

## CASE

**Company:** Acesita S.A.

**Location:** MG, Brazil

**Market:** Steel Industry

**Keywords:** steel manufacturing,  
production quality prediction,  
Decision Support Systems

**Project Name:** Acesita DSS

**Duration:** September 2002 - August 2003

**Divisions:** Research & Development

**Technologies:** C++,  
Vetta AI Framework

### Quality Prediction in the Steel Industry

Acesita is a steel manufacturing company associated with the European group Arcelor. Located in Vale do Aço (Steel Valley), Acesita's plant has two blast furnaces controlled by a supervisory system, integrated with the databases at the Chemical / Mineralogical Analysis Labs to collect historical data.

Aiming to improve the control of the final product, Acesita has hired Vetta Lab's R&D division to perform a proof of concept project: a quality prediction system based on Artificial Intelligence methods. The challenge would be to model the blast furnace environment using only historical data, without any analytical or rule-based modeling.

Combining adaptive AI methods, Vetta Lab's researchers have modeled, developed, and tested a decision support system that allows the blast furnace manager to control the quality of the molten iron, an important intermediary product in steel making. By forecasting deviations from standard values in quality indexes measured during the manufacturing process, the system helps the manager to act before a deviation actually happens.

### Key Benefits

By using the pilot system in production, Acesita will have:

- Predictions with at least 95% of accuracy in periods of normal functioning, and over 75% in periods of anomalous behavior
- A breakthrough prediction model that adapts dynamically to new blast furnace scenarios

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