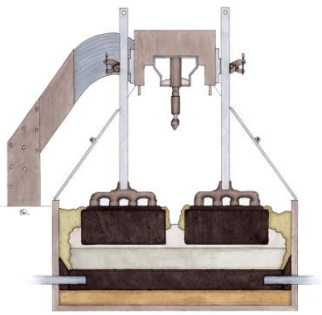
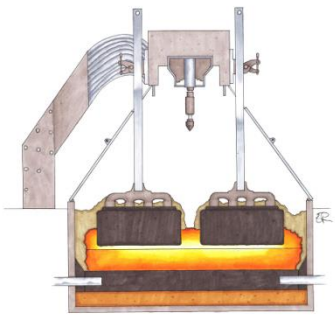
RD2 – Primary metal production
September 2015

We are now in the middle of the preparation of the first annual SFI -fall meeting the 27th-29th of October. The meeting will focus on the SFI through the start up as well as discussing future plans for RD's. It will also include a general part on how to increase our research through future EU projects. Welcome to all participants !!

Merete Tangstad



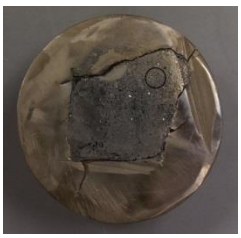


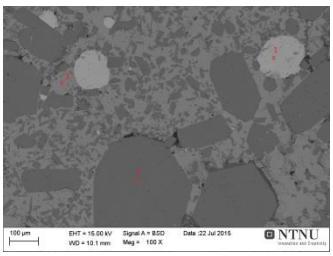
Fall activities within aluminium production

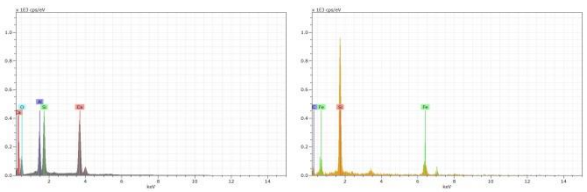
The aluminium industry partners met in September with NTNU and SINTEF in the SFI to discuss activities and organization of research in general. The short term activities in RD2 was also discussed. The discussion was focused on the dissolution of alumina, the formation of HF from water-content in raw materials, the wetting of cryolitic melts and carbon materials as well as trace element distribution in the electrolysis cell.

At the meeting it was decided that the main activity this year was to make a review of the trace element distribution, and then start to look at the other activities.

Impurity elements are always present in aluminium electrolysis cells. The origin of the impurities is relatively well known, but total mass balances have been carried out for only a few elements. Besides contaminating the produced metal, some elements are harmful for the current efficiency. There is still need for better knowledge concerning equilibria between the electrolyte and metal or gas, concerning loss of current efficiency, and concerning where the impurities finally end up.







Summer-job studying the samples from Elkem Bjølvefossens FeSi production furnace

The fifth year student Kristoffer Harr Martinsen studied the samples taken during the excavation of a 50% FeSi furnace. In the SEM, the phases present and their composition is found. In the course of the fall, this work will be reported together with the XRD work and XRF work performed by Elkem.

This work is a good example of how the different partners contribute to the overall results, where the in-kind from Elkem will both be excavation work as well as analyses, and the NTNU/Sintef part will be analysing work and overall reporting.

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Exchange PhD student from South Africa - Carbon materials in the lining and in the electrodes

PhD student Yolindi van Staden is on a one month exchange stay at SINTEF/NTNU studying FeCr production. Together with her supervisor, Prof. Paul Beukes, at the North-West University, a carbon meeting was arranged with Elkem Carbon (Lars Lindstad and Aslak Skjeldestad) at Mausundvær in the last part of September. North-West University in one of several universities in South Africa that has similar research interests with NTNU/Sintef.

Short courses from RD2 and RD4

21st and 22nd of September there was a 9 hour course in the fundamentals of FeMn/SiMn production and the 28th and the 29th of September there was a 9 hour course in the fundamentals of Si/FeSi production. Together with about 15 3rd, 4th, 5th and PhD students, also about 10-15 industrial representatives from both the Mn and the Si industry was present. There was also some international representatives from Ofz (Slovakia), Wacker (Germany) and White Energy (Australia). The lecturers was from NTNU, SINTEF, Elkem Carbon and Metsol (Sweden).

Pilot scale experiments.

In the end of September the first Mn-pilot scale experiment was performed. The goal is to optimize the operation of pilot scale experiments. These experiments is a coordinated effort between the industry and Sintef/NTNU. Two industry representatives, Per Anders Eidem (Eramet) and Bjørn Heiland (Glencore) was present with both NTNU and SINTEF operators.

The experiments was led by Ingeborg Solheim, and the sub-goal was to produce a 16-18% silicon alloy with Assmang ore and HC slag.