

Smart Process Manufacturing

Digital Innovation for Operational Excellence



The Challenge

Process manufacturers face intense pressure to improve efficiency and safety while managing costs and compliance. With hydrogen costs needing to drop from \$5/kg to \$1.5/kg by 2030, operational efficiency gains are critical. Yet 53% of executives cite skilled worker shortages, while legacy systems and data silos limit optimization opportunities.

Digital Solution Framework

- **Real-Time Monitoring**
IoT sensors on critical equipment provide continuous visibility into temperature, pressure, and vibration data
- **Predictive Analytics**
Machine learning forecasts equipment failures, reducing unplanned breakdowns by 70% and maintenance costs by 25%
- **Digital Twin Technology**
Virtual process models enable risk-free testing of optimization strategies before implementation
- **AI-Enhanced Control**
Advanced algorithms optimize multiple variables simultaneously for energy efficiency and yield maximization
- **Unified Data Platform**
Integration of production, quality, and maintenance data breaks down silos for holistic visibility
- **Automated Compliance**
Digital systems generate compliance reports automatically reducing administrative burden

Proven Results: Hydrogen Production Case Study

Challenge

Mid-sized facility with high energy consumption and frequent electrolyzer downtime

ThoughtFocus Solution

IoT-driven optimization platform with predictive maintenance and digital twin simulation

Results Delivered

30%

reduction in
unplanned downtime

15%

decrease in
maintenance costs

10%

improvement in
energy efficiency

8%

increase in
production output

Zero

equipment-related
safety incidents

\$2.5M

annual savings with
<12 month payback

Strategic Benefits

- **Immediate Gains**
Enhanced efficiency and safety within existing operational frameworks
- **Competitive Edge**
Data-driven optimization capabilities that competitors using standard systems cannot match
- **Risk Reduction**
Predictive monitoring prevents costly incidents and ensures compliance
- **Knowledge Capture**
Systems preserve expert knowledge as experienced workers retire

Implementation Approach

- **Assessment**
Identify high-impact optimization opportunities
- **Modular Deployment**
Phased implementation minimizes disruption
- **Seamless Integration**
Solutions enhance rather than replace existing systems
- **Change Management**
Comprehensive training ensures successful adoption

Transform Your Operations

Digital transformation is no longer optional. It's essential for competitive survival in process manufacturing. ThoughtFocus combines deep manufacturing expertise with cutting-edge digital capabilities to convert operational challenges into competitive advantages.

Ready to unlock your manufacturing potential?

Contact ThoughtFocus to discuss your digital transformation journey.

Let's talk.



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ABOUT THOUGHTFOCUS

ThoughtFocus helps forward-looking companies and organizations in the financial services, manufacturing, and higher education /public services sectors innovate and achieve better future faster. ThoughtFocus' innovative and cutting-edge technology solutions enable its customers to deploy new capabilities faster, deliver better user experiences, and drive operating efficiencies. We do this through executional excellence and mitigating the risk of change. With headquarters in the U.S., the company has more than 3,000 employees in locations spread across five countries.

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