

Aluminium

HATCH



A unique metal for the modern world

Strong. Durable. Recyclable. Add in corrosion resistance and low density qualities, and it's easy to see why aluminium is the number one choice for a growing number of critical applications.

The 2020 corporate average fuel economy (CAFE) standards in the United States are forcing the automotive industry to face some very real challenges: It must reduce emissions and improve fuel economy. Lightweighting of vehicles is at the heart of its strategy to meet these targets, driving a wave of innovation in which aluminium is replacing steel in any number of places, parts, and applications. Demand for aluminium is expected to rise by as much as five-million tonnes per year over the next twenty years.

To remain competitive as an industry and a material, aluminium must meet this anticipated demand, developing new and groundbreaking products at the same time. Upstream, producers must consider aluminium's whole lifecycle to improve energy efficiency and reduce its environmental footprint. Downstream, there is a revived push for new alloys and recycling. Fresh thinking is needed to improve process efficiency, harness the value of existing facilities, and propose tailor-made, cost-effective solutions to the industry's needs.

Our professionals have a wealth of experience in smelters and downstream processes and technologies. In greenfield and brownfield facilities, we can boost your operation's value by delivering smarter, more efficient solutions to increasingly complex production issues. We'll help you fine-tune existing processes, reducing operating expenditures and optimizing existing assets and organizational capabilities.

Our people are experts. They bring a vast knowledge of aluminium processing, plant optimization, technology, project delivery, and operational excellence to address your greatest challenges.

We can support you in these areas:

- High-voltage substations
- Reduction
- Carbon
- Recycling
- Casthouse
- Environmental engineering, technology, and community interfacing
- Systems and process control
- Rolling and finishing
- Operational performance
- Process and technology reviews
- Consulting services, audits, and due diligence
- Alliance engineering services

The AP60 project was completed within budget a month ahead of schedule, setting a new industry standard for safety with a loss time incident rate of 0.27 for five million hours

Global presence, local focus

- Hatch offices
- Selected aluminum projects



North America

1 RioTinto Complexe Jonquière - AP60 Phase 1

Québec, Canada

With our joint-venture partner, we completed the AP60 Phase 1 feasibility study and provided all EPCM services through to commissioning and start-up. The Phase 1 pilot plant, comprised of 38 pots, produces approximately 60,000 tonnes per year of aluminium. The AP60 project was completed within budget and a month ahead of schedule, setting a new industry standard for safety with a loss time incident rate of 0.27 for five million hours. It was awarded the prestigious PMI Project of the Year Award for 2014.

2 Aluminerie Alouette Phase 2

Québec, Canada

When the Alouette aluminium smelter was expanded from 245,000 tonnes per year to 575,000 tonnes per year, it became North America's largest smelter. In joint venture, Hatch provided full EPCM services, taking this $1.4 billion project from feasibility through to commissioning and start-up. Three months ahead of schedule, it ramped-up to exceed design capacity. In the first year alone, it produced over 50,000 tons of aluminium more than design capacity had indicated.

3 Alcoa-Hatch Alliance – operations support

Québec, Canada, and Louisiana, United States of America

Since 2000, we have been Alcoa's EPCM partner in the Northeast region, providing full engineering, portfolio management, and operational performance services to its smelters. Currently, the Alcoa-Hatch alliance includes Aluminerie de Deschambault, Aluminerie de Baie Comeau, and Aluminerie de Bécancour Inc., in Québec, Canada, and the Lake Charles plant in Louisiana, United States. This collaboration has delivered approximately 700 individual brownfield projects while maintaining high standards of health and safety.

4 RioTinto Kitimat smelter modernization

British Columbia, Canada

Project execution services were provided for deficiency close-out during plant commissioning and ramp-up for this modernization project in northern British Columbia. A dedicated group of experts was mobilized to support major work, such as the pot-line energization. The team also provided full execution services for urgent repairs of key equipment, major planned shutdowns, and upgrades and debottlenecking to achieve nameplate capacity of 420,000 tonnes of aluminium per year.

5 Constellium Rolled Products - new pusher furnace

West Virginia, United States of America

An integrated Hatch/Constellium team installed a new 800 Kt ingot pusher furnace in this US$35 million project. A new building extension and the demolishing of an existing furnace on a complex brownfield site saw the team work more than 120,000 hours over eighteen months without a lost-time incident.

South America

6 EPPetroEcuador - greenfield aluminium smelter in Ecuador

Ecuador

A prefeasibility study was conducted for a 500,000 tpy aluminium smelter and port facility in Posorja, Ecuador. The study assessed different reduction technologies, recommendations regarding plant location and services infrastructure, the analysis of environmental and social requirements, the determination of high-level operational costs, and commercial and financial feasibility. Hatch's global response strategy pooled participation from professionals in our Montréal, London, Lima, Santiago, and Abu Dhabi offices.



Iceland

7 Alcoa Fjarðaál – pot-relining facility

Reyðarfjörður, Iceland

We performed the engineering, procurement, and construction management activities for a state-of–the-art pot-relining facility.

8 Century Aluminum - Helguvik Smelter

Helguvik, Iceland

With a joint venture partner, we provided full EPCM services for this project, a 250,000 tonnes-per-year greenfield smelter in Helguvik, Iceland. The work included the feasibility study and design of two 180-pot lines, HV system and rectifiers, a gas treatment center, bath recycling plant, alumina handling and storage, rodding shop, casthouse (ingots and sows) and general plant infrastructure.

Middle East

9 Emirates Global Aluminium (EGA) – operations support

United Arab Emirates

We currently provide operations support to EGA's two aluminium smelters in the United Arab Emirates—Emirates Aluminium (EMAL) and Dubai Aluminium (DUBAL). The services, which cover all engineering disciplines including portfolio management support, are executed by our employees in the Middle East with support from our aluminium smelting specialists in Canada.

10 Ma'aden Aluminium – pot-relining facility

Ras Al Khair, Saudi Arabia

Hatch has provided complete EPCM services for the successful delivery of a new pot-relining facility.

Australasia

11 Alcoa Portland Smelter – bake furnace rebuild

Victoria, Australia

Full EPCM services were provided to demolish and then install 13,000 tonnes of refractory material for the anode baking furnace. A new firing and control system and a new fume treatment center were also put into service. This project posed particular challenges because the demolition and rebuild took place "on-the-go" to minimize the significant cost of replacing anodes to the pot rooms while the furnace underwent refurbishment.

Global capabilities in smelting, rolling, & finishing

You need accurate and timely information. We can determine process deficiencies, bottlenecks, redundancies, and constraints. Then offer cost-effective solutions to optimize systems and reduce capital and operational costs.

Our global teams are experienced in all smelter, rolling, and finishing technologies. You get the benefit of our independent technical expertise in reduction, carbon recycling, casthouse, rolling, finishing, high-voltage systems and process control, and environment and community interfacing. We can optimize installations to meet your aggressive schedule, ramp-up quicker to the designed production level, and deliver better operability and maintainability.

High-voltage substation

With services that span conceptual design, feasibility studies, system expansion, and the implementation of greenfield projects, we cater to your distinct needs. From load flows, short-circuits, insulation, and protection coordination, to harmonics studies and site measurements. We have analyzed and implemented more than fifty substation upgrade projects. We can manage yours.

Reduction

You need a partner who understands your business and how it operates. Our extensive knowledge and experience in reduction-technology assessment and selection extends to mass and energy balances; amperage creep and debottlenecking; time-and-motion studies; material handling; custom design and optimization of pot-room equipment; design and installation of booster circuits; analysis, design, and emergency repair of busbars.

Carbon

Starting with the identification of critical and common problems, we determine throughput restrictions and propose inexpensive equipment upgrades. Our knowledge of the process and the industry's best available technology means you get solutions to increase production, adjust anode size to support amperage increases at the pot room, and retrofit equipment. We find strategies for rebuilding anode-baking furnaces. We can implement anode-slotting machines and dynamic simulations (ARENA) to establish real production capacities, capital effectiveness, and operational efficiency.

Casthouse & recycling

With extensive process and equipment know-how in all areas of casthouse operations, you'll have a trusted, experienced partner to help you optimize operations and deliver value-added products. Our experience encompasses recycling, furnace optimization and energy efficiency, molten metal handling and treatment, and all casting technologies (sow, ingot, direct chill, strip, rod). Some of our recent brownfield projects have included the complete modernization of slab casting centers, expansion of a sow caster, a rebuild of ingot casting lines, an upgrade of ancillary equipment, and the installation of sow and ingot casters.

Rolls of aluminium lie packaged and waiting for shipment to customers





A state-of–the-art pot-relining facility was built for the Alcoa Fjardaal smelter

Rolling & finishing

With the current renewed focus on value-added products, including alloyed ingot, sheet, and extrusion, we're well-positioned to help you achieve your full potential. Our services extend to furnace upgrades, mill automation-systems line upgrades, capability studies for new products, debottlenecking, plant studies, process analysis, and modeling.

Mill performance audits

We provide process capability improvement and operating practice optimization recommendations, mill performance benchmarking, and rolling process optimization simulation models. In addition, our team offers operator and process engineering training. You benefit by having more knowledgeable personnel, more productive operations, better statistical process control, and faster deployment of new products.

Environmental engineering & technology

You've got specialized needs. We've got experts to address them. A dedicated team works exclusively on environmental projects in smelters worldwide, fully familiar with the latest developments in scrubbing technologies and practices to reduce emissions. We readily take on leading-edge work to extend surface filter-bag life in gas treatment and fume treatment centers. We can conduct emissions modeling, upgrade systems, install and optimize high-draft ventilation, and more.



Hatch provided EPCM services for the Point Henry project, which was one of the fastest furnace rebuilds of its size, completed on time, and 10 percent under budget

Systems & process control

It's big-picture thinking. Our clients come to us for global end-to-end systems-integration services tailored specifically to the aluminium industry. There can be substantial savings and big reductions in the risks associated with integration when a single, cohesive team designs, programs, and commissions all aspects of the software systems. Then we up the value again, adding our business functional experts to the mix.

Environment & community interface

Projects continue to become more complex and subject to increased public scrutiny. So understanding and attending to ancillary issues is critical for success. Our environmental and social management professionals work directly with project teams to ensure commitments are incorporated into the design and execution plans. The result? Optimum value for your organization and stakeholders.

Operational performance

Each plant has its own unique challenges. But they all need significant capital investment and steady funding to remain viable and meet ongoing operational and maintenance requirements.

We can help. We'll work with you to develop strategic operational-performance programs to improve process efficiency and incrementally increase plant profitability. We find smarter, more efficient solutions to bring rapid, meaningful improvements and operational excellence. Then we follow up with support across the full business life cycle, from concept to start-up. Across the full value chain, from alumina to semi-finished goods.





Alliance engineering services

We're believers in partnership. We're proud of our long, successful track record of providing alliance engineering services to the aluminium industry. Through our own and our clients' commitments, our engineering alliances enable an effective cost structure that is decidedly different. Once in place, it creates a high level of effectiveness in communication, delivery… and ultimately, the bottom line. Our teams of project managers and site engineers are linked to Hatch's regional delivery centers and further connected to our global knowledge centers.

Consulting services

Our specialized management consulting and business planning services set us apart from other engineering firms. Our scope extends to technology selection, project feasibility, due diligence, mergers and acquisitions, competitive benchmarking, market analysis, and strategic operational planning.

Hatch provided EPCM services for Alouette's aluminium smelter expansion, growing it from 245,000 tpa to 575,000 tpa and making it America's largest smelter

About Hatch

Whatever our clients envision, our engineers can design and build. With over six decades of business and technical experience in the mining, energy, and infrastructure sectors, we know your business and understand that your challenges are changing rapidly.

We respond quickly with solutions that are smarter, more efficient, and innovative. We draw upon our 9,000 staff with experience in over 150 countries to challenge the status quo and create positive change for our clients, our employees, and the communities we serve.

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