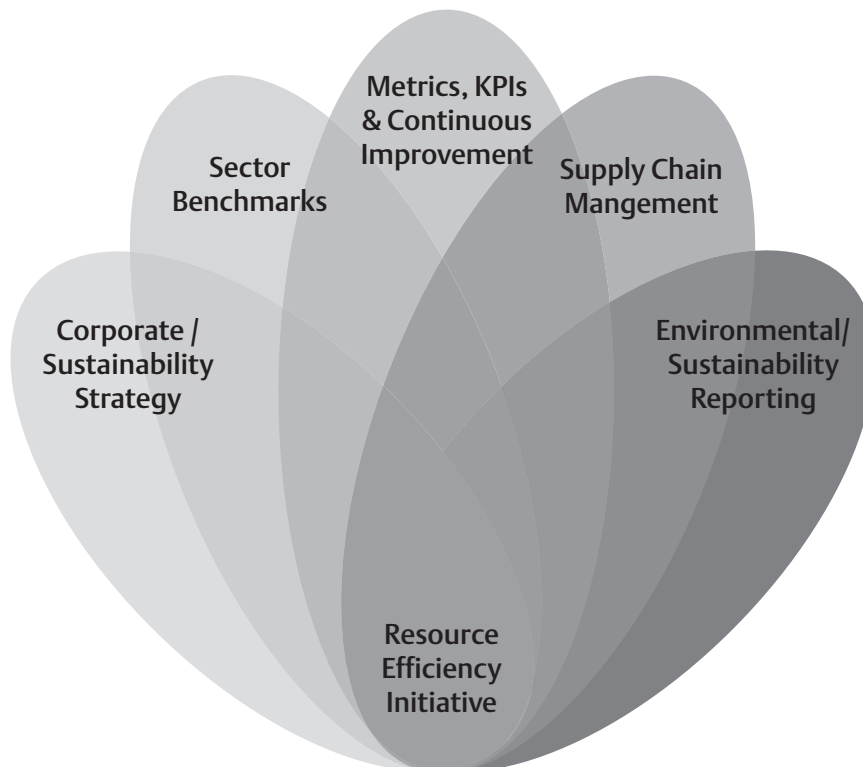


Achieve sustainability

Industrial energy

A compelling rationale exists for improving performance through EBITDA around Reliability, Production, Energy & Emissions, and Health, Safety, Security, & Environment. Emerson's Operational Certainty Consultants are experts with patented solutions at both the site-wide level for energy management information systems and at the plant level for boilers, compressors, fired heaters, and other energy intensive assets.

Do you need help? Eliminating nuisance and cascade trips, stabilizing boilers and steam headers on automatic, quickly responding to demand/process upsets, optimizing least cost fuel use (especially when waste or alternative fuels are involved), allocating load to units by cost, managing and optimizing tie-line / electric contracts, maximizing efficiency and minimizing overall cost, and identifying abnormal energy performance immediately? Operational Certainty Consultants are the ones to call.





Resource efficiency

Today companies in resource-intensive industries are facing both regulatory, social and environmental pressures to reduce CO₂ emissions and become more circular while remaining profitable. Managers are under increasing pressure to quantify the resource efficiency, but they struggle to come up with a meaningful metric. Today common practice is to optimize energy around balances between fuels cost and product output. Separately optimizations are performed around materials input, to outputs of products, by-products and wastes focusing on individual assets.

To get a better knowledge on network complexity and resource interactions, Emerson and the University of Cambridge have partnered to develop a resource efficiency solution founded on established thermodynamic methods: a new method to analyze whole systems as opposed to single assets and a single thermodynamic metric (exergy) to optimize energy and material use. We capture interactions between resources and system complexity, which is necessary to measure real efficiency improvement potential. Utilizing a thermodynamics-base means we provide a more realistic picture of efficiency and can develop deeper insights into process losses. Taking sustainability and decarbonization seriously also enables our clients to: prevent future regulation, reduce legal risk and liability, open new markets, differentiate themselves, attract employees, shareholders and customers who share similar environmental values.

Uncover the best reliability approach

New technologies, specific outcomes desired, and budget restraints can drive one reliability approach over another:

Transformational program

Recently in the building of a greenfield plant, a client aspired to the goal of “no unexpected downtime” to meet corporate safety, environmental, and production goals. In this case, a traditional approach was the most comprehensive, possibly the most expensive to implement completely, yet it delivered the significant savings and increased production. This approach is also appropriate on the opposite end of the spectrum. After a plant has been in operation for many years, the actual location and type of assets may be buried in a paper trail that may be hard to follow. If not adjusted over the years, the maintenance approach may not be optimized. The emphasis of the approach is to understand what and where assets are located, understand their criticality, clean the data and load it into the CMMS. In addition, there is considerable savings associated with MRO spares management and increased production / decreased downtime changing from a corrective to a predictive maintenance program.

- **Business Process Design**
- **Gap Analysis**
- **Foundational Data**
- **Reliability Strategy**
- **MRO/Inventory Management**
- **Training & Skills Development**

Agile reliability

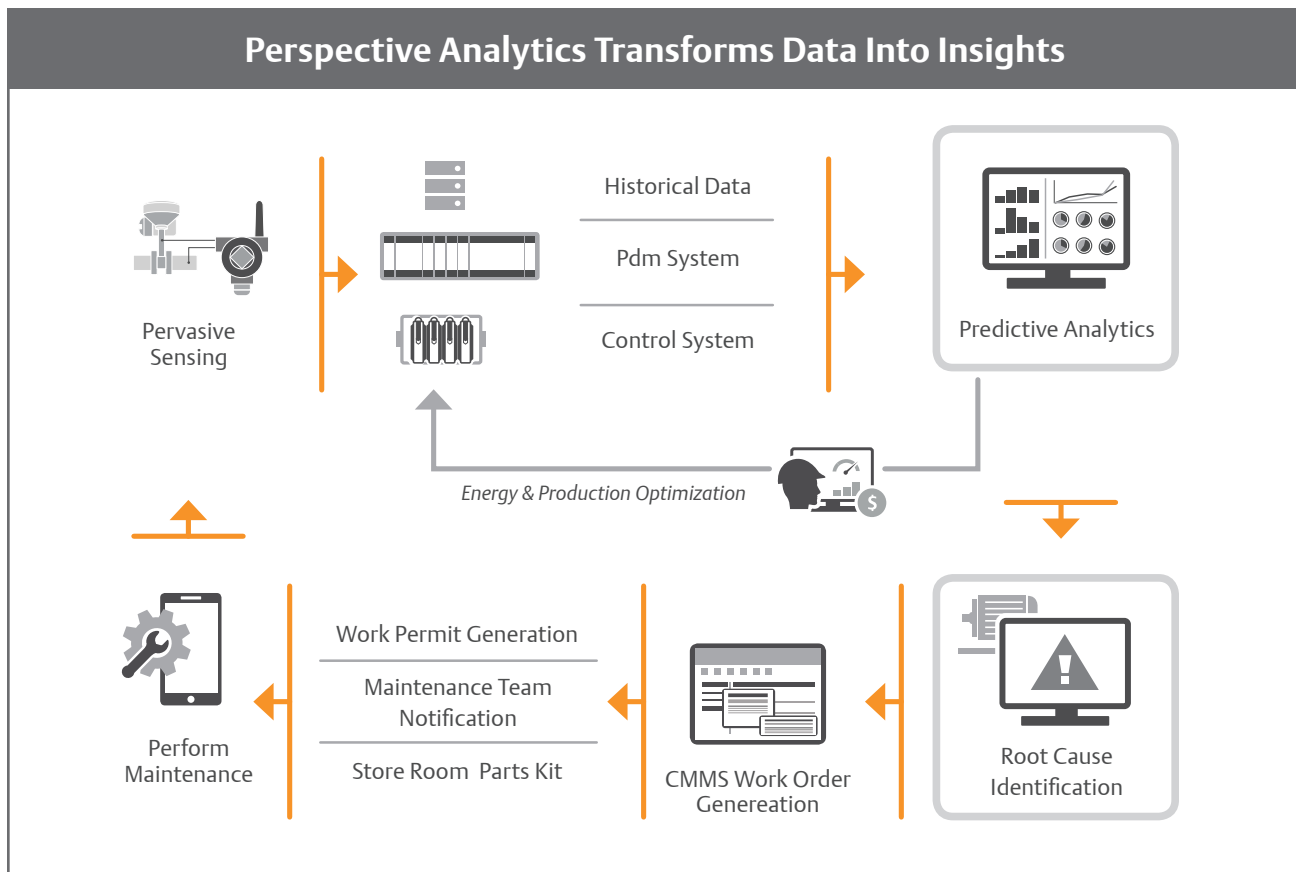
If you ask any operator, they can tell you which assets are the bad actors. The Agile Reliability approach focuses only on the near-term and stand-alone projects. It addresses one element at a time: one bad actor to fix, and then you move on to another. This approach can bring quick rewards when budgets are constrained, and you need successes to move forward.

Analytics

With new technologies such as machine learning and artificial intelligence; prescriptive operations can be a great approach for the best reliability outcome. It enables both the Operations and Maintenance teams to ensure asset health and minimize lost production by making data-driven decision and taking early actions.

Most plants today deploy a wide array of data collection techniques, feeding thousands of data point to either the control system, the Pdm system or the data historian. The Challenge is that people cannot make good decisions balancing more than 3-4 variables at a time (cognitive science.) AI is essential to analyze this data in a way that will help to predict not only a potential failure by also identify the root cause, and enable the team to resolve the problem quickly and efficiently.

What is the best approach to reliability? What are you doing in your facility? What are your goals and boundaries? Any of these approaches can bring you some degree of success but choosing to do nothing insures eventual failure. Our Operational Certainty Consulting reliability experts can help guide your transformation.





Engage Emerson Operational Certainty Consulting to conduct an assessment of your needs. Create the foundation and a roadmap for deploying for your operational needs, drive performance to top quartile, and exceed your expected returns on investments.

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