High value anode solutions, from furnace to pot
As world leader in aluminium smelter technology, ECL strives to address demands of the fast and constantly evolving world of primary aluminium. We answer to these demands by keeping the client at the very heart of our actions. We define ourselves as solution providers.
Looking after our customers on a daily basis

**ECL solutions**

More than just offering products, ECL delivers solutions. This makes us ready to assist you at every step of your project and at every milestone of your equipment's life cycle.

ECL is present in the three main sectors of an aluminium smelter: reduction, carbon and metal. And throughout the life of the equipment that we provide, we offer an exhaustive range of services that guarantees your maximum return on investment:

- Erection supervision guarantees that your schedule is respected;
- Training ensures that your equipment's performance is optimised from day one;
- The spare parts and technical assistance services facilitate its daily maintenance;
- Audit contributes towards a trouble free operation;
- Refurbishment and upgrades are the assurance of regularly increased performances and profitability.

**Sales managers**

As soon as your project feasibility study has begun, a dedicated sales manager is designated. He will be your main contact during the negotiation phase and at the start of the project, and during the complete life cycle of your equipment.

The sales manager takes care of all your business related queries and proposals. He will ensure that you get a personalised and dedicated service from ECL on a daily basis.

**Site managers**

The manufacturing and installation of heavy equipment in smelters across the world is a fairly complex process. It involves a mix of people, organisations and tasks.

This is why ECL has a team of site managers dedicated to overseeing the manufacturing and installation phases of your equipment through its life cycle. Your site manager co-ordinates teams and efforts inside and outside of ECL until your equipment is performing according to your contract. He is your main contact point as your project unfolds.

Quality and respect of deadlines and budget are the key objectives of his mission.

**Product range**

**Reduction: innovative, safe and reliable equipment**

ECL was the company that brought pot tending machines in the aluminium smelter world. With the largest installed base in the industry, we have the broadest experience and a track record enabling us to constantly improve our products. We can offer the equipment that best corresponds to each smelter's needs and demands, whatever the reduction technology used.

**Carbon: where reliability and productivity are paramount**

ECL offers equipment for the whole carbon sector. Since our first FTA in 1963, we have installed more than 190 in 69 smelters.

**Metal: adapted technical solutions and safety**

ECL metal and bath handling equipment can be integrated to the pot tending machine for applications at the reduction line or constitute a purpose-made crane. ECL has developed, over the years, several technical solutions adapted to the manipulation of ladles. When it comes to lifting, ECL offers balancing systems for ladle covers, guiding and locking mechanisms for safer operation and optimised interfaces for PTMs.
More than just offering products, ECL delivers solutions. This makes us ready to assist you at every step of your project and at every milestone in your equipment’s life cycle. Our offer covers the reduction, carbon and metal sectors of the aluminium smelter. Throughout the life of equipment we supply, we offer an exhaustive range of services that guarantees a maximum return on your investment.
Reduction sector

**Pot tending machines**
ECL cranes are designed to each smelter's specifications, and can benefit from our many patented and patent pending innovations:

- Pot tending machines;
- Anode changing machines;
- Overhead tapping machines;
- Superstructure and pot;
- Handling cranes;
- Stud pulling machines.

**Transfer equipment**
Transfer equipment includes:

- Transfer gantries;
- Runway raising beams;
- Retractable bumpers.

**Pot equipment**
More than 15,000 pots have been equipped by ECL around the world. Our offer comprises, for all technologies:

- Anode raising beam lifting mechanisms;
- Anode jacking frames;
- Intelligent and standard crust breaking and feeding devices;
- Isostatic and standard anode clamps;
- J hooks and fixings;
- Sealing jaws.

Carbon sector

**Cranes**
ECL has installed more than 190 FTA in 69 smelters and offers a whole range of related equipment:

- Anode baking furnace tending machines;
- Anode handling machines;
- Coke handling machines;
- Flue wall cleaning machines;
- Flue wall demolition grabs;
- Flue wall straightening machines.

**Rodding shop**
ECL offers from single machines to turnkey rodding shops for all types of anodes (2, 3, 4 or 6 stubs) including building:

- Loading and unloading stations;
- Bath removal stations;
- Hot bath cleaning machines;
- Butt shot blasting stations;
- Butt stripping machines;
- Thimble stripping machines;
- Stem brushing machines;
- Stem and stub control stations;
- Graphite coating machines;
- Casting stations;
- Level 1 and 2 supervision systems;
- Anode tracking system.

**Green and baked anode handling equipment**
ECL can deliver complete and fully automated anode handling shops:

- Green and baked anodes handling cranes;
- Transfer cranes;
- Conveyors;
- Cooling tunnels;
- Tilting devices;
- Green anodes control stations;
- Anodes and anode holes cleaning machines;
- Slot cutting machines.
ECL™
Rodding shop solutions

The anode rodding shop plays a major role within prebake technology aluminium smelters and is getting increasing attention when it comes to smelter efficiency. Its performance, in terms of production quality and productivity, can dramatically influence reduction line operation, as well as the quality of aluminium produced.
Unrivaled know-how and experience
Since 1965, ECL has gained a sizeable experience in this sector by producing turnkey rodding shops or single machines, each adapted to the customer's requirements and specifications. More than 280 machines have been commissioned by ECL, constituting the largest installed base in the industry.

Focus on environment, health and safety
Environmental impact, health and safety are key subjects for ECL when designing rodding shop equipment. Special features and unique technical solutions have been designed to help our customers in their EHS efforts.

An exhaustive range of equipment
Catering for all types of anodes (2, 3, 4 or 6 stubs), ECL can offer according to your specific needs:

- Overhead conveyors;
- Loading and unloading stations;
- Bath removal stations;
- Hot bath cleaning machines;
- Butt shot blasting stations;
- Butt stripping machines;
- Butt crushing machines;
- Thimble stripping machines;
- Butt and thimble stripping combination machines;
- Stem brushing machines;
- Stem and stub control stations;
- Graphite coating machines;
- Mating stations;
- Induction furnaces;
- Casting carousels;
- Casting machines.

Project management
A team of project managers is dedicated to overseeing the engineering, manufacturing, delivery and installation phases of your equipment. Your project manager drives the project team and contract execution, inside and outside of ECL, until your equipment is performing to your satisfaction.

More than a set of machines
Rooding shop design through flow management
The design phase of the rodding shop always starts with the smelter’s targets in terms of production quality and productivity. The type and quantity of stations needed is only a part of the equation. Physical location of the machines is critical, but also the size and availability of the buffer stocks.

ECL employs an ad hoc software to organise and simulate the anode flow, taking into account cycle times, availability rates, conveyors speed and machines locations. This allows ECL to guarantee an efficient solution with given production performance for single machines or complete shops.

Level 2 solutions
To ensure the optimum productivity of the complex system that is the rodding shop, a global flow, production and maintenance management system can be put in place. To this end ECL provides a level 2 solution giving access to a large amount of information regarding each station and the whole rodding shop operation.

The centralised computer system receives from each station the following information:

- Input;
- Output;
- Alarms status;
- Fault status;
- Operator’s shifts changes.

Computer analysis helps determine for each machine the:

- Availability rate;
- Breakdown statistics and therefore its reliability;
- Productivity.

The level 2 solution allows the optimisation of the rodding shop productivity, efficiency and reliability. It can also assist in determining which station needs to be doubled or replaced for a possible smelter expansion.
ECL™
Training and development programmes

Correct operation and maintenance of a smelter's equipment directly affects its performance and life expectancy. With the constant evolution of technology and equipment, it becomes critical to stay up to date. As designer and manufacturer of your equipment, we are the most suited to give you the technical support you need. For this reason, ECL offers full training services for all your operators, technicians and engineers.
ECL Technical School

Training sessions are customised to fit the technical level of the audience. Our training programmes cover refresher training sessions for existing personnel through to introductory training courses for new personnel. Whatever your requirements, ECL will adapt the sessions to suit your needs.

Official diplomas and certifications
All courses are sanctioned by an ECL diploma. We can also provide training courses complying with local regulations and official qualification or certification.

On-site or off-site
They can take place in your premises, or at ECL Technical School headquarters in France and subsidiaries. Sessions can be conducted for groups from 2 to 12 people. They all include theory courses and hands-on practical sessions to guarantee an optimum knowledge transfer to your teams.

On-site training
- Operation and maintenance training sessions for: PTM, FTA, rodding shop, stacking cranes, transfer equipment, anode handling and storage;
- Complete or refresher training programmes;
- Virtual reality training tools.

ECL Technical School off-site training
- Theory and practice training modules;
- Certifications and re-certifications;
- Theme-based training programmes: compressors;
- Good practices exchange forums.

Workshops

ECL Technical School offers standard training modules specifically adapted to the aluminium smelter's needs and environment. Tailor-made training courses can also be created for your particular requirements.

Operations
Equipment and functionality presentation:
- Operating modes;
- Start-up and shut-down procedures;
- Safety practices;
- Driving practice;
- Operator interface;
- Level 2.

Maintenance – Mechanics
- Hydraulic system adjustment;
- Compressor and pneumatic circuits;
- ECL service brakes and safety brakes;
- Air conditioning;
- Troubleshooting procedures;
- Preventive maintenance;
- Safety procedures.

Maintenance – Electrics, Instrumentation and Control
- Equipment and functionality presentation, electrical schematics, operator interfaces;
- Insulation Control System, safety procedures;
- Troubleshooting;
- PLC hardware and software, network architecture and protocols;
- MCC hardware, communication protocols;
- Specific equipment modules: encoders, speed drive VFD, weighing system, speed controller, etc.
Maintenance – Management
Objective: Implement a dedicated support to the smelter start up team/experienced maintenance crew in order to highlight roads for improvement and review maintenance best practices.

- Preventive maintenance;
- Work preparation and scheduling;
- Reliability; equipment reliability improvement, daily failure analysis;
- KPI and performance loss distribution; statistical analysis.

Virtual reality driving simulator

A superior learning tool
Traditional PTM operator's training is done on the installed cranes with a full time instructor and only provides basic control knowledge. Operator's ability and precision are gained through practice and experience. This induces many problems for the smelter:

- Driving mistakes leading to broken PTM tools and damaged pots;
- Low PTM availability rate due to training duty and breakdowns;
- Low productivity due to non-optimised driving habits of the operators.

ECL has designed a 3D virtual reality simulator that places the trainee inside your real PTM control cabin, and which employs head tracking system for increased realism:

- Full training programmes: from basic crane movements to complete anode changing sequences;
- Reconstitution of many scenarios: emergency situations, breakdowns, etc.;
- Practice of troubleshooting procedures for maintenance technicians;
- Performance monitoring and reporting.

"Training is an essential part of the ECL package offer. We are here to help you improve the technical performance of your team, reduce the learning curve and keep their skills up-to-date.

Our maintenance training sessions will enable your personnel to acquire the competencies to minimise equipment downtime (diagnosis and repairs), thereby increasing the availability of your equipment. They will also ensure its longevity, peak performance and increased productivity.

Whether on your premises or at your local ECL Technical School, our tailored training programmes combine theory and practice on your equipment, allowing us to better meet your expectations."

Olivier Gaignard,
ECL training manager
ECL™
Services solutions

With ECL’s worldwide network of eight subsidiaries, ECL customers benefit from our unmatched knowledge and experience in aluminium smelter equipment and technology. Offering on-site after-sales services, ECL provides fast and efficient services on a 24/7 basis.
Erection and commissioning

Meeting your schedule targets
ECL™’s supervisors are committed to ensuring that you get ECL™’s quality and reliability, according to your time schedule. Supervisors will also provide a start-up training at the time of commissioning.

- Contract timeline respect.
- ECL™’s quality standards.
- Staff start-up training.
- ECL™’s performance from day one.
- From supervision to Lump Sum Turnkey (LSTK).

Technical assistance

Offering permanent customer back-up
We pride ourselves in assisting our customers not only during the project phase but also whilst exploiting and maintaining the equipment throughout the life of the smelter.

- Maintenance management assistance covering:
  - Electrical networks and devices;
  - Mechanics: maintenance schedules and turnovers.

On-site technical assistance:
- Provided by ECL™ experts;
- Tailored to the smelter’s needs.

Technical assistance objectives:
- Maintenance costs reduction:
- Spare parts stock reduction;
- Equipment availability rate increase.

Training

Keeping your staff skills up-to-date
As the manufacturer and designer of your equipment, ECL™ is the most suited to give you and your teams the technical information you need to maximise your equipment’s integrity and longevity.

- Operation and maintenance training sessions:
  full training service for your operators, technicians and engineers.
- Complete or update training programs:
  refresher training for existing personnel, instructing for new personnel, training sessions adapted to the required level.
- On-site training:
  at ECL™ headquarters or subsidiaries, in your premises.
- Operations and maintenance PTM simulator:
  a high value training and recruitment tool supporting continuous HR development (less operator damages, faster learning curve, prevent from operation drift prevention ...).

Spare parts

Fast and efficient service
With the support of a dedicated business unit in France, ECL™ and its subsidiaries are able to provide a wide range of guaranteed OEM spare parts.

Dedicated stand alone spare parts business unit, comprising:

- Spare parts sales and purchasing administration;
- Dedicated spare parts stock:
  - long lead time items (wheels, etc.);
  - frequent turnover items (filters, cables, etc.);
  - worldwide distribution through our network of subsidiaries.
- Specific logistics platform;
- Local sourcing for reduced customer costs.
Maintenance service continuum

Offering an optimal performance/cost ratio
Based on performance indicators and a management process defined with the customer, ECL™ offers on-site maintenance management to an increasing number of smelters. The on-site ECL maintenance team follows a lifecycle approach, based on an integrated model from design to end-of-life to support decision making about critical and high capital assets.

Major milestone identification:
• technical assistance: post commissioning, local sourcing, capacity increases;
• equipment audits: obsolescence, structural inspections.

Strategic planning to meet the customer’s business plan

Audit

Developing a pro-active approach
ECL™ auditors are experts with broad experience in smelter equipment and technical expertise in such fields as mechanics, hydraulics, pneumatics, electrics, automation and engineering life calculation:

• Technical diagnosis of your equipment;
• Identify critical technical issues;
• Identify potential upgrades for higher performance;
• Prescribe tailored maintenance schedules;
• Environmental, obsolescence, creeping and modernisation assessments;
• Re-certification or life extension program;
• Structural life calculation.

Refurbishment and modernisation

Maximum performances during the equipment’s entire life cycle
ECL™ devotes a significant amount of resources to Research and Development. To ensure that you benefit from the latest innovations, or that your ECL™ equipment performance and safety standards are kept in line with current standards, we offer refurbishment and modernisation services:

• Benefit from the latest innovations;
• Improve the performance of your equipment;
• Add new functions to your production tools.

More than just offering products, ECL delivers solutions. This is why we pride ourselves in assisting you throughout the life of the equipment we provide.
Global service solutions

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