

ENGINEERED SOLUTIONS

CASE STUDY

Transforming a Leading Global Silicon Manufacturer's Plant
with Comprehensive Engineering Solutions



relevant.

FAMILY OF COMPANIES





BACKGROUND & CHALLENGES

BACKGROUND

A leading global manufacturer of polysilicon needed engineering expertise to revitalize their Washington state plant.

CHALLENGES

1

Financial and Operational Recovery

2

Complex Control Systems

3

Remote Location and Staffing

INTRODUCTION

When a leading global silicon manufacturer faced significant operational challenges after emerging from bankruptcy, they turned to Relevant Industrial for an innovative and comprehensive solution. The project involved upgrading the largest Yokogawa DCS system in the US at their polysilicon manufacturing plant and handling significant engineering and commissioning tasks. This case study details how Relevant Industrial's expertise and proactive approach led to the successful transformation of their plant, ensuring efficient operations and setting the stage for future growth.

PROJECT BACKGROUND

A major manufacturer of polysilicon - a critical material used in photovoltaic cells, solar panels, computer chips, and lithium-ion batteries - needed assistance at their plant in Washington State. Their chemical complex also produces silane gas, a highly reactive and essential component in the manufacturing of polysilicon and lithium batteries. The facility had undergone a series of financial challenges, culminating in a bankruptcy and subsequent acquisition.

The global investment company aimed to revitalize the plant, modernize its controls and instrumentation, and enhance its production capabilities. However, the scale of the project and the complexity of the systems involved posed significant challenges, particularly with the Yokogawa DCS system and the need for extensive engineering expertise.

THE CHALLENGE

01 FINANCIAL AND OPERATIONAL RECOVERY

After its acquisition, the manufacturer needed to rapidly upgrade its plant to meet modern standards and improve production efficiency. The massive scale of the Yokogawa DCS system upgrade, combined with the plant's intricate chemical processes, required specialized knowledge and skills that were in short supply.

02 COMPLEX CONTROL SYSTEMS

The Yokogawa DCS system at the plant is notably the largest in the US, managing a vast array of instruments and controls essential for the safe and efficient production of polysilicon and silane gas. Upgrading this system was critical, but finding the right expertise was a significant hurdle. Initial attempts to collaborate with other major DCS providers like Yokogawa proved challenging due to resource constraints and confidence issues.

03 REMOTE LOCATION AND STAFFING

The plant's remote location further complicated the project. Finding skilled personnel willing to relocate for an extended period to handle engineering, commissioning, and operational tasks was a significant challenge. The need for rapid mobilization of technical staff added to the complexity.



LITHIUM ION
BATTERY PACK
3.7V 6000mAh 2.4Wh

SOLUTIONS & EXECUTION

SOLUTIONS

1

Proactive
Project
Management

2

Comprehensive
Engineering
Services

EXECUTION & DELIVERY

1

DCS Upgrade
and Engineering
Excellence

2

On-Site
Commissioning

3

Continuous
Support and
Collaboration

INNOVATIVE SOLUTIONS

Relevant Industrial stepped in to address these challenges with a multi-faceted approach, leveraging their network, expertise, and proactive problem-solving skills.

01 PROACTIVE PROJECT MANAGEMENT

Understanding the critical nature of the project, Relevant Industrial assigned a highly experienced program manager to oversee the entire upgrade process. This hands-on approach ensured close monitoring and swift resolution of any issues that arose during the project.

02 COMPREHENSIVE ENGINEERING SERVICES

The scope of Relevant Industrial's involvement expanded significantly beyond the initial DCS upgrade. The client faced engineering challenges related to complete lineup changes, involving thermodynamics, chemical engineering, and electrical engineering. Relevant Industrial mobilized their partner network to provide the necessary expertise, addressing these complex engineering needs efficiently and effectively.

EXECUTION & DELIVERY

01 DCS UPGRADE AND ENGINEERING EXCELLENCE

Relevant Industrial's comprehensive plan for the Yokogawa DCS upgrade was successfully implemented, ensuring seamless integration and enhanced operational efficiency. The project was completed within the scheduled timeline, demonstrating the team's ability to manage large-scale, complex upgrades in challenging environments.

02 ON-SITE COMMISSIONING

As the project progressed to the commissioning phase, the manufacturer required skilled personnel for detailed loop checks of the plant's instruments and valves. Relevant Industrial quickly mobilized a team of on-site, full-time experts within 48 hours, ensuring continuous support for this critical phase. The team's dedication and expertise ensured that the commissioning process was thorough and efficient, laying the groundwork for reliable plant operations.

03 CONTINUOUS SUPPORT AND COLLABORATION

Relevant Industrial's commitment to the client extended beyond the initial project scope. Over seven months, the team provided ongoing engineering support, addressing additional challenges and optimizing plant operations. This continuous collaboration ensured that the manufacturer's plant operated at peak efficiency, meeting the high standards required for polysilicon and silane gas production.

OUTCOME & CONCLUSION

OUTCOME

1

Operational Efficiency

2

Financial Impact

3

Strategic Partnership

KEY TAKEAWAYS

1

Integrated Engineering Solutions

2

Rapid Mobilization

3

Collaborative Problem-Solving

OUTCOME

The successful transformation of the plant highlights Relevant Industrial's ability to deliver comprehensive engineering solutions in complex and challenging environments.

01 OPERATIONAL EFFICIENCY

The upgraded Yokogawa DCS system and optimized plant operations resulted in significant improvements in production efficiency and reliability. The plant is now better equipped to meet the growing demand for polysilicon and silane gas in the photovoltaic and lithium battery markets.

02 FINANCIAL IMPACT

While the project involved substantial investment, the outcomes justified the expenditure. The manufacturer's enhanced operational capabilities and increased production efficiency translate to long-term financial benefits, positioning the company for future growth and market competitiveness.

03 STRATEGIC PARTNERSHIP

The strong relationship between the client and Relevant Industrial, built on trust and collaboration, ensured the success of the project. Relevant Industrial's ability to rapidly mobilize resources and provide expert solutions reinforced their reputation as a reliable partner for complex engineering projects.

KEY TAKEAWAYS

01 INTEGRATED ENGINEERING SOLUTIONS

Relevant Industrial's integrated approach, combining in-house expertise with a robust partner network, enabled the successful execution of a highly complex project. Their ability to manage large-scale upgrades and provide comprehensive engineering services highlights their versatility and capability.

02 RAPID MOBILIZATION

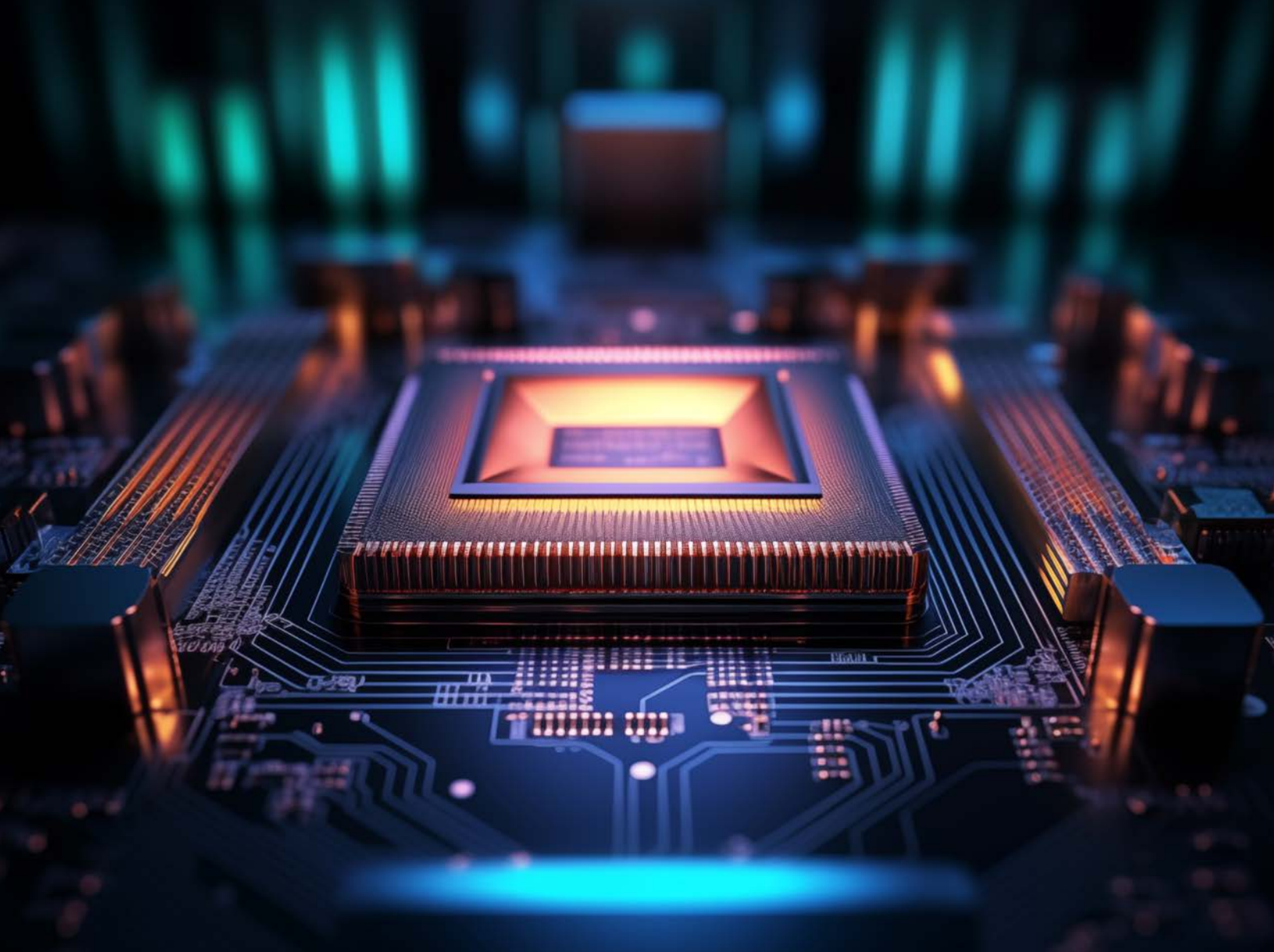
The ability to quickly mobilize skilled personnel for critical tasks, such as on-site commissioning, underscores Relevant Industrial's commitment to client success. Their proactive approach ensures that projects stay on track, even in challenging environments.

03 COLLABORATIVE PROBLEM-SOLVING

The close collaboration between Relevant Industrial and the client throughout the project ensured that challenges were addressed promptly and effectively. This partnership approach fostered innovation and resulted in a successful outcome for both parties.

CONCLUSION

Relevant Industrial's successful transformation of the client's polysilicon plant demonstrates their expertise in delivering comprehensive engineering solutions in complex environments. By leveraging their network, expertise, and proactive problem-solving skills, they ensured the efficient and reliable operation of a critical manufacturing facility. As the demand for polysilicon and silane gas continues to grow, Relevant Industrial remains a trusted partner for companies seeking innovative and effective engineering solutions.



relevantsolutions.com

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