

# SOLUTION SPOTLIGHT

## AllScan Enables Real-Time Ash Control, Improving Air Quality for Indian Power Stations

Introducing the AllScan system into the mine site resulted in:

**25k** Tonnes of coal saved per unit, per year of operation

**1.4k** Tonnes reduction in emissions of CO<sub>2</sub> per unit, per year

### COMMODITY

Coal

### TYPE OF ACTIVITY

Power Station

### APPLICATION

Ash Control



### Background

India's coal-fired power stations are under increasing pressure to reduce emissions and improve air quality. With over 90% of the population living in areas that exceed the World Health Organization's air quality standards, the environmental impact of high-ash coal combustion has become a national concern. In response, the Ministry of Environment and Forests mandated a 34% ash limit on all NTPC-operated power stations.

However, these facilities historically relied on manual lab sampling to determine coal ash content—a process that could take up to 24 hours to return results. By the time off-spec coal was detected, it had already been fed into boilers and burned, compromising both environmental compliance and operational efficiency.

### The Challenge

NTPC's power stations needed a reliable and timely way to assess the ash content of coal during the reclamation and feeding process. Without real-time data, operators were unable to make informed decisions when blending or feeding coal into their bunkers. This often led to combustion of high-ash coal, contributing to excess CO<sub>2</sub> emissions, increased particulate matter, and reduced plant efficiency.

The goal was to enable operators to respond dynamically to incoming coal quality and adjust blending strategies on the fly, reducing emissions and fuel waste.

### The Solution

Real Time Instruments (RTI) deployed the AllScan Cf-252 elemental analyser at key points on the infeed conveyors to the bunkers. The system provided continuous, accurate ash readings, giving operators both instantaneous values and ongoing trends to support operational decisions.

RTI's local team worked with multiple power stations across India to customise each installation. Strategic placement of the analysers and well-defined commissioning procedures ensured high measurement accuracy with minimal disruption to plant operations. Operators could now make real-time decisions to blend different grades of coal, reducing ash content before combustion.

### Implementation & Discovery

RTI collaborated with NTPC engineers to integrate AllScan into the bunker feed process. Once calibrated for regional coal characteristics, the analyser began delivering consistent results that matched or exceeded lab precision—without the wait.

Operators were trained to interpret real-time data via control room dashboards. With continuous feedback, they could adjust bunker feedstock in real time to stay within environmental targets and operational limits. This shift marked a turning point in how India's power plants managed combustion quality.

## The Results

The introduction of AllScan revolutionised coal quality control at the bunker feed stage. With continuous insight into ash content, operators were empowered to proactively manage fuel quality and improve environmental outcomes. This led to:

- **Improved Blending Accuracy:** Operators blended coal more effectively to maintain ash content below 34%.
- **Emissions Reduction:** Real-time ash control contributed to a reduction of more than 1,400 tonnes of CO<sub>2</sub> per unit, per year.
- **Fuel Efficiency Gains:** Over 25,000 tonnes of coal saved per unit, per year, through improved combustion and reduced overfeeding.
- **Health & Environmental Impact:** Lower ash levels in combustion improved local air quality and reduced respiratory health risks for surrounding communities.

## Conclusion

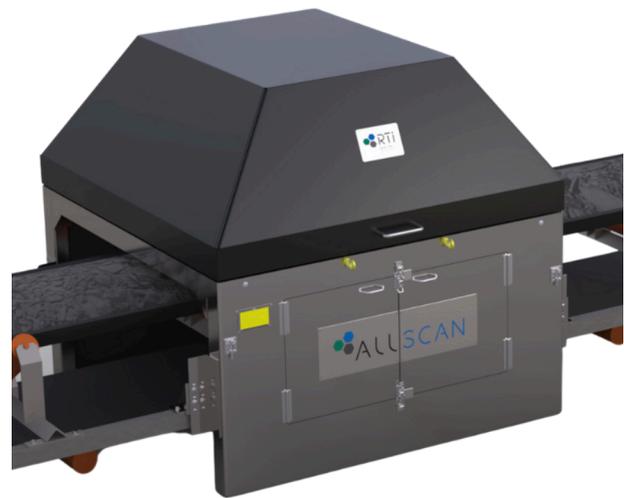
RTI's AllScan technology enabled Indian power stations to shift from delayed lab analysis to proactive quality control. By integrating real-time ash measurement at the bunker feed, NTPC significantly improved both fuel efficiency and environmental compliance.

This case highlights how real-time analysis can support large-scale energy producers in meeting air quality regulations, reducing emissions, and protecting community health—while also improving bottom-line performance. RTI continues to help power producers across the globe Measure, Analyse, and Optimise their operations in real time.

## Future Applications and Industry Impact

The success of AllScan at NTPC sites demonstrates the value of real-time ash analysis in large-scale thermal power operations. As environmental regulations tighten globally, similar solutions can offer transformative results across:

- **Cement Plants:** Reducing ash input to kilns for cleaner combustion.
- **Steel & Coke Producers:** Monitoring ash to control feedstock and emissions.
- **Port Blending Facilities:** Ensuring export-grade consistency in coal shipments.
- **Waste-to-Energy Plants:** Real-time control of input material composition to optimise burn efficiency.



### GLOBAL HEADQUARTERS

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