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STAHL CraneSystems

Five heavy duty cranes in engine production BMW, Landshut

Crane types 5 ZL-A double girder overhead travelling cranes by STAHL CraneSystems _ **S.W.L.'s** 4 x 40,000 kg and 16,000 kg _ **Spans** 28.65 m/21.5 m/13.5 m _ **Drives** Stepless speed control _ **Equipment** S7 SPC control, condition monitoring package (SSC load cumulation, load monitoring at hook, SMC load spectrum memory, motor and brake management), electrically rotating hooks, temperature control of all motors, maintenance platform along crane bridge, radio remote control

Lifting technology | Drive technology | Control technology

STAHL CraneSystems

Each hoist is equipped with a maintenance platform to enable maintenance work to be performed in safety. The ramshorn hooks in the bottom hook blocks can be rotated electrically to enable the loads to be handled precisely.

The crane installed in an adjoining building with 13.5 m span was designed with a raised bridge to maximise the effective hook height.

The heavy duty cranes are equipped with stepless drives. The maintenance concept includes an extensive condition monitoring package. The catwalks facilitate safe inspection and maintenance work.

In Landshut the BMW Group has been building the most up-to-date petrol engine presently being produced in large series since 2004. The combination of aluminium and magnesium is innovative, not merely making the engines lighter, but reducing petrol consumption in spite of their higher performance. The magnesium-aluminium-composite crankcase for the new six cylinder in-line petrol engine is used on models of the 6 and 7 series.

Starting situation BMW commissioned a new foundry in 2004 especially for producing the light metal housing. The various engine components are produced on six ultra-modern diecasting systems. Each of the components is cast using a different tool which, depending on size, can weigh up to 40 tonnes. For the regular retooling, BMW's staff need up-to-date crane installations for lifting the heavy tools into the machines and performing various maintenance tasks.

Requirements The new production building is approx. 140 m long and 65 m wide. Its main section is divided into two segments in which the cranes to be purchased have to bridge spans of 21 and 29 m – the span required in the adjoining section of the building is 13.5 m. A lifting height of 12 m must be achieved in these large buildings. The foundry work processes necessitate among other things rotating the heavy casting tools – a tricky task as the rotation process must be reliable and safe. In addition, the installation height in the existing building was to be optimised – a further point to be kept in mind when designing the cranes. The crane bridges were to be arranged so that on the one hand the necessary safety clearance to the ceiling was maintained, and on the other hand the maximum hook path was achieved. The customer approached STAHL CraneSystems with this complex specification. The crane specialist's engineers developed a solution that was able to convince the customer.

Realisation Each of the four massive double girder overhead travelling cranes is designed for S.W.L.'s up to 40 tonnes and equipped with two identical hoists both of which can also lift 40 tonnes. The decision to use two identical hoists ensures safe and trouble-free rotation. As protection against overload, the SSC electronic load cumulation from the condition monitoring system continuously monitors the weight suspended on the hook and disconnects the hoisting motion in an emergency. The crane operator controls the rotation process from a safe distance by radio remote control. The load hooks can be rotated electrically to ensure that horizontal rotation is precisely controlled. The stepless travel drives offer particularly smooth travel characteristics, frequency-controlled speeds are also at the customer's disposal for the hoisting motion of the AS70 wire rope hoists from STAHL CraneSystems. The SMC condition monitoring system makes a valuable contribution to the safety and availability of the system, monitoring important safety- and function-relevant components. The continuous calculation of the expected remaining service life plays an important role in this safety concept. In addition, the electronics provide data on the crane operator's behaviour, such as the number of overload situations for example. By evaluating the recorded information, specific training measures for the crane operators can be contemplated to make working with the crane still safer. After the heavy duty cranes had been successfully commissioned, STAHL CraneSystems supplied a further order to Landshut in January 2005. This high-quality bridge crane is also a double girder overhead travelling crane and is operated in a smaller adjoining building with a floor area of 6.5 x 8 m. It is equipped with two electric wire rope hoists with 16 and 10 t S.W.L. When dimensioning the crane, a maximum spacing of 700 mm between the load hooks had to be observed which was made possible by the modular sub-assemblies of STAHL CraneSystems. Thus the customer can utilise the restricted space to the full, while employing cost-effective series components.

Result The four heavy duty foundry cranes have now been working in two-shift operation for more than two years, with no downtimes and to the customer's complete satisfaction. Their safe and long-term operation is ensured by original parts supply directly from the central warehouse of STAHL CraneSystems in Künzelsau. A close-meshed network of service personnel, regularly trained on the latest technical developments in the Künzelsau training centre of STAHL CraneSystems, is at the ready to provide reliable and prompt service.