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STAGE EFFECTS LIFT MUSIC PRODUCTIONS

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GLOBAL MUSIC STARS HAVE FULL FAITH IN INNOVATIVE MOTION TECHNOLOGY

Ed Sheeran, Rammstein, The Rolling Stones, Simply Red, Bon Jovi, Genesis, and ABBA... with a list of stars like this, you could be forgiven for thinking it is a line-up for one of the world's biggest music festivals, but you'd be wrong. All these bands have another, quite unexpected link: WICREATIONS, world leaders and genuine innovators in the entertainment sector, from Belgium, provide the motion controlled screens, lighting, and other scenic elements of their stage effects.

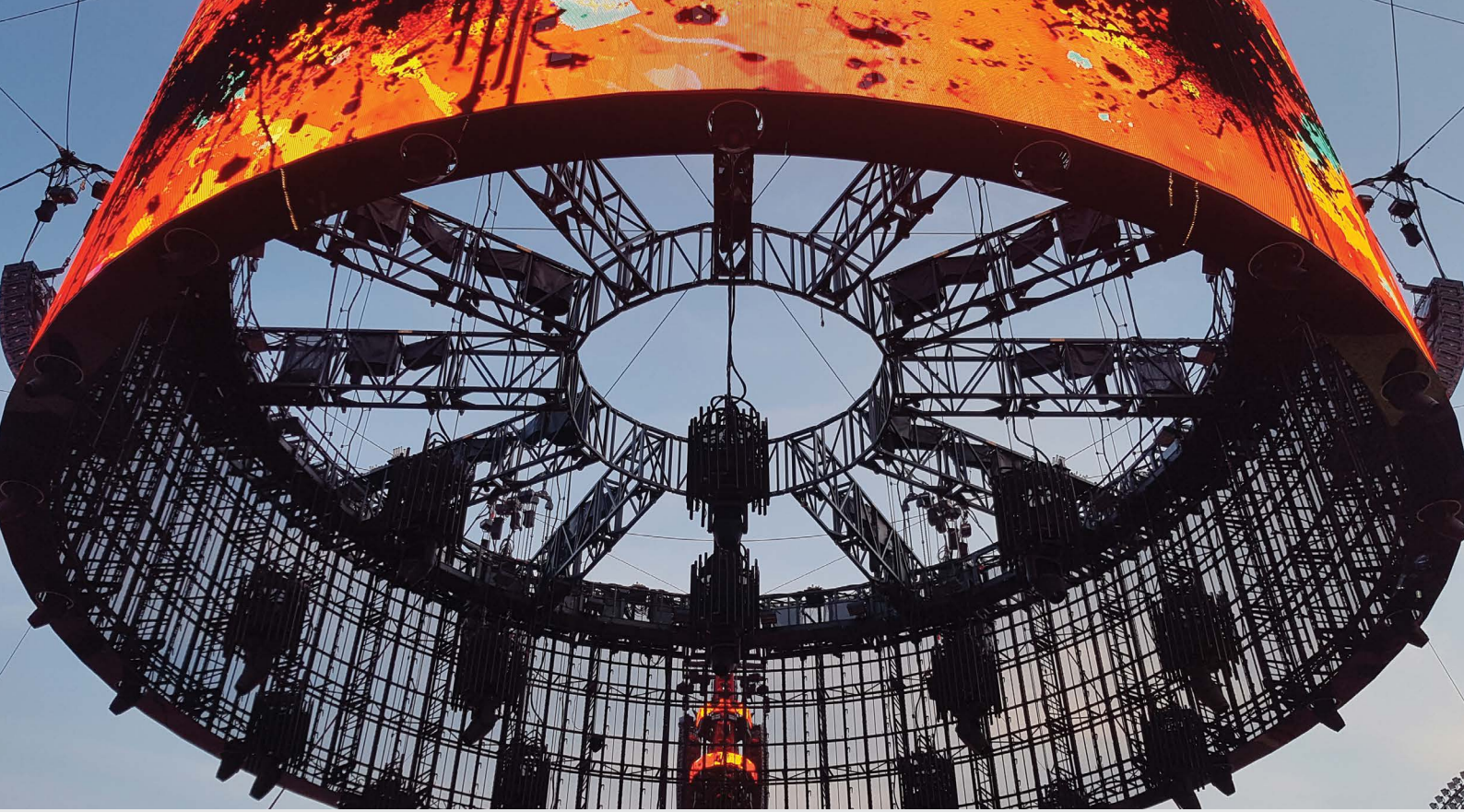
Anyone who spent their wild teenage years growing up in the golden nineties, like the writer of this article, has absolutely no reason to complain when it comes to the entertainment they were served back then. It was a golden era for music, and there was always a festival or gig in the Netherlands or worldwide, with exciting global bands most weekends. It was a time when the music spoke for itself, with little use of additional technology to enhance shows. It's true that bands like Metallica would let off the odd firework, and sometimes a guitarist might even dangle above the audience for a bit, but that was pretty much it.

Possibilities on that front have now become hugely diversified and Hans Willems, CEO of WICREATIONS, has watched this evolution from the front row seat:

"Music concerts used to have two 'goose bump moments': one when the gig started and then the climax at the end. Often without much extra excitement in between. More and more light shows and moving images have been added over the years, but these technologies soon reached the limit of their capabilities. Now we have new options to keep the audience thoroughly entertained, in the form of automated moving structures. For example, we might use winching systems and linear motion to shift stage props around or move and rotate screens and lighting in all kinds of different directions – turning a show into a real journey of experiences, always going from one highlight to the next."



Brend De Buyser, Control Techniques and Hans Willems, WICREATIONS: "Ever since its formation, WIREATIONS have partnered with Control Techniques" (photo: Bert Jansen)



Ed Sheeran, among others, called on Wlcreations to inspire his audience. This 42 tonne halo screen is synchronized with 12 hoists to pull it up (photo: WICREATIONS)

Unique Experience

Top bands and their managers recognise that their audiences have high expectations of show performance throughout, which is why they hire in specialists to carefully choreograph their shows.

“These designers come to us to develop the technical aspects of their ideas,” explains Willems. “All bands, of course, want to put on shows with exclusive elements, something that will appeal to and astound their audience, something that they’ve never seen before. We facilitate these creative ideas into technical reality, mainly using well-known techniques and technologies, such as electric motors, AC drives, linear guides and so on. It’s these links with the creative aspects that always make our systems unique. In other words, we’re an engineering company that almost always makes and uses our own prototypes. And that brings some very specific challenges with it.”

Ed Sheeran, Rammstein, Genesis and safety

Willems is happy to use Ed Sheeran’s current Mathematics Tour as an example. “Among other things, there’s a halo-shaped screen that is 23 metres in diameter which is winched up using 12 fully synchronised hoists. It’s an enormous structure weighing 42 tonnes, so I don’t need to tell you that designing a system like this definitely can’t involve any guesswork, because guaranteeing safety is an absolute priority. The fact that this is on a world tour means we also need to respect different safety standards in the different locations. And these constructions always need to be erected and dismantled very quickly, sometimes within 24 hours.”

WICREATIONS’ approach to safety was given a huge boost during the Covid-19 pandemic says Willems: “We were preparing the indoor tour for Genesis, Phil Collins’ band, at the time. We were designing the floor system among other things for this tour, which involved the seamless motion of 23 moving stage props and the master grid, the structure that all the motors are installed in, the key was to be able to erect and dismantle the podiums quickly and safely.” I believe the master grid is the structure...

WIMOTION platform

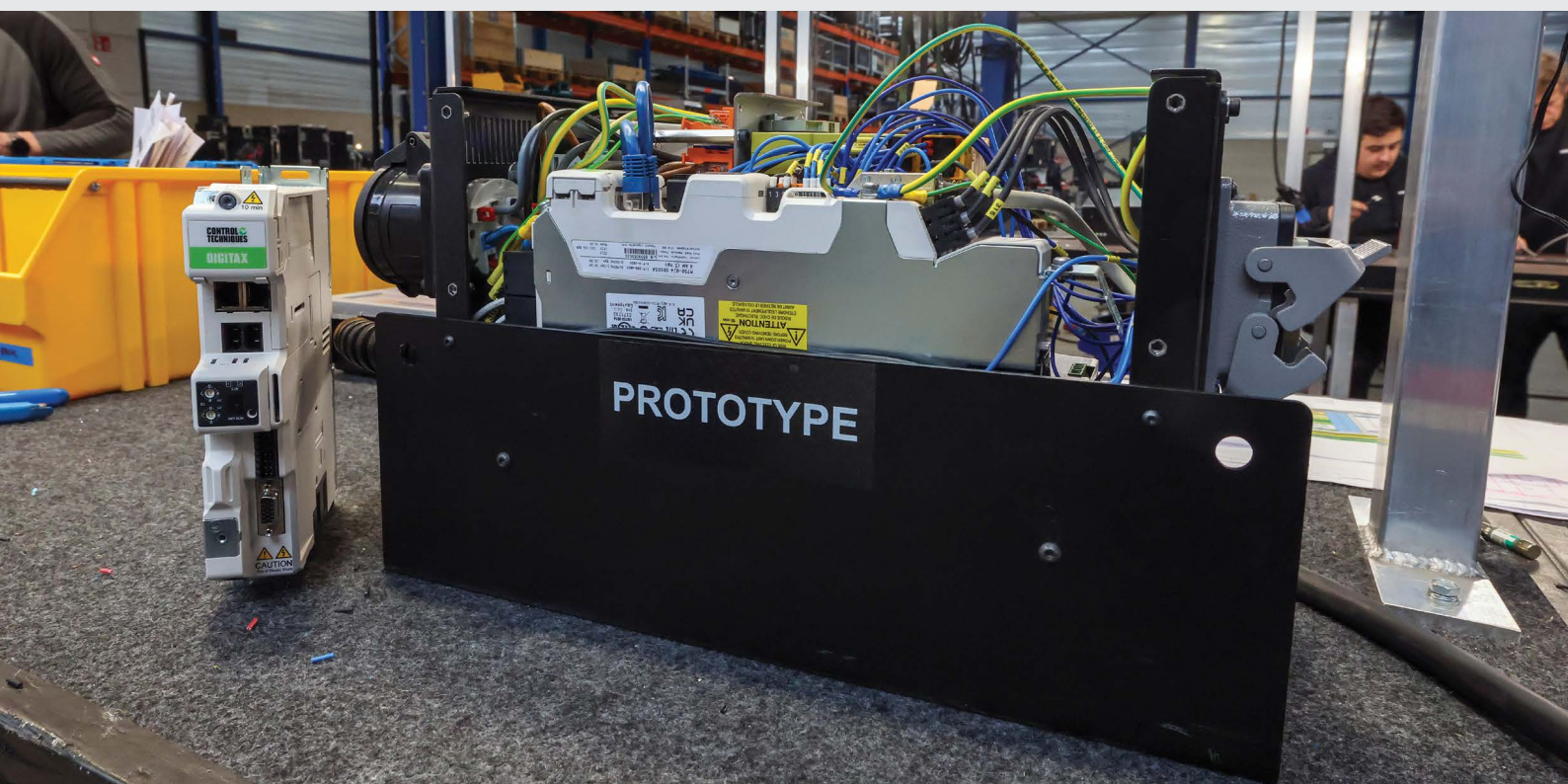
“We created the WIMOTION platform during the pandemic. This includes some motion systems that have a direct link with safety: the systems in this platform have all been approved and meet applicable safety standards, such as the new IEC 17206 (Entertainment Industry Functional Safety). It's a logical step towards standardisation in the entertainment industry, where we want to play a pioneering role.”

Willems believes that their collaboration with Rammstein is the best way to illustrate the robustness of their approach. “Anyone who went to the show was served up a real spectacle involving sound, vision, special effects, fireworks and much more. There was an almost 30-metre tower in the middle of the stage, with an HD video screen that was 5 metres wide and 9 metres high, moving 27 metres up and down along vertical guides, strong enough to withstand wind strengths of 15 metres per second. To top it all off, we created an elevator platform that lifted the six band members 26 metres above the main stage. We used 10 WIHOIST winches in total to move the video screen and band platform, with both reaching speeds up to 0.4 metres per second. It's exactly these types of calculations where our expertise comes into its own. There are so many factors you need to consider when creating a safe and functional installation: inertia, starting speed, weight, etc. And that's what our engineers excel at.”

Reliability is key

The WICREATIONS system controls are supplied by Control Techniques. “We've been using their controllers since our company opened in 2005,” says Willems. “I came across their equipment while looking for a high- quality supplier and we were quickly convinced by their benefits. They have a wide range of products which meet our needs perfectly, and a really good reputation in the entertainment and stage and scenery industry. They know exactly what we need, and they always anticipate and respond well whenever the required safety levels increase like they did a couple of years ago. Issues such as safe stop, safe speed and safe motion don't just apply in this industry; they're also being addressed more and more in our own safety standards. The IEC 17206 is full of SIL3 requirements, for example. Sometimes the standards even go so far that they impose things that aren't even technically feasible yet. That's when you need a supplier who can work with you to find a solution.”

The Digitax HD, a servo drive with onboard Ethernet, can use both servo motors and asynchrone control motors in closed or open loop (photo: Bert Jansen)



Motor control model

For Control Techniques – represented by Nidec in the Benelux region – the collaboration with WICREATIONS provides a few special challenges. Sales Director at Control Techniques, Brend De Buyser explains: “Our equipment is stretched to its limits in this industry, in completely different applications to other industry sectors. Control Techniques, who are celebrating 50 years in business this year, are renowned for products that offer just that little bit more. For example, our controllers are well-known for their precise positioning and very fine motor controls. The motor control model in our controllers is perfect for applications such as those used by WICREATIONS, where the motor often needs to move slowly and with great accuracy.”

The MCI motion control modules are another big advantage. “These modules are used directly on the AC Drive, opening up the possibility of adding PLC functionality to the controller. This decentralised structure ensures you can write all the software directly into the control system, resulting in super quick response times, which in turn leads to fast and flawless motor controls.”

Limits of possibilities

De Buyser mentions another piece of technology that WICREATIONS works with. “Digitax HD, an extremely compact and powerful servo drive with onboard Ethernet, which can control both servo motors and synchronous motors in a closed or open loop.” “Make no mistake: what WICREATIONS does is brilliant,” explains De Buyser. “If they come to us with a technical question, we know straight away they will be asking us something very specific and challenging. WICREATIONS is always looking to push the limits of the AC drive’s possibilities, and we always feed the information we get from them back to our product developers. Our technical support team is very solid and well-developed, and we work together, with our clients, to find a suitable solution”



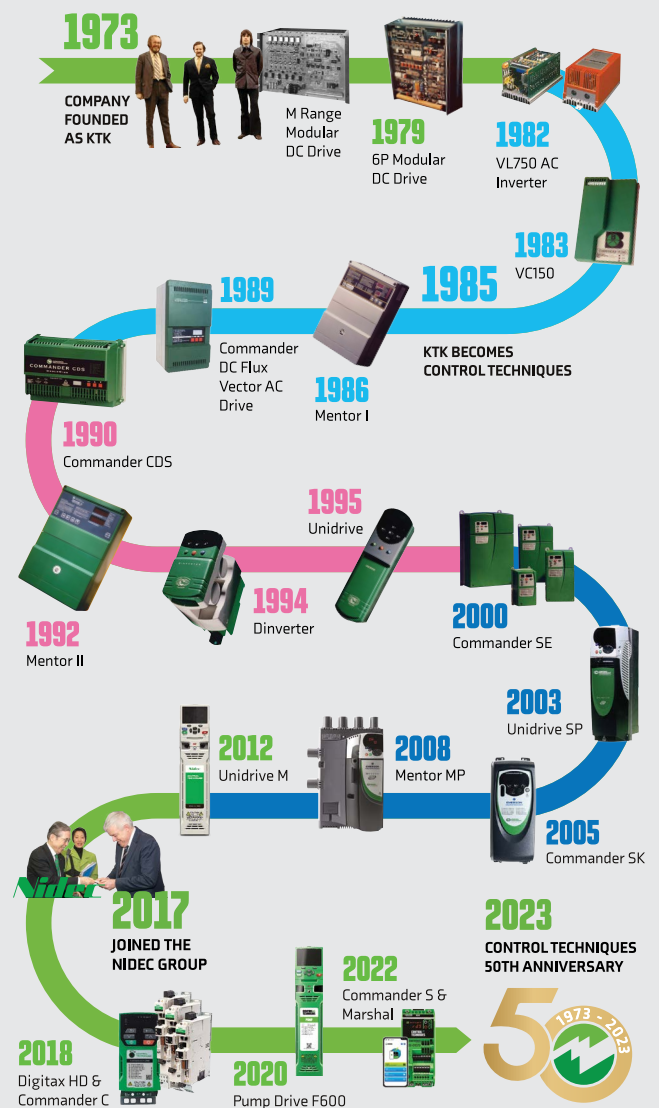
In addition to reliability, the smooth and flawless control of the electrical motors are an important advantage in this industry (photo: Bert Jansen)

CONTROL TECHNIQUES

CELEBRATING 50 YEARS OF INNOVATIVE DRIVE TECHNOLOGY

Control Techniques, founded in Wales in 1973, is a global drives specialist with a long entrepreneurial history of designing and manufacturing Variable Speed Drives. Today they are a challenger with a big name in the drives industry. With its head offices, production and R&D facilities in Newtown, Mid Wales, Control Techniques now has 23 drive centres around the world, with Control Techniques B.V. being the first European drive centre to open its doors back in 1989. Having local presence was important to ensure that advice and assistance was more readily available for businesses with electrical drive system issues. With their own stock of AC drives and DC inverters, they were on hand to provide servicing, repairs and their own electrical panel building as part of their total service provision.

Since becoming a part of the Nidec group in 2017, Control Techniques continues to be an innovator in 2023, with the aim of producing more innovative and ground-breaking AC drives for many generations to come.



145 VSD installations for the film sector

The many impressive solutions from the music and show world have not gone unnoticed in the film industry. For example, an Australian film studio asked WICREATIONS to develop a system for recording film scenes.

Willems says "This is usually done using the familiar 'green screens', with the backgrounds added in afterwards. But this doesn't make things easy for the actors, because it means they can only imagine what's there – like they're in thin air. The system that we delivered didn't use green screens, but moveable LED screens with very realistic backgrounds projected onto them, so the actors feel like they are right in the middle of the action. To get the extremely sharp images required when filming, the cameras need to always be perfectly coordinated with the screens' movements. Exact synchronisation with precise controls for all the motors were therefore essential. We used no fewer than 145 servo drives in this installation. One of our main concerns was the delivery time, because we made our request to Control Techniques right in the middle of a global shortage of chips and other components."

De Buyser adds: "The standard delivery period was 22 weeks at the time, but WICREATIONS absolutely had to have them in 12. So, we did everything we could and worked closely with our production team, to make the delivery possible because we realised this was such an important project for the company. We ultimately managed to successfully deliver on time – so everyone was happy!"



The completed systems ready and waiting to depart Belgium for stages worldwide (photo: Bert Jansen)



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Registered in England and Wales. Company Reg. No. 01236886.

P.N. 0781-0502

