

# Adani Ports

## Profitability and performance with the PI System



Ports sit at the heart of the modern global supply chain, processing the critical natural resources, raw materials and finished products that connect international economies. Adani Ports is the largest private port operator in India, handling the majority of the country's international trade. Economic growth is driving an expected increase in demand for port services. Adani Ports is planning ahead for this growth by investing in both new port construction and port automation, to ensure that all facilities achieve peak performance levels. The PI System is the backbone of these initiatives, providing the data collection, analysis and reporting tools that have helped Adani Ports achieve ongoing performance improvements and wider profit margins at ports old and new.

**“The PI System integrates all our equipment data at the enterprise level. That helps us increase productivity and preserve the profitability of our ports.”**

– Pradeep Gupta, Project Director

### Situation

Adani Ports processed approximately 100 million metric tons of cargo in 2012-2013 and by 2020, the company expects to handle 200 million tons. It's constructing five new ports in India and overseas to accommodate this growth.

To move goods between ship and shore, each port uses a wide range of equipment, from the tugs that guide ships to berths to the cranes, conveyer systems, load-

ing machinery, transport railway lines and pipelines, as well as liquid and dry bulk storage facilities. Adani Ports spent significant resources on performing scheduled maintenance of these assets as equipment breakdown or under performance can slow the movement of goods, eating into port capacity and profits.

Ports, by necessity, use many different types of equipment. With different systems for recording their use and performance data, Adani Ports wasn't able to integrate data about individual assets' utilization or performance rates. Achieving this level of system-wide visibility is critical to operating the ports at peak performance levels, says Pradeep Gupta, Project Director. “Our profit margin depends on our ability to efficiently handle cargo, store it and disperse it to the customer,” he said.

With rapid growth in traffic at its existing ports and more ports coming online in the next decade, Adani Ports needed a system that could provide better visibility into the end-to-end lifecycle of goods shipped through the port, from intake to unloading to storage to distribution. Furthermore, it needed a scalable solution that could accommodate the large and rapidly growing volume of data needed to paint that picture.

### Solution

In October 2010, Adani Ports began using the PI System to track real-time usage and performance data across all assets at its Mundra and Dahej ports. This includes everything from the utilization rates of different equipment to the specific RPM of tugs to the real-time fuel use of tug boats. The PI System collects data output from the dozens of different manufacturers' devices at Adani Ports and brings them into a single database; allowing managers to view relevant data from different assets side-by-side.

Adani Ports then uses data gathered by the PI System to analyze equipment performance, utilization rates, operating costs and revenue to set performance benchmarks. This includes both operating parameters for specific assets — e.g., how much product must be unloaded by a specific crane when it is in service — and for the port as an end-to-end system.



## Benefits

Adani Ports’ port automation has yielded significant benefits for the company. With increased visibility into real-time operations, the company has been able to reduce maintenance costs, improve productivity of individual assets and increase its effective capacity. These gains have helped drive an improvement in the ports’ overall profit margin.

By monitoring the performance of individual assets, the company has been able to shift away from scheduled maintenance toward preventative maintenance. The op-

erations team uses PI System analytics and visualization tools to assess the health of each asset and monitor maintenance parameters, such as hydraulic pressure, fuel use, engine performance, etc. PI System data is then integrated with Adani Ports’ ERP system to generate needs-based maintenance agendas. This cuts costs by reducing unnecessary repairs and significantly reduces on-the-job equipment failures.

By using the PI System to understand operational costs and productivity, Adani Ports now knows how much cargo needs to be handled by each crane or other equipment. That lets the port’s equipment team make smarter decisions about when to deploy or remove equipment, which in turn, helps maximize profits. “The PI System is a tool that provides us with better trending and handles complex calculations” says Vijendra Pancholi, Project Manager.

Paired with specific shipping volume goals, this kind of automation has improved the efficiency of products moving through the port and effectively increased Adani Ports’ overall capacity. “If we are behind schedule for meeting our daily benchmark, the manager can deploy more cranes or equipment to unload the ship in a faster way,” Gupta says. “That is the key parameter of productivity.”

Because of its success at Mundra and Dahej, Adani Ports is now working to implement port automation using the PI System at four more Indian ports in Hazira, Goa, Vizag and Kandla.

### Business Challenge



### Solution



### Customer Results

- Manual log books only allow post-mortem analysis.
- Hundreds of operational software systems didn’t communicate with one another.
- Rapid growth planned over the next decade.

- The PI System collects data throughout the port from intake to distribution.
- PI System tools provide real-time performance monitoring and analysis.
- Benchmarks established.

- Increased port throughput.
- Increased revenue and increased profit margins at the ports.
- Reduced maintenance costs and downtime.