



OUTOTEC REPLACES COMPLETE PALLET CAR FLEET AT SAMARCO'S 1970 PELLET PLANT 1 TO EXTEND LIFETIME AT HIGH PRODUCTION PERFORMANCE

Outotec was executing the maintenance of pallet cars for all four of Samarco's pellet plants, where the lifetime of the pallet cars at plant 1 was coming to an end. Based on the latest design of pellet plants 3 and 4, some of the most modern plants in the world, and the extensive

maintenance experience, Outotec delivered redesigned pallet cars with collaborative contributions from Samarco to incorporate all improvements that the induration machine would allow, while also looking at compatibility of parts between the plants.

CHALLENGES

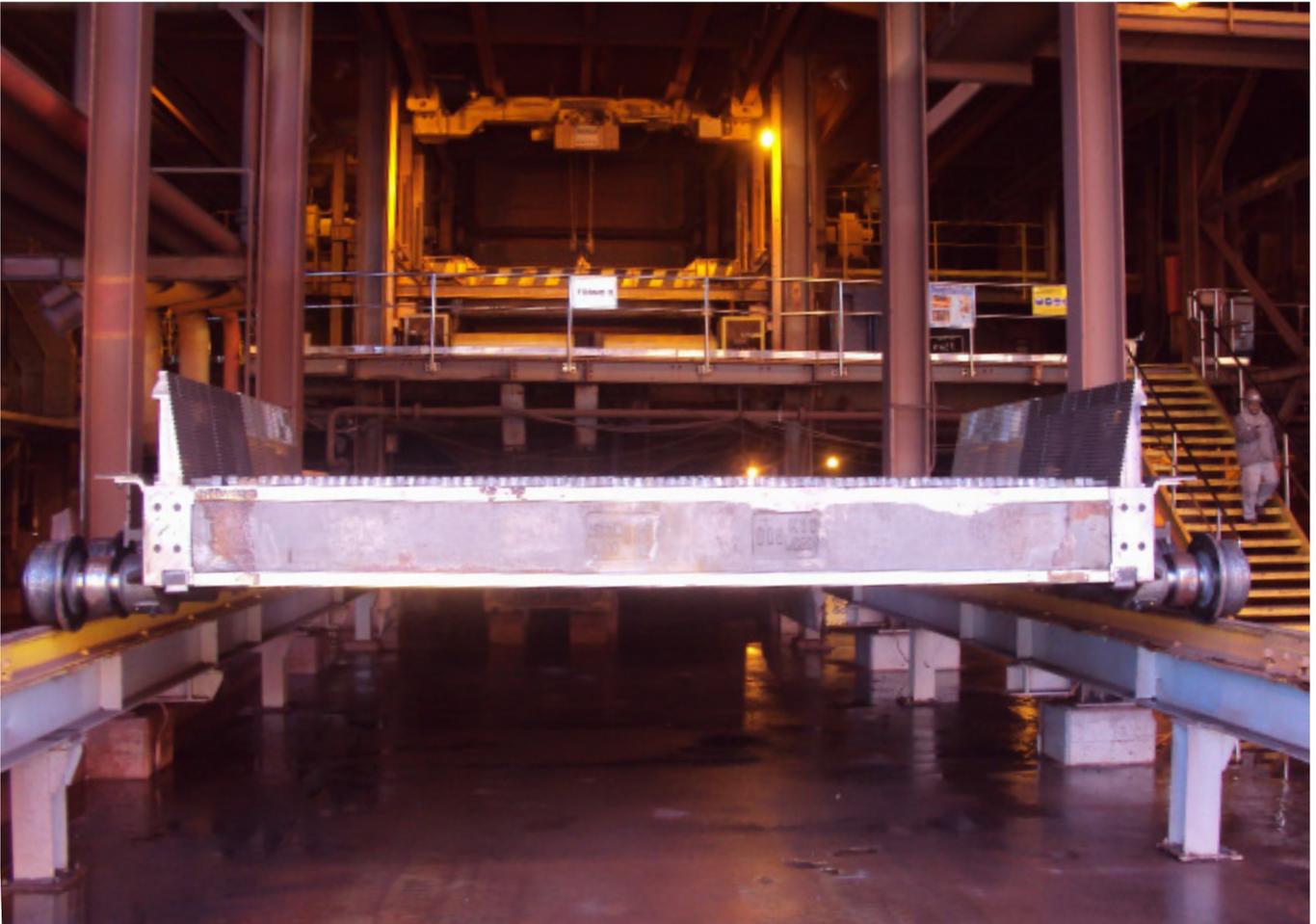
- Worn pallet cars with limited availability
- Plant production compromised by maintenance needs
- Increasing maintenance and repair costs

SOLUTION

- Replacement of all 286 pallet cars
- Customized design with proven design improvements and standardization
- Superior manufacturing with Outotec quality assurance and control

BENEFITS

- Seamless integration of customized pallet cars in existing plant
- Optimal travelling grate performance
- Reduced spare part inventory and maintenance costs



Samarco is a joint venture between Vale and BHP Billiton which operates four plants for the pelletizing of iron ore, located at Ponta Ubu, Anchieta, in the state of Espírito Santo, Brazil. The first two plants were built by Davy and Kvaerner in 1974 and 1995 respectively. Outotec was awarded the EPC contract for the induration part of pellet plant 3 in 2005. In 2011, Outotec was awarded the EPC contract for pellet plant 4, which included an indurating machine of 816m², with a design capacity of more than 9 million tons per year, making it the largest single furnace in the world. Startup of the plant commenced in 2014, which increased the nominal production capacity at Ponta Ubu to 30.5 million metric tons per year.

Pallet cars are core equipment of the travelling grate pelletizing technology. They constitute the moving furnace grate and are exposed to heavy loads at high temperatures in the furnace with subsequent cooling on the return track, as well as harsh abrasion during the discharge of hardened pellets. The design of pallet cars is therefore of utmost importance to withstand wear and tear, extend service life and to ensure optimal plant performance with high equipment reliability.

“Even though the equipment is already approximately 30 years old and compromised with some inefficiencies due to a long operation period, the first pallet car was installed today without any problems.” Sergio Mileipe, Head of Maintenance, July 09, 2012.

The pallet cars of plant 1 had to undergo frequent maintenance and extensive repairs which resulted in downtime, compromising production and increasing energy consumption as well as maintenance and spare part costs. Outotec performed a plant inspection in March 2010, to ascertain ways of improving the productivity, as inefficiencies due to the then 30-year-old plant were visibly evident. Based on the findings detailed in the inspection report, a decision was taken by Samarco to replace the fleet of 286 pallet cars. The new pallet cars were especially designed in partnership with Samarco, one objective being to significantly reduce their spare part inventory.

The new pallet cars included improvements of the following components:

- Stronger center castings, less prone to sagging during operation and identical to the new plants delivered by Outotec
- Outotec's proven composition of casted parts with comprehensive heat treatment
- Outotec's spring-loaded sealing elements, fit to the existing machine
- New wheels using the same bearings as in the new plants

- Pressure rollers with bearings instead of the installed bushings, same as at the new plants, for improved performance and maintainability
- Split sidewalls with high-alloyed cast steel upper sidewalls to prolong lifetime, mostly identical to the design of the new plant

Installation of the new pallet cars was conducted in July 2012, about a year after the order for engineering and supply was placed by Samarco, during normal operation, exchanging with the original pallet cars without any hindrances, allowing seamless integration to the existing plant.

Outotec also entered into several maintenance agreements with Samarco for the pellet and filtration plants, capitalizing on Outotec's workshop situated near Guarapari, in close proximity to Samarco's pelletizing complex.

Additional material

- Samarco P4P, the largest pelletizing plant in the world
- Maintenance contract for Samarco's pelletizing plants in Brazil
- Outotec signs another long-term service contract with Samarco in Brazil



Outotec

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