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Vale's investments expand Ponta da Madeira's capacity

Ponta da Madeira Port Terminal (TPPM) in São Luís will become the country's leading port in terms of cargo handling capacity and volume in 2012. Besides handling more iron ore, Ponta da Madeira will become an important transport hub for soy and corn produced in the Northeast (mainly Maranhão and Piauí), North (Tocantins) and Center-West regions, using a new route provided by the North-South Railroad (FNS), operated by Vale and interconnected with the Carajás Railroad (EFC).

The port will be an alternative to the three major ports of the South and Southeast regions, in Rio Grande (Rio Grande do Sul), Paranaguá (Paraná) and Santos (São Paulo). To transform Ponta da Madeira into the country's largest port, Vale will invest US$2.9 billion to increase capacity, by installing a new pier (Pier IV), dredging to increase the water depth (the port is already one of the world's deepest), and double tracking a 115-kilometer stretch of the EFC.

Pier IV will raise Ponta da Madeira Port Terminal's annual handling capacity to 150 million tons in 2012. It will be able to receive and load two ships simultaneously. Intended for large vessels, the pier will be used by ships of between 150,000 and 400,000 tons. Ponta da Madeira is already one of the largest ports in the world and the only one that can fully load the 346,000-ton bulk carrier Berge Stahl, and now Vale Brasil.

Three piers at TPPM

Ponta da Madeira Port Terminal is a private port belonging to Vale. Opened in 1986, it is located in the Itaqui Port Complex on the eastern bank of São Marcos Bay, on São Luis Island, Maranhão. The terminal has three piers. Pier I has a depth of 23 meters and a berth length of 330 meters. It is able to receive very large ships such as Vale Brasil, the world's biggest ore carrier, which has a 400,000-ton capacity, 362-meter length and 65-meter width.

Pier III has two continuous berths with a total length of 694 meters, although it prioritizes the simultaneous docking of two smaller ships. Both Pier I and Pier III handle iron ore, pellets and manganese. Pier II, leased by Vale from Empresa Maranhense de Administração Portuária (EMAP) and administered by the Port of Itaqui, has a depth of 18 meters and a length of 280 meters. It is used for goods such as soy, pig iron and copper concentrate, with priority given to the latter two products due to their high added value.

In 2010, TPPM handled 99.1 million tons of iron ore and general cargo, up from 91.7 million tons in 2009.

Artificial Intelligence at Ponta da Madeira

At Ponta da Madeira Port Terminal, Vale has developed an artificial intelligence system that allows remote operation of stackers and reclaimers used to transfer ore from the dockyard to the ship. The system enables machinery to be controlled remotely from the Port Control and Operations Center. Maranhão is the first state in Brazil to have a port terminal with all dockyard machinery operated by remote control.

In addition, Vale's port employs advanced mathematical models that simulate ships' docking behavior at the piers, forecasting variables such as wind speed and currents. The company also keeps a physical model of the port terminal at

the University of São Paulo, where simulations are performed of ship docking and undocking maneuvers, as well as maritime currents and tides, and their effects on ships that are maneuvering and docked at the piers.

The model is also used for training the port's technical team, besides enabling staff and the Navy to assess the feasibility of different ship maneuvers. The 1,600 m2 model was built in 1979 in a giant hangar, through a technical and scientific partnership between Vale and the University of São Paulo.

More information

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