



# Aluminium & Alumina Center of Excellence



## 50 years of delivering for our customers

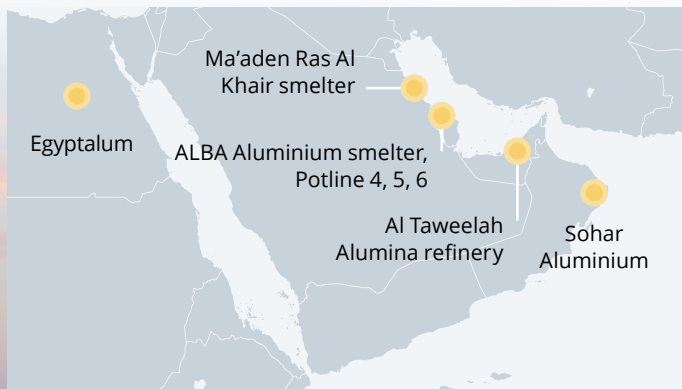
Over the past five decades, our customers have delivered more than a third of the western world's aluminium production outside China.

From designing and building the mining facilities to access the raw bauxite, the refineries to extract the alumina and the smelters that produce the metal, Bechtel's expertise stretches the entire value chain from mine to metal, which enables our global customers to provide essential resources that enable energy efficiencies.

We are proud to partner with our customers to unlock the resources needed to deliver on the lower-carbon commitments being made around the world.

Modernisations, expansions, and retrofits in existing operating facilities are critical to ensure cost efficiencies and production improvements can meet the growing market need for aluminium products. We know first-hand how to work around production demands, minimising downtime and disruption while maintaining industry-leading safety performance. Construction phases are managed through Bechtel systems designed to streamline, minimise or eliminate production interruptions.

### Building with our customers in the Middle East



## By the numbers:

Designed and built  
**1/3**  
of western  
aluminium capacity  
over the past 30 years

Built  
**40%**  
of western world  
refinery capacity

Designed and installed  
**9.2** mtpa  
refinery capacity  
**4.2** mtpa  
smelter capacity

**3** months  
faster to  
market than  
industry standard

## Aluminium and Alumina Center of Excellence

Our Aluminium and Alumina Center of Excellence's leadership and technical specialists provide expert evaluation of systems, new and emerging technologies, and design solutions, with an in-depth understanding of both the customers' needs, and technologies employed in order to maximise their investments.

With recent experience with all major aluminium and alumina process technologies and demonstrated experience commissioning new facilities, our experts are recognised as industry leaders worldwide. The group brings together industry best practices, innovation, global perspective and practical design and construction expertise to mitigate technical risks and produce industry-leading plants with optimised cost and schedule outcomes.

Through the Center of Excellence, we have the capability to support our customers through the entire lifecycle of the asset from concept design through to operations, decommissioning and plant closure.





## A multicultural and unique construction project

Al Taweelah Alumina, EGA

United Arab Emirates EPCM 2013–2020

The Al Taweelah alumina refinery development was part of EGA's strategic expansion upstream in the aluminium value chain. It created additional economic opportunities for other industries in the supply chain, including shipping and trade. The greenfield refinery with an annual capacity of some 2 million metric tonnes is the UAE's first alumina refinery and only the second in the Middle East.

EGA announced in early 2021 that the refinery had delivered sustained monthly production at or above nameplate capacity for three consecutive months. The milestone marked the completion of a world-class ramp-up that was achieved within 21 months of the start of production, despite the global pandemic. This achievement compares to other refineries commissioned in the past decade that have taken three years or more to reach this level.



## Enhancing Bahrain's global competitiveness

Alba Aluminium Smelter Potline 6, Aluminium Bahrain, B.S.C.

Bahrain EPCM 2013–2019

Alba continues to support the Kingdom of Bahrain's diversification in line with their Economic Vision 2030. The Project increased Alba's contribution to the country's overall GDP by three percent and will continue to boost employment opportunities for Bahrainis both at Alba and in the local downstream market.

In 2016, Alba appointed Bechtel to build its sixth potline in the Kingdom of Bahrain, continuing our companies' long-standing partnership and 25-year collaboration. Potline 6, completed under budget and ahead of schedule, increased the annual output by 540,000 metric tonnes by adding one potline with 424 pots utilizing DUBAL DX+ Ultra technology, and related infrastructure, carbon and casthouse facilities.



## Delivering additional value for Rio Tinto

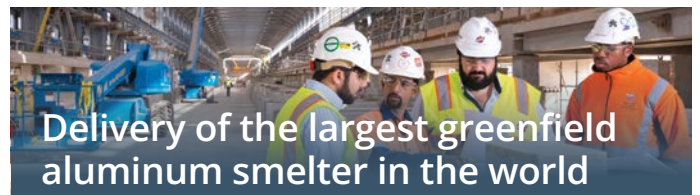
Yarwun 2, Rio Tinto

Australia FS & EPCM 2007–2012

As a significant investment for our customer to help meet the growing worldwide demand for aluminium, we leveraged our past experience in designing and building the original Yarwun Refinery to help deliver tangible benefits during the expansion effort.

The brownfield expansion increased capacity of the facility from 1.4mtpa to 3.4mtpa and was completed over a period of 39 months. Bechtel generated efficiencies and ultimately delivered additional value to our customer through retained workforce, excellent safety, design replication and productivity.

The project included construction of a 160-megawatt, gas-fired cogeneration plant that would improve energy efficiency while reducing greenhouse gas emissions. About half the electricity generated by the plant is used to power the facilities with the remainder exported to the national electricity grid.



## Delivery of the largest greenfield aluminum smelter in the world

Ras Al Khair Smelter, Ma'aden

Saudi Arabia EPCM 2010–2013

Ras Al Khair, Saudi Arabia's first greenfield smelter, is the cornerstone of the Ras Al Khair Industrial City and fast becoming the country's aluminium and phosphate center.

Bechtel proudly partnered with our customers Ma'aden and Alcoa to provide engineering, procurement and construction management for the smelter, which was delivered safely, ahead of schedule, and under budget. The completed project included construction of two potlines that produce 740,000 metric tonnes of aluminium per year.

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