

## RD2 – Primary metal production June 2015

With a SFI that barely has started, we are still in the process of determining activities, organization and visions. However, there are already quite some activities going on. To keep all participants involved, there is a goal to have a monthly newsletter from RD2. It is hence also a goal to get input from both the industry as well as the research organization, so please send me information on any activities within the SFI (RD2) for future editions. In some cases there will be some overlap between the RD's which is a strength to the whole vision of the SFI. So I urge you all to send me any contribution for future newsletters.

Merete Tangstad



### Alumina for aluminium production

There is an ongoing discussion on the Al-activities in RD2. The two winners coming up so far is alumina and distribution of trace elements. The alumina and the production of alumina is important for the production process and to steal a famous quote: All alumina is equal, but some alumina is more equal. 2015 may hence be used to set the path a head. Whatever area chosen, making a summary of the knowledge and the knowledge-gaps may be a good starting point.

### Excavation of a 50% FeSi furnace at Elkem Bjølvefossen

One of the many nice project in the SFI is the excavation of industrial furnaces. Though quite hot, zones was recorded and samples was taken out for further analyses at Elkem Bjølvefossen. Some samples will be investigated at the SEM at NTNU/SINTEF, the slag will be analyzed at Elkem Bjølvefossen and the XRD will be performed at Elkem Technology.

Elkem trainee Liv Rasmussen participated in the excavation and you can read her blog about it at:  
<https://elkemtrainee.wordpress.com/2015/04/21/a-trip-to-warmer-climes-furnace-excavation-in-bjolvefossen/>



Worsley Alumina operation in Western Australia  
Source: The Australian



### Norwegian representation at the International FerroAlloy Conference

Infacon is one of the prioritized conferences when it comes to ferromanganese production. Ferrosilicon- and silicon-production is also a topic at the conference. Due to the un-stability in Ukrain, the turnout was not as strong as usual. Though this was also the case for the Norwegian participants, it was still a noticeable presence from the Norwegians. With 7 presentations from 4 people and one representative at Infacons board, the Norwegians contributed with a fair share.

Infacon IX will be held in South Africa in janury / february 2018, and is hence returning to its roots.

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### The summer students are coming

One of the seasonal activities we are looking forward to, is the start of the summer-students. While some of them is only connected to the SFI for the summer, the soon 5<sup>th</sup> year students will continue with the Specialization project in the fall, and hopefully a Master thesis next spring. In the coming Newsletters the students will present themselves, and we start with Joakim Holtan.

While most of the summer jobs are paid by the SFI directly, there is also a couple that are used as in-kind from the industry partners. Here are some of the summer students related to the SFI:

Joakim Holtan on SiMn, Kristoffer Harr Martinsen on FeSi samples, Håkon Olsen on modelling of SiMn, Sofie Aursjø on carbon materials, Erik Roede is drawing the Mn and Al process, Stine Svoen on slag phases in Mn, Marthe Erdal Kjelstadli on quartz, Eirik Nedkvitne is surveying the industry (RD5), Siri Marie Bø Myhre on alumina (RD5), Sigmund Strand Dahle on alumina (RD5)

### Summer project within Centre for Research-based Innovation (SFI)

This is the last summer before I complete my Master's degree. My summer project is experimental work based. The objective of the experiment is to investigate the melting and the reduction of  $\text{SiO}_2$  during silicomanganese production. I will do this by measure weight loss during melting. Professor Merete Tangstad is my supervisor, and our main goal is to determine if MnO is reduced before or after it is mixed with the quartz.

I am excited and look forward to see the results from the experiments. Anyway, it will be interesting to be a part of the research team at metal production.

Joakim Holtan  
summer student



### Discover Channel visit ?

Discover Channel (Canada) is visiting Scandinavia in the middle of the summer. NTNU was approached to suggest good stories. In this contest the SFI are now in the small group of four stories that may be chosen. We cross our fingers and hope that we will be able to show the world cleanest metal-producing industry. This is our sales-pitch towards the Discovery Channel:

### **Green metal production**

*The Norwegian metals industry is a world leader in technological and innovative production, producing the cleanest metals in the world – in terms of energy use, efficient processing and the recycling of waste. The industry and research institutions work closely in order to further improve these processes, making our everyday utensils, transport materials, solar cells etc. greener.*

*During the last weeks of June (flexible dates) research experiments will be conducted at NTNU in Trondheim. The experiments will include the production of Ferroalloys (silicon, manganese and iron), simulating industrial production. The goal of the experiment is to study reaction mechanisms affecting both energy consumption and emissions, with a goal to reduce both elements.*

*The same metal producing ovens that are tested at a laboratory scale at NTNU, can be then seen on an industry scale, 250 times bigger, at the metal producer Elkem Thamshavn, 20 minute drive from NTNU/Trondheim. Elkem Thamshavn holds the largest silicon furnace in the world, and the tapping of the melted metal is very visual.*