

## MSc thesis project proposal

### INVESTIGATION OF OPPORTUNITIES FOR COST-EFFECTIVE CARBON CAPTURE AND STORAGE AT BOLIDEN'S PLANT IN SKELLEFTEHAMN

#### AIM

Investigate opportunities to implement CCS (carbon capture and storage) to achieve climate neutral operation of Boliden's Rönnskär plant in Skelleftehamn.

#### BACKGROUND

Boliden's Rönnskär plant currently emits approx.. 280 ktonnes/yr of CO<sub>2</sub>, of which 210 ktonnes from two individual point sources: (i) the eKaldo plant for processing electronic scrap (60.000 tonnes) and (ii) the slag fuming plant for reduction and metal recycling (140.000 tonnes). Both sources could potentially be of interest for implementation of CCS.

#### SPECIFIC GOALS

Investigate process consequences and indicative capital and operating costs for implementation of CCS technology at the eKaldo and slag fuming plants at Boliden's Rönnskär plant in Skelleftehamn. Specific focus should be placed on investigating how the energy requirements of the carbon dioxide capture process can be covered by residual heat available at the site. The project should also provide cost estimates for transportation and final storage of the carbon dioxide, based on best available knowledge.

#### ORGANISATION

The proposed project is to be performed by one or preferably two students with a chemical or mechanical engineering (or similar). The work will be supervised by research staff at the Division of Energy Technology at Chalmers as well as engineering staff from Boliden. Students will be expected to travel to Boliden's plant in Skelleftehamn for data collection, data processing and in-depth discussion with plant engineers. Boliden will cover travel and accommodation expenses.

Support staff at Chalmers: Process integration experts at CIT-Industriell Energi and CCS experts at the Division of Energy Technology

Examiner: Simon Harvey, [simon.harvey@chalmers.se](mailto:simon.harvey@chalmers.se)

Time frame: January-May 2020

Requirements: Background (B.Sc.) in chemical or mechanical engineering (or similar), M.Sc. in Sustainable Energy Systems or Innovative and Sustainable Chemical Engineering. The course Industrial Energy Systems (KVM013) or equivalent is required.

#### CONTACT PERSON AT CHALMERS/ENERGY TECHNOLOGY

Prof. Simon Harvey, Industrial Energy Systems Analysis, [simon.harvey@chalmers.se](mailto:simon.harvey@chalmers.se)

#### CONTACT PERSON AT BOLIDEN

Jens Christiansen. Corporate R&D

Tel +46705583847; e-mail [jens.christiansen@boliden.com](mailto:jens.christiansen@boliden.com)