

***Afrikaans is Groot* music festival a flying success thanks to mechatronics, automation from SEW-EURODRIVE (Pty) Ltd.**

18 March 2019: One of the most spectacular stunts ever achieved at a live music event in South Africa, namely 'flying' a replica helicopter across the stage at 'Afrikaans is Groot' at the Sun Arena in Menlyn, Pretoria, was achieved using state-of-the-art automation and mechatronics technology from SEW-EURODRIVE (Pty) Ltd.

The yearly music festival took place from 23 November to 2 December 2018, with planning for the helicopter stunt commencing at the beginning of November. The stunt was devised, set-up, and executed by specialist rigging company Film Riggers of Johannesburg. "We are primarily a rigging company focusing on the film industry, particularly in-camera rope-based stunts," partner **Graham Terrell** explains, who founded the company together with **Alard Hufner** in 2012.

From commercials to documentaries and television reality shows, Film Riggers has established a world-class reputation in the industry. Indeed, its work at 'Afrikaans is Groot' is the highlight of the company's achievements to date, involving the development of a specialised rigging system exclusively for this event.

"I do not think the organisers expected this level of rigging automation, especially from a South African company," Terrell points out. "It was a great opportunity to showcase our capabilities. Up to now, no one is able to automate a live show like we can, and no local rigging company has a similar level of experience and expertise. Otherwise one would have to turn to an international company, which is prohibitively expensive in terms of labour costs and the fact that all equipment has to be imported."

Key to the success of Film Riggers has been its long-standing relationship with SEW-EURODRIVE (Pty) Ltd., Terrell comments. The winches it has devised use its MOVIDRIVE® drive inverter, including the IPOSplus® integrated positioning and sequence control system as standard. The drive inverters have

a wide power range, large overload capacity, and a modular design. In addition, they facilitate unrestricted application of AC drives, with a power range of 0.55 kW to 315 kW, featuring the most modern digital inverter technology, according to MAXOLUTION® Engineer **Dylan Enslin**.

Terrell highlights that, as a rigger, he has been using SEW-EURODRIVE (Pty) Ltd. products for over a decade. The 'Afrikaans is Groot' event required four MOVIDRIVE® drive inverters with CMP motors. These consisted of two 11 kW units and two 30 kW units, in conjunction with four 2.2 kW MOVIAxis® multi-axis servo inverters with CMP motors. Film Riggers also made use of three standard 2.2 kW AC motors driven by MOVITRAC® Inverters. Synchronisation and coordination was achieved by means of a MOVIPLC® motion controller.

In addition, SEW-EURODRIVE (Pty) Ltd. also supplied off-the-shelf software or application modules for the operational controllers for the coordinated drives. This software provides for a range of functionality, from accurate speed control to precision positioning and torque control. "We even developed customised software for certain interfaces where an off-the-shelf solution was unavailable," Enslin remarks.

It all begins with Terrell approaching Enslin with his specific requirements. "Typically, I enquire what is the best solution that SEW-EURODRIVE (Pty) Ltd. can provide me for my needs. We then compile a workbench calculation, from which we select the motor and drive that is best suited, which I incorporate into a hoist. The hoist is then independently load-tested and certified."

A major advantage for Film Riggers is that it has been able to take advantage of the latest developments from SEW-EURODRIVE (Pty) Ltd. in automation and mechatronics in particular. The basic winch it devised from the outset simply comprised an AC motor with a brake, running off a MOVITRAC® MCO7 Variable Speed Drive (VSD), which is an open-loop system with no encoder. This is the most manual or basic form of an electric winch as deployed by Film Riggers.

MOVIDRIVE® represents next-generation technology, incorporating servo motors with encoders. The positioning and control are very specific, and it can be automated. This is far more accurate and safer than having a person with a remote control driving the winch. Instead, MOVIDRIVE® allows for the winches

to be preprogrammed, which means that all actions are repeatable as well, with no possibility of error or mishap.

Film Riggers was tasked by the 'Afrikaans is Groot' production team to coordinate the moving and lifting of setpieces that were required to be airborne, in addition to moving performers around the stage. "The beauty of the MOVIDRIVE® is that it is modular, which means I can only use one, or up to four as we did at this event, and have them all interlinked," Terrell adds.

The replica helicopter 'flown' across the stage consisted of a metal frame with a moulded fiberglass skin, weighing 300 kg, with an extra 100 kg added for an occupant. The initial idea was simply for a basic take-off and landing, but by using four MOVIDRIVE® units, Film Riggers was able to achieve the spectacular effect of simulated flight on the stage. This meant moving from right to left, in conjunction with moving up and down. Not only was the angle of flight adjustable, but the nose section could be moved up and down as well.

Enslin highlights that MOVIAXIS® is an even more advanced evolution of the entire system, allowing for extremely refined resolution and feedback, and lightning fast reaction time to any changes in the drive speed. "Our brief from 'Afrikaans is Groot' was to deliver a live stage show that superseded anything done before. This would not have been possible without the technology and support from SEW-EURODRIVE (Pty) Ltd.," Terrell concludes.

Ends

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