Technological Innovation

Next-Gen Solutions for AI-Enabled Maintenance and Energy Efficiency at HPCL

Presented By Team - Data Rangers

Next-Gen Solutions for Energy Efficiency: HPCL's Strategy

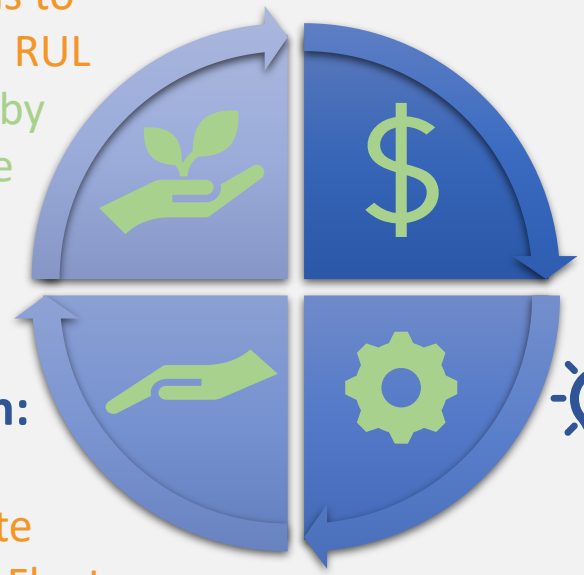
Objective: Leveraging AI, ML, Automation, Data Analytics and IoT to Drive Operational Excellence at HPCL

Predictive Maintenance:

- ❑ Using IoT sensors and AI models to Predict Equipment Failures and RUL
- ✓ **Benefits: Minimize Downtime** by **30%** and Extend Equipment Life

Advanced Analytics for Fuel Quality:

- ❑ AI-enhanced Quality monitoring for every Fuel Batch
- ✓ **Benefits:** Ensure **100%** Compliance with **Global Quality Standards**



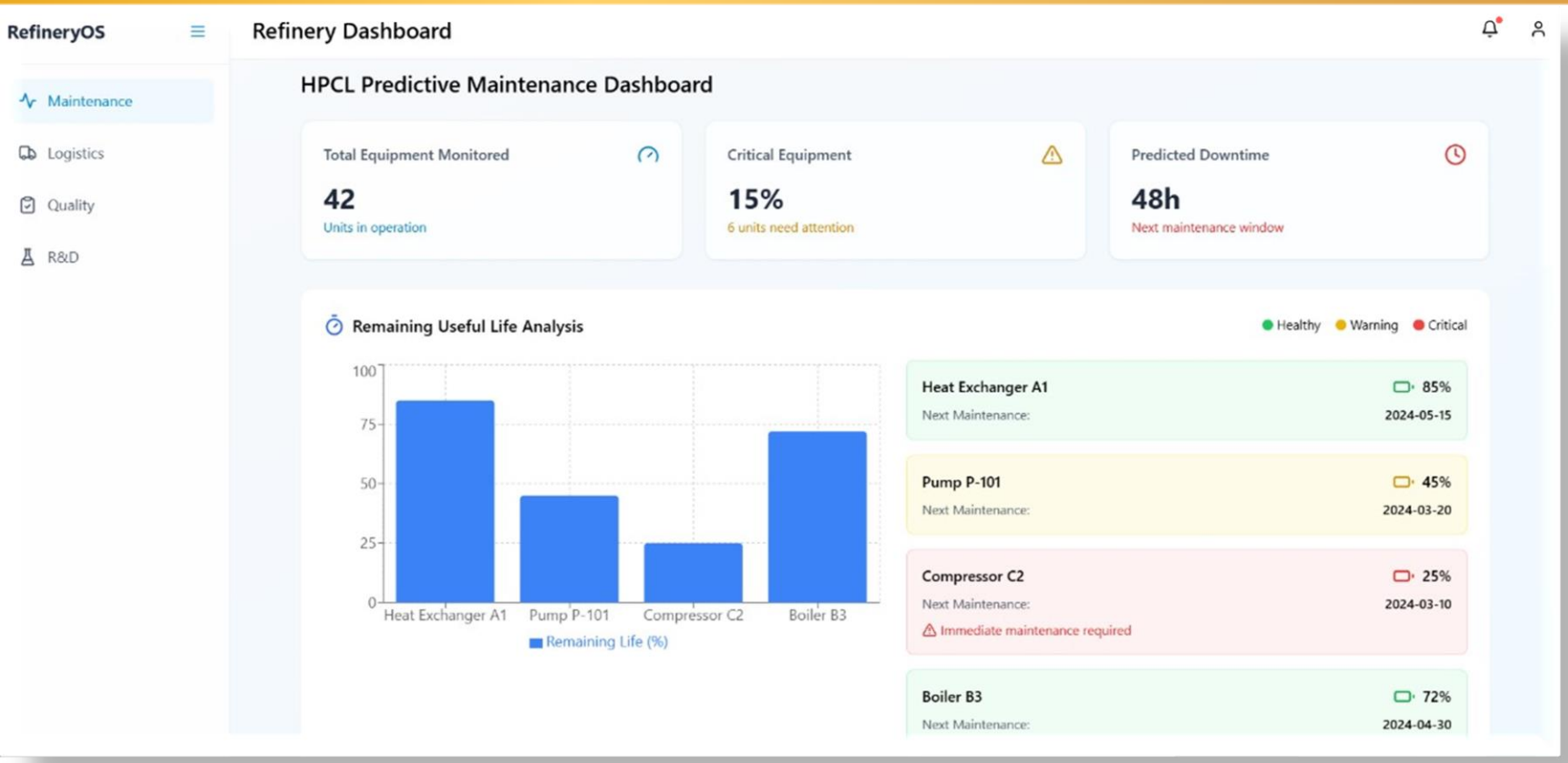
Fuel Logistics Automation:

- ❑ Implementing AI-Powered Route Optimization and Autonomous Fleet Management Systems
- ✓ **Benefits:** Achieve **25%** Faster Deliveries and **Reduce Logistics Costs**

R&D Process Improvements:

- ❑ Developing Energy-Efficient Designs using AI Simulations
- ✓ **Benefits:** Reduce Energy Consumption by **20%** and Accelerate Innovation Cycles

Dashboard Overview



❖ Key Insights Provided by the Dashboard:

- ✓ **Predictive Maintenance Trends:** Track real-time equipment health and predicted failure rates.
- ✓ **Fuel Logistics Performance:** Monitor fuel delivery times, logistics costs, and fleet efficiency.
- ✓ **Fuel Quality Analytics:** View batch-level quality monitoring with AI-enhanced insights.
- ✓ **R&D Performance:** Analyze energy consumption and innovation cycles for optimized product designs.

❖ Key Technology Integration:

- ❑ AI and ML Algorithms
- ❑ Data Analytics
- ❑ IoT Connectivity
- ❑ Automation Dashboards

❖ Real-time Benefits of the Dashboard:

- ➢ Predictive Insights
- ➢ Enhanced Delivery Efficiency
- ➢ Fuel Quality Compliance
- ➢ Energy Consumption Reduction

❖ Expected Impact:

- ❑ Data-Driven Decision Making
- ❑ Enhanced Operational Performance
- ❑ Cost Optimization

Thank you

Thank you for your time and attention!

"These innovations will position HPCL as a leader in energy efficiency and operational excellence."

We are excited to work towards a more efficient, sustainable, and data-driven future at HPCL.

Looking forward to your feedback!