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OCH

Overhead Crane & Hoist

The dawn of a new era

Bimonthly schedule for 2008 confirmed

Expert market analysis

Overhead crane chosen over fork lift

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Precision lifting

Hooks have to be positioned to within one eighth of an inch when a custom-built crane lifts $35 million jet engines at the NASA Stennis Space Center, Mississippi, USA

When the engines need to be fired up and run for testing, they are transported several hundred yards from the facility and mounted to a test tower

North American Industries (NAI) supplied a 25 ton double girder bridge crane, with an 87ft span riding on a 90ft runway, to MDS Aero Support Corporation for a facility at the NASA Stennis Space Center, where it is used to lift jet engines. The crane was delivered in July 2007.

MDS Aero Support Corp is an engineering company headquartered in Canada. MDS Aero was NAI's customer and MDS Aero's client was Rolls Royce. The latter have just built an engine testing facility at Stennis Space Center, which is NASA's primary rocket propulsion testing facility where engines such as the ones used on space shuttles are tested. It is also the new home to a division of Rolls Royce which is doing testing for the company's high-thrust Trent 900 and Trent 1000 jet engines, which are slated for use on the new double decker Airbus A380 and the new Boeing 787 Dreamliner, the next generation in wide body aircraft.

The crane can adapt to the different types of engines (such as the Trent 900 and the Trent 1000) because the four hoists attach to a special lifting device bolted to the top of each type of jet engine.

Stennis is a multi-agency center with more than 30 resident agencies. Based there, is the Applied Research and Technology Project Office, which partners with outside companies to conduct research and development.

The crane is entrusted to lift $35 million prototype engines into special engine stands which will enable engineers and technicians to work on them and make the necessary developmental changes. Due to the weight, size, and unequal weight distribution of the loads, a precise four-point lift is required, so the crane has four remote controlled 15 ton wire rope hoists. The hoists are mounted on one trolley with four pick points which can lift the jet engines up to 26ft 2in above the ground. Flux vector variable frequency drives are used to monitor the position and speed of each hoist and to control the hoists for precision lifting.

Attached to each hook block, the hoists also have an adjustable turnbuckle (a metal device that can be adjusted for length or tension) capable of plus or minus two inches of adjustment. When the jet engines are lifted up to the test facility, the turnbuckles can be adjusted manually to ensure the precision necessary to connect them to the stand.

In the testing facility, there are two engine stands in which an engine may be placed. Once a jet engine is mounted in a stand, the NAI crane is used for maintenance and changes to the engine. The engine(s) may be in the stands for a week or more while they are being worked on.

The crane also has two 5 ton auxiliary monorail trolleys which ride on the bottom flange of each cross girder, used for handling smaller equipment mounted to the engine, such as intakes and instrumentation.

When the engines need to be fired up and run for testing purposes, they are transported several hundred yards from the facility and mounted to a test tower, which incorporates additional lifting equipment supplied by NAI in the form of jib cranes. Once mounted to the test tower, the engines are run to test the changes made by the engineers and technicians. OCH