INDUSTRIAL SERVICES

Case Study

Integrated Reactor Cooldown, Inerting & Inspection During Complex Shutdown

Introduction

During a major plant shutdown, we were selected to execute a combination of critical reactor and heater services, including reactor cooldown (Nicool), inerting, nitrogen purging, pressure testing, and support for inspection activities during the turnaround.

The project involved multiple parallel activities, requiring precise coordination, high nitrogen demand, and a strong focus on safety and execution efficiency.

Asset Details

- Application: Reactor and heater systems
- Scope: Cooldown, inerting, purging, pressure testing & inspection
- Scale: Multiple reactors executed in parallel
- Execution: Simultaneous operations across units
- Nitrogen usage: High-volume, multi-point supply

Scope of Work

We were responsible for the engineering, planning, and execution of multiple shutdown activities, including reactor cooldown (Nicool), nitrogen inerting, purging operations, pressure testing, and support services for heater decoking and inspection activities during the turnaround.

The scope also included temporary nitrogen supply, nitrogen logistics management, system integration, and on-site coordination of all activities during the shutdown period.

The Challenge

Executing multiple critical operations in parallel created a highly complex environment with significant safety and logistical challenges.

Cooling, inerting, and purging activities had to be carefully synchronized, while ensuring stable nitrogen supply across multiple systems. Any imbalance could impact safety, delay the shutdown, or lead to equipment stress.

At the same time, strict timelines required all activities to be completed efficiently without compromising safety or operational control.

The Solution

Intero implemented a fully integrated and centrally coordinated execution approach, ensuring all activities were aligned and optimized.

A temporary high-capacity nitrogen supply system was deployed to guarantee stable and continuous flow across all units. This included a large fleet of equipment operating simultaneously, ranging from a 20,000 m^3/h nitrogen vaporizer unit (NVP-20) to multiple steam and ambient vaporizers, as well as temporary storage tanks. The large-scale Nicool operation was made possible through dedicated nitrogen logistics management, including the deployment of three large mobile nitrogen storage tanks.

Cooling and inerting processes were carefully controlled and monitored to protect equipment integrity and maintain safe operating conditions.

A dedicated on-site project team coordinated all operations, ensuring clear communication, efficient sequencing, and rapid response to changing conditions. Project management and preparation were carried out in the customer's local language, supporting efficient coordination throughout the shutdown.

The Result

- Safe execution of all shutdown activities without incidents
- Stable nitrogen supply across multiple parallel operations
- Completion of cooldown, inerting, and inspection within the planned schedule
- No equipment damage due to controlled cooling and process management
- Efficient coordination contributing to minimized downtime

Advantages

- Ability to manage complex, multi-unit shutdowns
- Integrated execution across multiple services and disciplines
- Reliable high-capacity nitrogen supply and logistics management
- Large fleet of temporary nitrogen equipment available simultaneously
- Strong on-site coordination and communication in the customer's local language
- Flexible and solution-driven approach under changing conditions

Customer feedback

Preparation, on-site coordination, and execution were highly appreciated. Equipment handling and nitrogen supply adjustments were smooth, and Intero provided strong support and clear communication throughout the project. The collaboration was described as solution-oriented, with a positive outlook for future cooperation.

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