



REFINING

CASE STUDY

Practice infrequent events. Perfect operational performance.

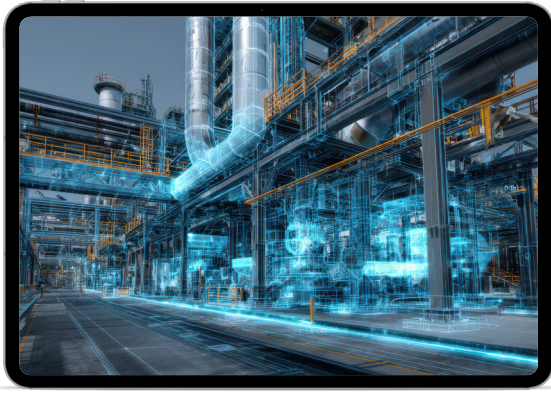
Challenge

A major refinery faced ongoing operational and safety risks during requisite procedures such as startup, shutdown, and gas-to-diesel fuel transitions. Because these events occur infrequently, operators had limited experience performing them. The refinery relied heavily on a small group of veteran operators who were nearing retirement. They didn't realize they had a critical knowledge gap until it was too late...

As a result, the site was experiencing three to four outages/year due to operator errors.



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Solution

Onyx 360 designed an Operator Training System (OTS) that enabled operators to safely train on procedures immediately before performing them in the field—reinforcing best practices, improving procedural discipline, creating muscle memory, and building operational confidence.

A realistic, simulated environment provided hands-on training for rare and high-consequence scenarios like:

- ⬡ Startup and shutdown procedures
- ⬡ Park and unpark operations
- ⬡ Gas-to-diesel swing transitions

Seasoned operators transferred years of experiential knowledge and documented it within the OTS. Based on the success of the initial OTS, they expanded their simulators to include additional units across the refinery. Simulator maintenance is performed by Onyx 360—ensuring the training environment remains aligned with production and maximizing the hands-on time available for operator training.

Results

Implementing simulation directly led to measurable improvements in refinery performance, reliability, and operational readiness.

- ⬡ **Zero unplanned downtime attributed to operator error** the first year following implementation.
- ⬡ **Reduced planned downtime** through improved operational decision-making and procedure execution.
- ⬡ **Faster, safer commissioning activities** with significantly lower startup risk.
- ⬡ **Improved execution of rare, high-risk transitions**



Onyx 360 Connects Technology, People, and Processes. We design solutions for the Energy industry that enable:

- ⬡ Load change and transient response evaluation
- ⬡ Turbine, boiler, and reactor performance diagnosis
- ⬡ Control logic optimization and testing
- ⬡ Equipment and operating procedure validation
- ⬡ Fuel, water, and energy efficiency studies
- ⬡ Virtual commissioning and start up
- ⬡ Emergency response and safety training

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