

Loramendi Case study: Foundry/Sand Casting

Loramendi makes cylinder block production in Mexico easy with the help of robots. Quality and reliability were the keys for Loramendi to install once again the ABB robots in a completely automated core line for the manufacture of cylinder blocks in Mexico. The close collaboration between Loramendi and ABB has been vital for the success of this complex project.



Fully automated lines

Established more than 30 years ago, Loramendi is today the world's leader in core making equipment with the capacity to undertake a variety of projects, from the manufacture of single core machines to the design and manufacture of completely automated core making and assembly systems as well as vertical and horizontal moulding lines. Throughout this time, the ABB robots have been very important for the installation of many automated foundry lines like this one.

In the project, Loramendi machines are used as part of a fully automated line for crankcase, water-slab, side and top core manufacturing. A technology that combines the Key core process with ABB robots has been developed to manipulate and assemble the cores.

The core manufacturing plant consists on three lines: crankcase manufacturing and assembly; waterjacket and slab

manufacturing and assembly,; and core dipping, drying and final assembly.

Another facility's main feature is the sophisticated automation level of, which allows full production by just six operators. This line produces 110 cylinder blocks per hour.

The line for crankcase manufacturing and assembly uses the key core process (sand core to lock crankcase cores together) and involves various pieces of equipment. There are two SLC3-60L Loramendi machines for vertical core blowing. These type of machines may use vertically or horizontally parted tooling. There is also a Loramendi key core machine as well as two ABB manipulation robots. The line also includes a core transporting conveyor, a dipping manipulator and dimensional control equipment for core blowing and key core verification.

Loramendi-Getting to the core of the problem



FACTS

www.loramendi.com

ABB and the Foundry Industry

Our wide range of foundry robots can handle more than 35 applications around foundry processes. Main manufacturing processes like Sand Casting, Die Casting, Precision Casting and Forging .ABB's high-performance robot technology provides lower production costs, scrap rates, increase up time and consistent with superior quality.

Completely sealed, equipped with a two-component high-resistance enamel surface and IP67 certified, ABB's Foundry Plus range of fully foundry adapted industrial robots can take more than just the heat. These robots are ready to meet the challenges of spits, sands and lubricants of modern high-performance foundries on a daily base.

For the Waterjacket and slab manufacturing and assembly, the line consists of two identical cells, each producing waterjackets and slabs to reach the required rate of 110 packs per hour. Each cell consists of one SLC2-30+30L Loramendi machine to manufacture waterjacket and slab cores using different sands depending on the core type, as well as one ABB robot for core manipulation. In addition, the cell includes a Waterjacket core deburring station, an artificial vision unit to check waterjacket cores, an ABB robot for automatic core screwing and waterjacket to slab assembly, and a core transport conveyor to dipping area.

Finally, the core dipping, drying and final assembly line has an ABB robot for waterjacket and slab core dipping, a waterjacket and slab core dipping tank, plus a number of ABB robots, including two ABB robots for side and top core dipping, three ABB robots for side, top and waterjacket core assembly in the main core block, one ABB robot for final core block manipulation at line exit. Of course, also included is artificial vision control equipment to check correct core assembly.

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