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First fully automated crane solution for Indian Ford press and stamping line

Sparkline, STAHL CraneSystems' Indian crane building partner, has developed fully automated process cranes for a new Ford plant in India. The crane builder supplied a total of seven cranes – equipped with winches, wire rope hoists and crane components from STAHL CraneSystems. The cranes operate on two levels and in some cases can travel over one another. Wireless communication between the crane bridges and a complex anti-collision system permit the cranes to operate in various safety zones. Ford specified high speeds for the lifting and travel motions to enable the press and stamping line to be retooled quickly. "A high-end crane system of this type is unique in India at present," Sparkline Managing Director Doshi explains proudly.

Automation results in higher productivity

Ford manufactures vehicle body components on the newly erected press and stamping line in Sanand, India. The tools in the presses must be changed regularly – this is usually time-consuming: the crane has to be summoned and moved into position, the operator must attach the tool, lift it carefully out of the machine, move it to the storage point and then set it down. Now he must take up the next tool, move the crane back to the machine and insert the heavy load into the press with millimetre accuracy. Retooling is fully automated in the new plant in Sanand – this saves valuable minutes and thus increases the productivity of the whole system. When the operator has entered the destination number of the tool, the crane travels to the position selected at a speed of up to 60 m/min, following prescribed routes and detouring around safety areas. Sparkline's cranes meet Ford's strict specifications with their positional accuracy of ± 6 mm. When the crane reaches the machine, a grab lifts the tool, the crane travels automatically to the storage area and sets the tool down in a free space.

Experts on the spot

Most of Ford's specifications for the crane system could only be built in customised design. STAHL CraneSystems started assisting its Indian crane building partner Sparkline with its expertise at an early stage, when the components were being selected and calculated. STAHL CraneSystems' Indian team and experts from Germany were already at the table during the important preliminary discussions between Sparkline and Ford's engineers. The Sparkline / STAHL CraneSystems team was thus able to offer convincing solutions for all the requirements when its quotation was presented and its technical flexibility even exceeded the high expectations of Ford's team.

State of the art crane technology from Germany

The heart of the systems are modified winches from STAHL CraneSystems. During production in Künzelsau, South Germany, they were prepared for mounting the grabs, designed for a hoisting speed of up to 9 m/min and equipped with a second brake to meet the high safety requirements. STAHL CraneSystems supplied a total of 6 frequency-controlled SHWF 8 winches with safe working loads between 50 and 63 tonnes, and four ASF 7 wire rope hoists with safe working loads between 20 and 32 tonnes. The wheelblocks and travel drives were also supplied from Germany. Sparkline designed and built the cranes and grabs and programmed the controls.

Intelligent crane control was required to operate the complex crane system safely and cost-effectively. The cranes operate on two levels and communicate by wireless to prevent collisions. Laser-based distance meters supply positional data. The control is a Siemens S7 PLC combined with latest generation inverters. Designing the safety features of the system was also demanding, as the specified American Standard CMAA 70 – Class D (for heavy duty) had to be brought into line with Indian industrial standards. Sparkline's crane builders rose to this challenge too.

German-Indian partnership

STAHL CraneSystems has been building up the crane technology market in India together with Indian crane building partners since 1999. Sparkline, as specialist for material flow solutions in the automotive industry, is now one of the largest purchasers of STAHL CraneSystems chain hoists in the world. The crane builder has its own chain hoist warehouse to supply standard products to its Indian partners quickly. They have two state of the art crane building facilities in Pune, India.

Commended on completion

Sparkline delivered the completed crane system just 9 months after receiving the order, in March 2013. The cranes were erected over the following months and commissioned in March 2014. Sparkline received more post from Ford in July 2014: the automobile manufacturer thanked Sparkline for its outstanding work and the successful completion of the project: "Thank you for your patience! In-house, we promised to get the best crane system in this region, a system meeting all Ford's global standards. Now we have it," wrote Jose Conce Romero, one of Ford's project managers, on completion. Jose is a crane expert in Ford's global organisation. An excellent basis for more Sparkline/STAHL

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CraneSystems projects, as an extension to the plant could be scheduled in just two or three years.

Photo material:



State of the art production at Ford India. Automatic process cranes with STAHL CraneSystems components are used for retooling the press and stamping lines.



The heart of the crane systems are SHW 8 rope winches from STAHL CraneSystems. During production in Künzelsau they were equipped for particularly high speeds and operating with tool grabs.



Fast tool change from the air: the cranes approach the desired tool position at a speed of up to 60 m/min, take up the tool and transport it to the designated storage area. Equipping the press with the next tool is also automatic.



Operating on more than one level: effective collision protection is essential to prevent the bridge cranes and semi-portal cranes colliding.