AI

APC+ by METSOL

APC+™

An Advanced and Versatile Solution for Pot Process Control

+ Raising Current Efficiency
+ Increasing Metal Production
+ Lowering Power Consumption

METSOL
A BATHCO COMPANY

The APC+™ Solution

The **APC+™** represents the next generation of **Advanced Process Control** systems, developed specifically to address three serious issues facing the primary aluminium industry today:

1. Power Consumption

Being a large consumer of electricity, the aluminium industry faces significant challenges to remain viable amid rising energy demand and substantial increases in power tariffs. As a result, reducing power consumption is not just important, but **essential** to smelters.

Solution:

APC+™ allows smelters to achieve lower process specific power consumption through improved anode effect management and process control tools driven by AI data analytics leading to:

+ **Lower Pot Voltage**
+ **Decreased Electrical Pot Noise**
+ **Decreased Total Power Consumption**

2. Environmental Impact

Perfluorocarbons (PFCs) generated during anode effects make the aluminium industry a significant contributor to greenhouse gas emissions when not effectively controlled.

Solution:

Through **advanced alumina feed control logic**, the APC+™ Pot Controller directly reduces total PFC emissions by effectively **suppressing anode effects**. As such, APC+™ significantly reduces a smelter's carbon footprint and provides a platform to produce Green Aluminium, realizing significant benefit:

+ **Lower Anode Effects**
+ **Lower Anode Effects Overvoltage**
+ **Reduced PFC Emissions**
+ **Green Aluminium Production**
+ **Reduced Total Carbon Footprint**

3. Productivity

As the global marketplace accelerates its push toward responsible energy consumption and sustainable processes, primary aluminium smelters must look for every edge available to improve total process productivity.

Solution:

APC+™ is built with **AI-driven smart analytics with real-time monitoring and predictive capabilities** for early detection of process deviations to achieve improved pot stability leading to higher current efficiency and plant profitability:

+ **Increased Pot Stability**
+ **Higher Current Efficiency**
+ **Increased Metal Output**
+ **Increased Profitability**

The APC+™ - A Superior System

The APC+™ Pot Controller is an **AI-driven, PLC-based process optimization** system designed to enhance:

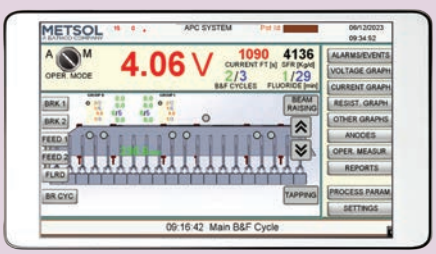
+ Pot voltage control
+ Alumina feed
+ Aluminium fluoride dosing

APC+ by METSOL

By leveraging **proprietary algorithms and advanced sensors**, APC+™ enables:

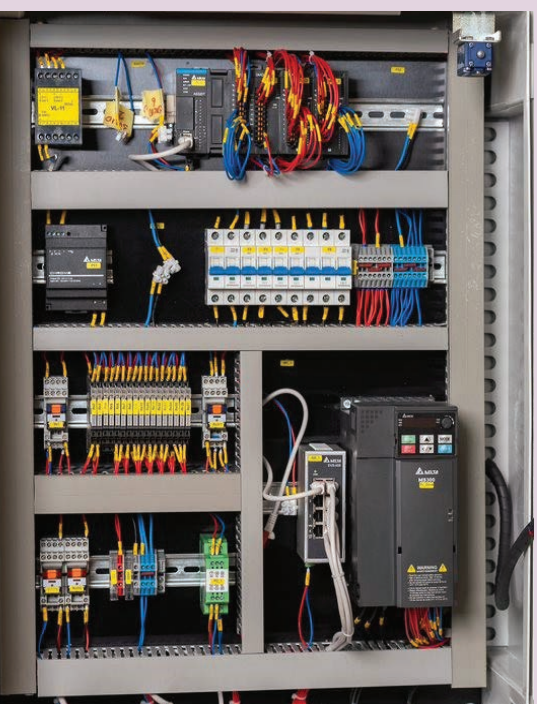
+ Smart real-time monitoring with predictive capabilities
+ Optimized mass balance to reduce energy consumption
+ AI-driven analytics to detect process deviations and improve current efficiency
+ SCADA database and HMI interface for seamless data analysis and operational control
+ SCADA system that can generate customized reports to meet the client's requirements
+ Secure remote access for monitoring pot operations via mobile devices

Examples of APC+™ interface:



The APC+™ - A Superior System

The **APC+™ control cabinet** is made of **high-quality polyester** for complete electrical isolation and can be easily mounted near the pot. It includes a variable speed drive (VSD) or frequency converter for efficient voltage control, making it a highly effective replacement for outdated pot controllers and a leap forward from traditional solutions.



The APC+™ system will include:

+ **Delivery of the hardware** – APC+™ Pot Controller units and their accessories
+ **Installation and commissioning** of the units
+ **Training** of plant trainers, operation and maintenance teams
+ **Providing software upgrades** for a period of one (1) year, then extended through the **System Maintenance** contract provisions
+ **Full technical support** during commissioning and system fine tuning
+ **Ongoing support options** beyond system tuning, with MetSol offering a range of support solutions, including **24/7/365** assistance to ensure long-term operational success and continuous improvements

The APC+™ Difference

The APC+™ System represents the next generation of pot controller technology, leveraging AI-driven analytics and real-time data insights, ensuring maximum efficiency and pot stability. The APC+™ Pot Controller is extremely versatile and can be applied to any smelter technology including:

- **Soderberg:** + Horizontal Stud + Vertical Stud
- **Prebaked:** + Point Feed (PBPF) + Side Worked (PBSW) + Centre Worked (PBCW)

The APC+™ and the APC™ first generation pot controller have successfully been used on a variety of smelter technologies regardless of operating amperage:

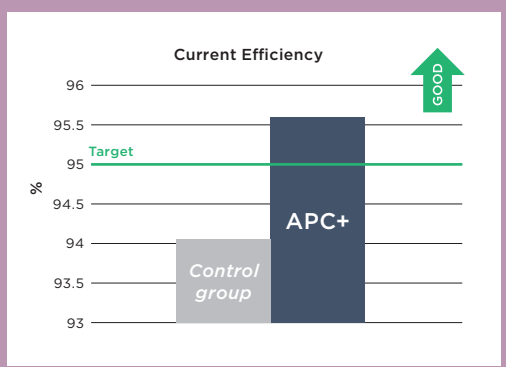
- AP-7
- AP-9
- AP-CM
- AP-40
- P-69
- GAMI
- SAMI
- NEUI

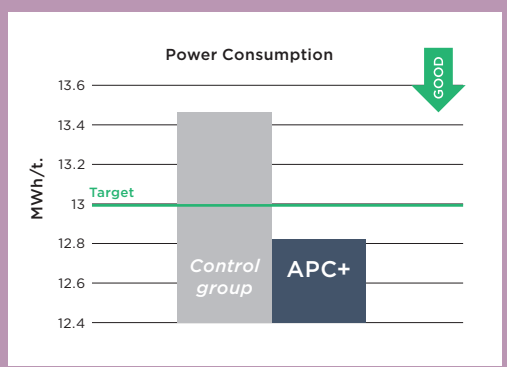
Case Studies

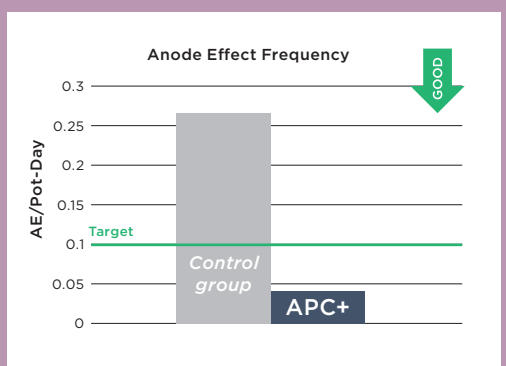
Independent case studies have compared **APC+™ to traditional pot control technologies**, demonstrating its advantages in both **old** and **new** smelter technologies.

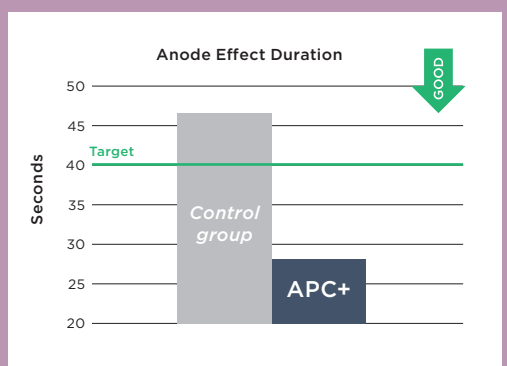
PBSW Case Study

"old technology" smelter

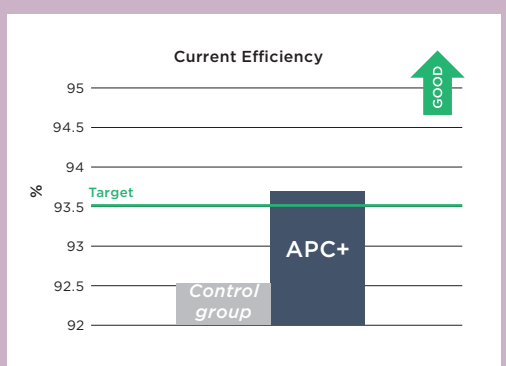


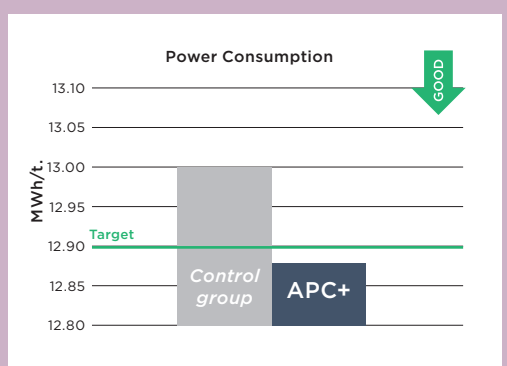


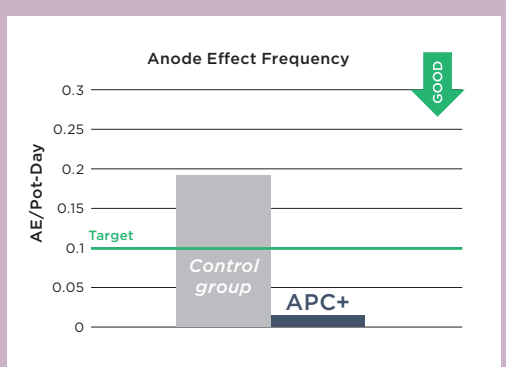


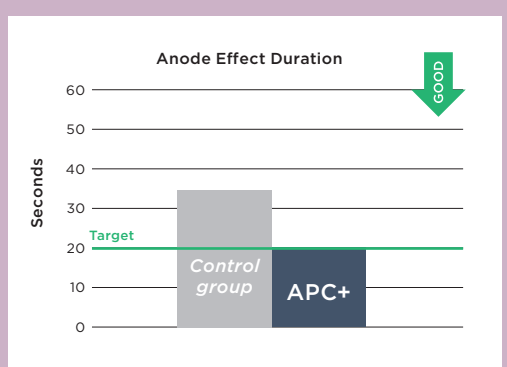


"new technology" smelter









Client Support

MetSol's commitment goes beyond installation. We provide:

+ **Proven process optimization expertise**
+ **Strategic and technical support for long-term ROI**
+ **A true partnership for continuous operational excellence**

About Us

MetSol is a leading provider of energy-efficient solutions for the aluminium industry, focused on:

+ **Reducing energy consumption**
+ **Optimizing smelter performance**
+ **Advancing sustainability efforts**

Our team consists of industry veterans with experience at Alcoa, Rio Tinto Alcan, Aluminium Pechiney, and RUSAL. Our customized solutions deliver maximum gains with the shortest payback period for primary aluminium smelters.

MetSol is part of the Bathco Group, an integrated leader in aluminium raw materials, upcycling solutions, and equipment.

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Contact us today to see how APC+™ can transform your smelter operations!

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