

E-Kaldo - A novel process for treating e-waste at Boliden AB

2010 to 2012 Countries covered: Sweden

Summary:

E-Kaldo process allows for the increase of WEEE recycling at the Boliden Rönnskär smelter by nearly 200%, closing the loop for base and precious metals. An integrated processing route is a key challenge. This is an example of process innovation based on inhouse RD&I.

Description:

The E-Kaldo process at Boliden's smelter in Rönnskär is a special process step for smelting waste from electronic and electrical waste (WEEE). It is using an adapted Kaldo furnace and produces black copper and a slag, which can be further processed in existing process steps for treating ore-based raw materials. I.e., the E-Kaldo plant does not produce a final product, but rather intermediate products for downstream processing, with the advantage to significantly increase the WEEE capacity (smelter capacity for recycling of electronic scrap increased from 45,000 to 120,000 tonnes/year). The plastics contained in the WEEE are contributing to the thermal energy needed, as excess heat from scrap smelting is transformed into electricity or district heating.

Start-up 1976 of first Kaldo process

Treatment of electronic scrap since 1980

Flexible unit, altering campaigns for e-scrap and lead smelting

Project started Q2 2010

New E-Kaldo plant commissioned in 2012:

- Superior capacity compared to competing technologies
- Improved environmental performance
- Continuous improvements

The innovation has proven its efficiency in full-scale industrial operation.

Good practice areas:

Resource security

Recovery of metals from EoL products

Environmental sustainability

Reduced waste amounts

Organisations involved:

Boliden AB

Innovation category:

Process

Impact on the mining value chain

- mineral and metallurgical PROCESSING (incl. Permitting)

Linked policies

WEEE Directive

Waste Framework Directive

Strategic Implementation Plan for the European Innovation Partnership (EIP) on Raw Materials-1782

Transferability:

Technical solution: Known process technology has been adapted and integrated in specific flowsheet

Innovation drivers and barriers

Drivers:

Economic

Business opportunity (competitive position in e-recycling) Need to increase WEEE capacity as metal grades in primary resources are decreasing

Other

Responsible resourcing within the EU instead of illegal trade with EoL products

Barriers:

Other

Multiple levels of government authorities involved in permitting Knowledge asymmetries

Impact Area

Area:

Environment, Quantity of natural resources

Impact on listed area:

Increased resource efficiency

Area:

Economic, Competitiveness

Impact on listed area:

Optimized production