

Fact Sheet

Pacific Aluminium is a supplier of bauxite, alumina and primary aluminium to Australia, New Zealand, United Kingdom, Europe and other export markets.

Boyne Smelters Limited (BSL) has been operating since 1982 and is Australia's largest aluminium smelter situated on a 60 hectare site at Boyne Island in Central Queensland. The smelter produces more than half a million tonnes of aluminium each year from its three reduction lines. BSL is managed by Pacific Aluminium and is owned by a consortium of international companies.

Production activities at the smelter include three main production areas which include the manufacturing of carbon anodes in the carbon plant, aluminium production (smelting) in reduction lines, and casting of molten metal into aluminium products.

The smelter underwent a A\$1 billion expansion in 1997, introducing a third reduction line which increased aluminium production from 260,000 to more than 570,000 tonnes per annum.

In June 2012, the company completed a \$720 million modernisation project with the re-building of Carbon Bake Furnace 3 and the construction of a new Carbon Bake Furnace 4 (worth \$330 million) which boasts upgraded and cleaner technology. The new furnace is more energy efficient and has greatly reduced onsite greenhouse gas emissions. Also as part of this upgrade was the replacement of overhead crane rails, a crane runway upgrade and an improved system to more efficiently transport alumina to the reduction cells. While a huge investment into the smelter, these upgrades were essential to amplify its operating efficiency, improve environmental performance and increase the lifespan of the smelter.

Aluminium production is supported by numerous other functional areas such as power supply, maintenance, safety, health and hygiene, environment, process improvement, procurement and supply, human resources, community relations and shipping and transport.

Bauxite is mined at Rio Tinto Aluminium's Weipa mine in Cape York and is shipped to Queensland Alumina Limited (QAL) in Gladstone where the bauxite is refined into the white powder alumina. Approximately 30 per cent of QAL's alumina is produced for BSL and is transported from the refinery by conveyor to BSL. BSL is the third stage of the aluminium production process called smelting, where the alumina is created into aluminium.

Quick Facts

Employees	Approximately 1,050 employees and approx. 120 contractors.
Production (2012)	575,000 Tonnes
Products	Aluminium Ingot Aluminium Billet
Year of first operation	1982
Pacific Aluminium percentage of ownership	59.39 per cent (manager)
Technology	Sumitomo cells (Lines 1 and 2) Pechiney AP30 cells (Line 3)
Number of Reduction Cells	749 Cells



Aerial photo of Boyne Smelters Limited

SAFETY

BSL operates under the safety principle – “The Goal is Zero” which aims to create a workplace free from incidents and injuries.

The smelter is committed to a safety culture that is grounded on the belief that all incidents and injuries are preventable and that each employee is entitled to a safe work environment. Improvements have been made to safety performance via a number of initiatives including the Take 5 (pre-task hazard assessment process), safety interactions, increased focus on the application of work standards, and the recognition and communication of safety incidents and improvements. In 2011 BSL achieved its best ever safety performance and matched this in 2012.

COMMUNITIES

BSL is committed to building enduring relationships with the community based on mutual respect, active partnership and long-term commitment. Our aim is to be a valued community member and to contribute to the enduring sustainability of the region. BSL has a number of ongoing community funding and support initiatives, education partnerships and training opportunities to support the community in which we operate.

ENVIRONMENT

BSL has an overriding commitment to environmental responsibility and aims to achieve best practice by minimising waste, emissions and impacts associated with our activities through the implementation of effective mitigation and management strategies.

A good example is the redistribution of spent cell lining, which is a solid waste from the smelting process. As part of a programme established in 2004, spent cell lining is transported to Cement Australia for use as an alternative fuel in the production of cement.

EMPLOYMENT

BSL currently employs over 1 050 people (plus another 120 contractors) in a variety of roles including operation, maintenance, technical and administration.

Efforts are made to employ locally and retain highly capable and enthusiastic people, who enjoy their work and are committed to contributing to the business.

PROCESS

Aluminium is produced in large electrolytic reduction cells, which are housed in one kilometre long Reduction Lines. Alumina, the raw material for aluminium production, is transported from Queensland Alumina Limited (QAL) along a 10 kilometre conveyor system.

To convert alumina to primary aluminium, an electrolytic reduction reaction known as the Hall-Heroult process is carried out. In this process alumina (Al_2O_3) is fed into cells at regular intervals where it dissolves in a bath of molten cryolite (sodium aluminium fluoride). An electric current of 230,000 DC amperes for Lines 1 and 2, and 360,000 DC amperes for Line 3, is passed through the carbon anodes suspended in the bath material causing the oxygen in the alumina to separate, and to combine with the carbon of the anodes. The aluminium settles to the bottom of the reduction cell as molten aluminium which is siphoned off daily and transferred to the metal casting facility where it is cast into two main types; ingots and billet.

The carbon anodes used in this process are also made on-site in the Carbon Bake Furnaces.

WEBSITE

www.pacificaluminium.com.au