

ATF-06-02—Management of PFC Emissions

Project

This project will enable all primary production facilities in Partner countries to identify and implement cost-effective, technically feasible opportunities to minimize perfluorocarbon (PFC) emissions generated during anode effects in the electrolytic cell. The IAI GHG protocol provides guidance on common measurement and calculation methodology.

In general, the magnitude of PFC emissions for a given level of production depends on the frequency and duration of anode effects. Cost-effective technologies and practices to reduce PFC emissions are currently available and can be implemented at smelters of all technology types. However, emissions can vary significantly from one aluminium smelter to the next, depending on cell technology and operating procedures.

This project will provide the relevant tools to develop PFC inventory and reporting regimes and to facilitate the development and adoption of smelter-specific PFC emission reduction strategies, which may include some or all of the following measures: improving alumina feeding; training monitoring staff on best practices to minimize the frequency and duration of anode effects; maintaining applicable controls over alumina properties; mechanical maintenance; and cell parameters.

Objectives

That all participating Partner countries report anode effect performance.

That all participating Partner countries reduce PFC emissions through the development and use of high quality PFC emissions data and by facilitating the adoption of systematic PFC emission management processes. Key components of PFC management include:

- Monitoring and inventory
 - Establish baseline estimates using IPCC default values or, when available, smelter-specific measurement data.
 - Establish monitoring and data collection system for anode effect frequency and duration.
 - Conduct direct PFC measurements to establish smelter-specific slope-coefficients to improve accuracy of emission estimates.
- Management systems
 - Set reduction targets.
 - Awareness of the process efficiency and climate benefits of reducing anode effects for managers and potline operators.

- Awareness and analysis of technical options in emission reduction technical upgrades.
- Anode effect prevention and response training for managers and potline operators.
- Process control systems
 - Anode effect reduction algorithms/resistance monitoring.
- Cell technology upgrades
 - Point feed.
 - Prebake.

Performance Indicators

- All participating Partner countries are trained in the collection and reporting of the required data.
- All participating Partner countries collect and report on PFC emissions for the agreed quantity of smelters.
- Each Partner achieves the IAI median benchmark for PFC emission performance across smelter population for each technology type.
- Ongoing PFC emissions performance benchmarks to be reassessed based on global benchmark.

Milestones

- 2007 Adopt standard facility-specific measurement method, e.g. EPA/IAI Smelter Measurement Protocol
- Agree to common reporting format for primary facilities, e.g. IAI Aluminium Sector Greenhouse Gas Protocol
- Identify and initiate training requirements for data collection and reporting
- Identify and initiate training requirements for smelter measurements
- Establish in-country data reporting processes
- Achieve anode effect data tracking and reporting at 25% of smelter facilities
- Estimate Partner country PFC emissions using IPCC method
- Develop compendium of currently available mechanisms to facilitate PFC emission reductions

- Host workshops and study visits to disseminate PFC emission reduction information
- Develop PFC direct measurement strategy to identify priority smelters for measurements including cost estimates, timeline etc.
- 2008 Complete preliminary benchmark assessment of Partners' facilities against global averages
- Achieve anode effect data reporting at 50% of all primary facilities
- Partner countries identify mechanisms in existing smelter operations of different technology types that have facilitated PFC emissions reductions and host workshops and study visits to disseminate information
- Identify financial mechanisms to implement strategies to enhance PFC emission reductions
- Conduct additional training workshops as needed
- Complete facility specific PFC measurements at 10% of primary facilities
- 2009 Complete facility specific PFC measurements at 20% of primary facilities
- Undertake supplementary data collection training in Partner countries if required
- 2010 Complete baseline smelter measurements at 40% of primary facilities

Resources

Financial and in-kind resources will be necessary for training and management awareness, measurements, translation, etc. and be sourced from Partner contributions.

An international organization (to be determined) with expertise in data collection and analysis will collate and analyze data.

Provide relevant training in conjunction with a consultant and technical experts for the measuring of the PFC data through Partner funds.

IT upgrades necessary to collect anode effect process and other relevant data to be through Partner funding.

Resources necessary for any technical upgrades, major/minor retrofits, etc. will be achieved through commercial markets and implemented on a case-by-case basis.

Demonstration smelter operations will be provided at the cost of the smelter operator. Participation of Partner countries in the workshops and information sharing will be at the cost of each Partner.

Investment in minor and major technology upgrades, e.g. anode effect prediction software packages—commercial markets.

Tools/mechanisms for information dissemination, prioritization and recommendations for implementation of appropriate technologies and practices—Partnership resources.

Participation

The United States, Australia and China.