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Imtiaz Potrooms

Celebrating UAE National Day 2012

The beautiful memories of the past, when the leaders planted the seed for the seven Emirates becoming a Union, which over the years has grown into a strong tree extending its roots and branches in all fields, is celebrated on 2 December every year.

In DUBAL, our Potroom Process Control Department along with representatives from different departments gathered with high interest to celebrate the occasion. Amongst the attendees were Ali Al Zarouni, Nedhal Al Rahma, Abdulla Zarouni, Kamel Al Aswad and Sergey Akhmetov. There were also external visitors from Star Probe (Canada) who participated in the event and were astonished to see the great love and affection shown by people towards this beloved country — not only by UAE Nationals but also by employees of different nationalities.

Representing the national's forum, Dr Maryam Al Jallaf (Senior Manager: Process Control Potrooms and Cell Lining), welcomed everyone to the celebration. She spoke about the Spirit of the Union, paying tribute to the leaders of UAE for their endless favour on the nation and its residents, whether UAE Nationals or expatriates. She also spoke briefly on the UAE culture and traditions. At the end, people gathered to sing UAE National Anthem.

A traditional Emirati Breakfast and a cake (with the UAE flag embossed on it) were served and enjoyed by all. Finally, a group photo was taken to mark the celebration of this memorable 41st National Day.

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Celebrating UAE National Day 2012

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41 روح الاتحاد
SPIRIT OF THE UNION
NATIONAL DAY اليوم الوطني
UNITED ARAB EMIRATES الإمارات العربية المتحدة

Testing new equipment:

Adopting best practices for employees' development and improving efficiencies (Part 1)

Since the company's inception in 1979, DUBAL has been committed to and encouraged continuous innovation in the aluminium smelting process so as to produce the world's best quality aluminium products, made-to-order and delivered direct to customers, while achieving maximum operating efficiencies. Over the years, DUBAL has remained internationally competitive and sustained efficient operation through continuous improvement, encouraging innovation at all and every level, adopting best practices and developing employees technical and managerial knowledge, skill and professionalism.

While attending a TMS course in Canada during 2012, Dr Maryam Mohammad Al Jallaf (Senior Manager: Process Control Potrooms & Cell Lining) and Nadia Al Ahli (Development Engineer: Technology Development), re-established communication with the vendor of STAR Probe™ (STAS) to address concerns regarding the instrument. This equipment gives four simultaneous readings, namely bath temperature, super heat, alumina concentration and excess aluminium fluoride percentage in bath. The provision of such comprehensive data through one system is expected to facilitate timely and effective actions for diagnosing the operational cells for quick, remedial decision-making. Introducing this sophisticated instrument is expected to reduce power consumption, improve current efficiency and optimise bath chemistry control and in addition, reduce XRD sample testing – eventually lead to smooth and stable operation of the cells and reduced hot metal cost per tonne of aluminium produced.

A professional delegation from STAS visited DUBAL in December 2012 to demonstrate the equipment, its functionality and all the technical aspects so as to achieve maximum benefits for individual and team development. The STAS delegates included Dr Marc Dupuis, Etienne Tremblay and Florent Gougerot.

A comprehensive plan was set-up prior to proceeding with real measurements. The equipment was tested across the potlines in coordination with Area Engineers and Managers in two stages:

- Stage 1 – The STAR Probe™ was trialed across the potlines to quantify the benefits in different technologies, view the overall measurement mechanism, develop measurement skills, and explore the usage concept and know-how.
- Stage 2 – The results obtained by DUBAL and STAS were reviewed in February 2013 to compare the results and explore whether the claimed benefits were achieved.

Dr Ali Al Zarouni (Vice President: Smelter Operations) and Dr Maryam Mohammad Al Jallaf (Senior Manager Process Control Potrooms & Cell Lining presented a token of appreciation to the STAR representatives after the final presentation.

The salient points are as below:

- A STAS representative presented the different probe features to Process Control/ Technology Development Technicians and Engineers along with assembly and usage.
- Measurements were conducted for each technology D18/D18+, CD20/D20, DX/DX+ etc. in the presence of the respective Process Engineers and STAR representative. To increase confidence and confirm the STAR results, bath temperature measured and bath samples were taken along with the STAR measurements to establish the level of accuracy.
- The team leaders were present on site to observe the measurement procedure, constraints, obtain the required information or explanation throughout the taking of the measurements.
- At the end, a second detailed presentation was delivered to all senior/ middle process control/ production management, in the presence of Dr Ali Al Zarouni (Vice President: Smelter Operations). The theoretical background of the STAR Probe™ and its usage in different smelters were explained in depth, all queries and concerns were answered.
- DUBAL employees were able to carry out measurements and capture the data independently

What is the STAR Probe™?

In essence, STAR Probe™ is a measurement tool for use in the potroom. It measures and gives bath **S**uperheat, bath **T**emperature, **A**lumina concentration in bath and cryolite **R**atio (excess AlF_3) in a single measurement.

The STAR Probe™ was developed specifically for potroom use, to provide all the critical information necessary for effective pot control, in real-time.

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Testing new equipment

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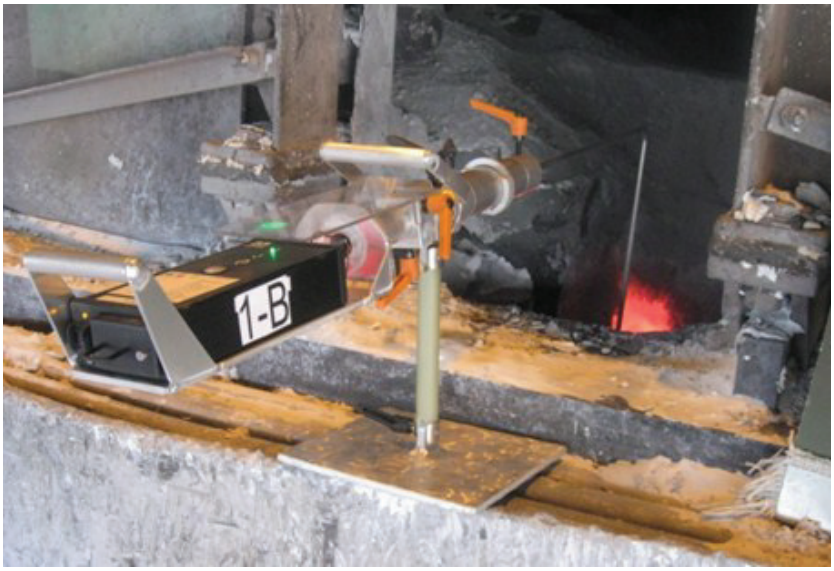
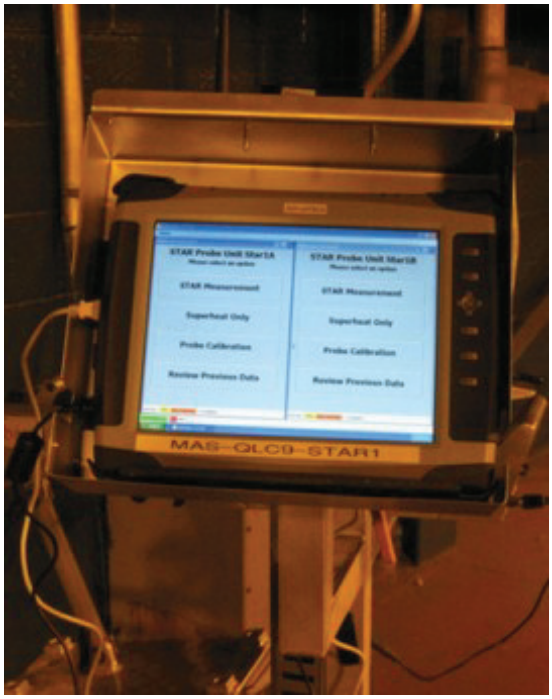




(Left) The STAR Probe and (right) tablet.

What's the reason for the change?

Efficient smelter operations requires critical measurements of bath temperature and bath composition (ratio or acidity). Not only is additional information required, but the information must be timely and coordinated due to the complex interactions of the smelter.

It is common practice that temperature measurements and bath sampling for chemical analysis are carried out separately, a causing delay in obtaining the results. The practices are usually not by design but of necessity, because of the logistics of running the potroom loss of bath cover with loss of alumina control and high emissions.

How the STAR Probe™ works

STAR Probe™ was developed based on the principle of Differential Thermal analysis ("DTA").

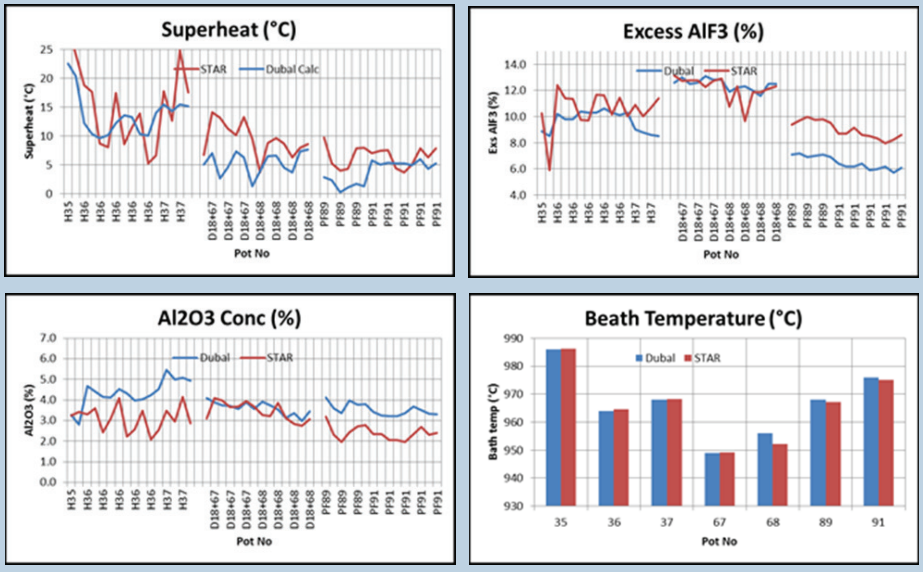
- It is designed to be used in potroom floor and does not require an especially skilled person.
- A few of simplified steps are required to obtain a measurement:
  - ⇒ Insert the probe in molten bath and wait for the temperature to equilibrate.
  - ⇒ Remove the probe from molten bath and allow to cool.
  - ⇒ The STAR analyzer calculates result and relays it to the pot controller.

The manufacture summarizes the success of the STAR Probe™ to date as follows:

- The STAR Probe™ has been successfully deployed in Alcoa's plants, replacing the traditional bath sampling/ analysis and temperature measurements.
- Comparisons of measurement results on the plant scale for multiple smelters verified that the STAR Probe™ measures bath ratio (acidity) as accurately (if not better) than the traditional sampling and analytical methods.
- Constant superheat based control algorithm was developed and deployed for pot control to take advantage of real time STAR Probe™ measurement results.
- Higher pot performance – reduced pot power consumption, reduced chemical consumption, and increased current efficiency – have been achieved by using STAR Probe™ and the integrated STAR Probe™ based pot control.

Preliminary results

Preliminary results at DUBAL using the Star Probe™ for some measurements conducted in D18 potlines are shown below.



Note: Results depend on method of analysis and equipment capability.