

Moduloc digital laser metal level sensors for the aluminium casthouse

MQP have recently entered into a worldwide agreement with Moduloc Control Systems to market and distribute their digital laser metal level control systems. Moduloc appointed MQP due to their expert knowledge of the requirements of aluminium casthouses.

For ten years UK based MQP Ltd have specialised in bringing innovative technology to the aluminium casthouse industry with the aim of improving quality and reducing costs. Moduloc is based in Hertfordshire, UK and has many years' experience supplying laser measurement systems to the steel industry and has several installations in the aluminium industry in Quebec. This article reviews the range of equipment available through the new agreement and highlights the unique features and advantages of the Moduloc technology for aluminium casthouses.

Range available

Moduloc manufactures and markets laser measurement devices for hot metal measurement and molten metal level control for both the ferrous and non-ferrous metal industry. Their product development originates in the metals sector and they fully understand the industry requirements. They supply a wide selection of highly specialised products for liquid level control:

- Digital laser camera sensors for molten metal level measurement
- Actuators for controlling the pour
- Control systems to support the hardware



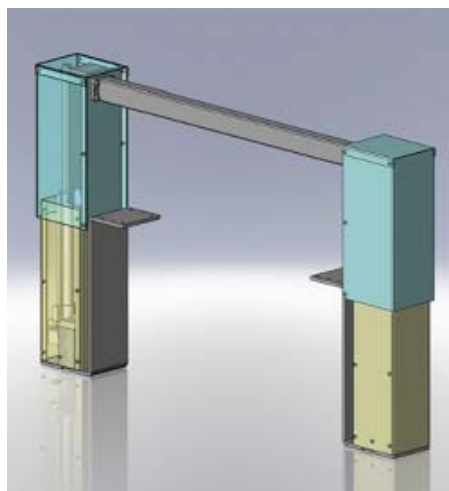
1 Moduloc digital laser level sensor.

Moduloc digital laser level sensors are compact units (fig 1) with integrated optics and a signal processor for precise measurement of the liquid level to less than 0.2 mm. A focused laser spot is illuminated on the molten metal surface and the image distance determined by an internal CCD Camera.

A unique feature of this high resolution laser and camera system is that it enables a narrow triangulation angle to be used. This means that the camera and laser can be mounted together in a compact housing positioned well above the molten metal surface. The housing is equipped with a protective nozzle and baffling, with a vortex air cooling option, to provide protection from steam and dust in the operating environment. Camera replacement can be easily achieved without disturbing the mounting configuration.

Another feature of the sensor is enhanced software with an auto gain circuit which brightens the laser and opens the camera aperture when heavy fumes are present at the start of pour, where control function is critical. Installation software is provided for connection to a PC and to display measured values. Electrical connection is via a stainless flexible conduit with robust plug for protection from metal splash. An internal plug socket is also incorporated inside the conduit for quick replacement and maintenance.

The company recently introduced periscope laser level sensors that enable the user to mount the sensor well away from the high ambient temperature and yet monitor the molten metal in close proximity for accurate level measurement. Moduloc also offer a service adaptor box to facilitate fast commissioning and programming of the laser, which connects between the sensor and the client's local terminal by a simple dual plug socket.

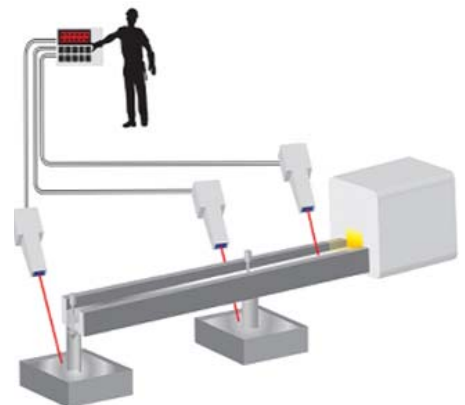


2 Gate valve actuator in open position.

Various actuators are also available to provide the user with the complete control solution. Gate valve actuators (fig 2), vertical, pin out and tap out actuators can all be supplied with or without an emergency opening and closing facility. All are designed for accurate controlled pouring into head boxes, normal moulds and slab caster moulds. A pin rotation function is available.

Integrated systems

The aluminium casthouse industry, like all industries handling molten metal, needs reliable and precise level control on the launders, troughs and head boxes in use throughout the typical casting plant. With this in mind the Moduloc level sensors incorporate digital outputs which verify level measurement is being transmitted and the internal temperature is within acceptable limits.



3 Metal level control with a Moduloc sensor system installed on a head box and launder.

The illustration (fig 3) shows how an integrated system of Moduloc laser level sensors, connected to a control station, can provide the ideal solution for measurement of molten metal level in a typical casthouse layout.

MQP is now able to specify and supply Moduloc digital laser sensor systems for control of aluminium metal level in casthouses together with ancillary equipment including actuators.

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The Moduloc sensor incorporates a high resolution digital camera laser sensor, with a unique narrow triangulation system, which provides precise molten metal level measurement to less than 0.2 mm. Systems are modular designed for ease of installation, maintenance and replacement. Digital technology means immunity to heavy smoke and steam problems and low maintenance costs. Complete Moduloc systems can be customised to suit billet or slab casting layouts and supplied with sensors, actuators and plc control.

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