Oxide growth analysis

The Materials Team at Innoval Technology, a leading provider of independent technical expertise to the global aluminium industry, has developed a new analytical technique for measuring oxide growth on the surface of metals and plastics. The new technique, called Environmental FT-IR, shows how a material’s surface alters as the temperature changes. The specialised equipment, a modified FT-IR spectrometer, allows a sample to be heated within a controlled environment and changes to the surface observed in real time.

The technique provides valuable information about the composition of oxides and their formation kinetics, both of which can affect how a surface performs. So far, Innoval Technology’s Environmental FT-IR has proven beneficial to the aluminium heat exchanger industry where it has demonstrated how the surfaces of different alloys behave during the brazing process. The company is expecting this ground-breaking technique to prove equally useful to automotive sheet manufacturers and the aluminium industry in general. For more information about Environmental FT-IR, and to request a research paper on the technique, please contact Alan Gray at alan.gray@innovaltec.com.

Reader Reply No.143

Steel coating process

The diagram shows the passing of the steel wire through molten metal.

At the Wire Exhibition in Düsseldorf, AlumGreen presents – for the first time in the world – its completely new process for coating cold drawn steel products with aluminium for corrosion protection. With this process a more homogeneous and durable coating is achieved than by galvanising. Not only that: production costs are reduced radically and natural resources are protected at the same time. The process is ready for normal industrial application.

Reader Reply No.144

Hydrogen analyser

The new Alspek H hydrogen analyser is now available from MQP Limited, UK with twin probes to provide simultaneous on screen read out of hydrogen content of molten aluminium at two locations. The Alspek H hydrogen analyser is a portable analyser for the direct and continuous measurement of dissolved hydrogen in molten aluminium. It has three main components – an electrochemical sensor, a measurement probe and an analyser unit. A new model has recently been launched with twin measurement probes providing simultaneous measurement on screen real time presentation.

The new model has the following features:

- Twin measurement probes especially suited to measure efficiency of in line degassing equipment by locating the probes upstream and downstream of degassing unit.
- Allows easy real time adjustment of gas flows and rotor speeds to give optimum hydrogen removal efficiency.
- Measurements can be automated – raising and lowering device inserts probe into metal stream automatically on signal from degasser. Measurements can be made at the start of each cast so that there is a verifiable Q/C record of the hydrogen content for each cast.

By constant monitoring it can reduce incidence of high hydrogen levels occurring due to changes in practice, scrap charge, degasser performance, wear of degasser components – in particular rotors.

All data can be downloaded to the plant operating data system (such as the Scada system).

Capability exists to run additional probes.

Reader Reply No.145

Anode Stub Saws

Replacement of damaged anode stubs is a routine process in all prebaque aluminium smelters. In the past, many smelters have used gas torches to cut off damaged stubs, an environmentally unsound process with safety considerations due to noise and molten metal. Some rodling shops have opted to unhook rods from the overhead conveyor and use mechanical hacksaws or circular saws in an effort to reduce the dangers and improve the cut quality, a time-consuming process.

For the past ten years, VHE of Iceland has supplied an effective and efficient customised band saw, offering energy savings, a low noise profile, clean and precise cut surfaces, and easy and inexpensive blade replacement. The saw is designed such that stubs are cut horizontally whilst the rod remains hanging in the overhead conveyor. The machine is suitable for all designs of yoke, including star and hexapod designs. System automation enables the selection of any of three cut lengths on any combination of the stubs on each anode rod. The smooth and precise cut surfaces produce by the VHE saw prepare the stub for a high quality welded repair.

Reader Reply No.146

Oxide growth on aluminium

Oxide growth

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