

Self-Erecting Wind Turbine System

Complete SHS Series Braking Packages

PROBLEM

COMANSA, a major tower crane OEM, needed a sophisticated lifting control and braking solution for use on a self-erecting wind turbine system (SES). The unique system allows for the installation of wind turbine generator components, including tower, nacelle and rotor, without the need for large cranes. Comprised of three lifting legs, the SES is able to hoist the generator assembly in intermediate stages while installing tower sections under it. Identical braking systems are mounted to the winch drive at the base of each of the three legs.

The OEM contacted Stromag based on successfully working through challenging braking and control issues on previous project collaborations. Stromag engineers worked closely with the OEM team to refine and clarify the braking system components and specifications.

SOLUTION

To meet the SES performance requirements, Stromag supplied three identical braking systems that utilize a set of SHS15-3 spring actuated, hydraulically-released caliper brakes mounted on a 30 mm thick disc. Each set of brakes has a combined dynamic braking torque of 194.250 Nm and a static braking torque of 172.235 Nm. All brakes feature offshore protection, including breather pot, inductive switch, special seals, specific paint C5M, specific treatment/protection and tie rod C5 protection. Customer-specific brake supports and quick-connect hydraulic piping were also included.

Three Sideos Sc controls were installed (in a common cabinet) to ensure precise synchronized braking of all three lifting winch drives. The configurable and secure Sideos Sc speed monitoring module is fitted with an efficient auto control system which secures the overall operation of the overspeed detection system.

A SHPU2 hydraulic power supply unit with a 2.2 kW motor and C4M-L anti-corrosive protection level (according to ISO12944 standards) was installed for each of the three brake systems. A Series 51 cam limit switch was incorporated for each Sideos control.

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HIGHLIGHTS

- Complete braking and control package solution
- SHS15-3 spring-applied, hydraulically-released disc brakes
- Sideos SC speed monitoring controls
- SHPU2 Hydraulic power units
- Series 51 geared cam limit switches
- Brakes feature offshore protection, including breather pot, inductive switch, special seals, specific paint C5M, special treatment/protection and tie rod C5 protection
- Customer-specific brake supports and quick-connect hydraulic piping



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