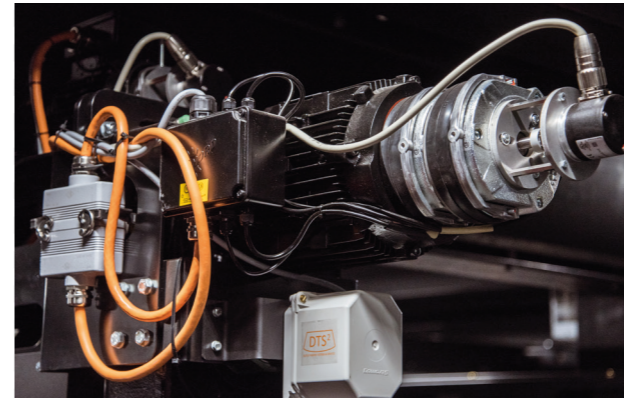
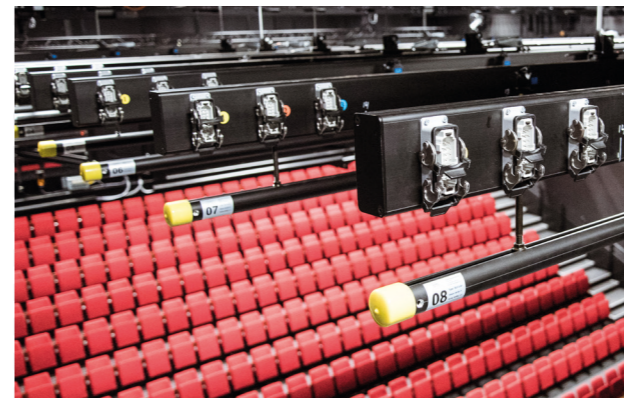




Further references and application cases:
www.nord.com/references



Safe and quiet movement



Motors with double brakes



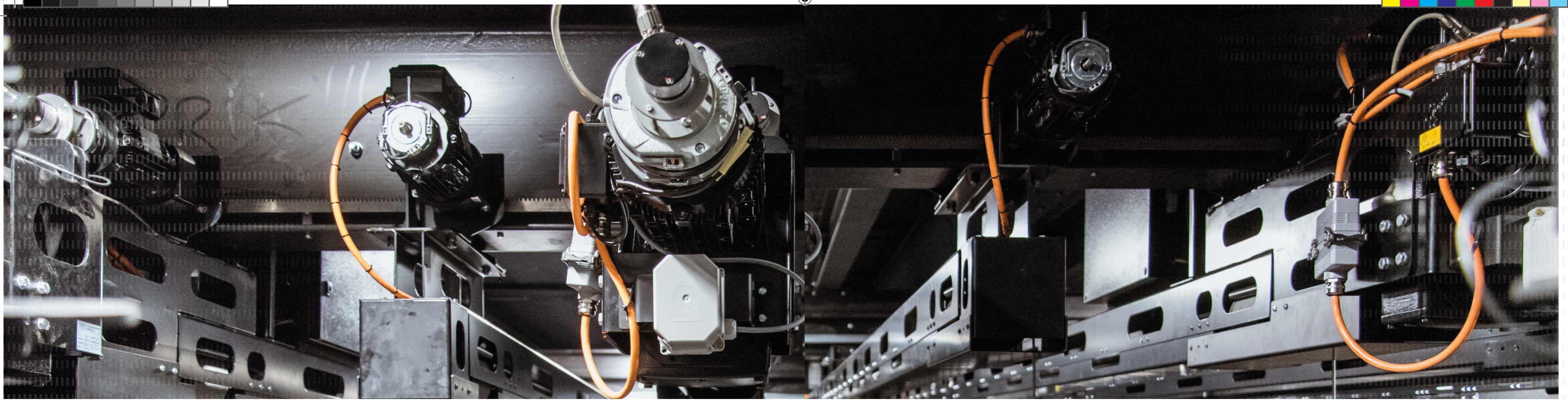
Lifting and lowering loads

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Drive solutions for stage technology

Case Study: DTS²





Stage technology
Overhead machinery



Geared motors
Helical gear units
Parallel shaft gear units

„During the entire project, NORD assisted us with great commitment and extensive technical knowledge. Their technical support and service is really remarkable.“

Eeuwe Vos,
Managing director of DTS²

Project requirements

As in most Dutch theatres, the Theater aan het Spui, a part of Het Nationale Theater in The Hague was equipped with automatically controlled electro-mechanical stage and drive technology. However, over the years this had become outdated and the company DTS² from Groningen was commissioned with the refurbishment.

Maximum flexibility – The entire equipment was replaced with a new construction; the drive system was modernised and the electronics were brought up-to-date. The previous inflexible and rigid installation has become an extremely variable system. Three moving gantries, twelve scenery hoists as well as several chain hoists enable scenery, curtains, decorations, stage

elements, lighting, sound equipment, etc. to be moved to any point in the auditorium. **Safety has the highest priority** – All of the NORD drives installed in the theatre meet the stringent safety requirements of DIN 56950 and DIN EN ISO 13849-1 /-2 as well as the German accident prevention regulations DGUV 17+18. If further requirements apply in particular countries, NORD plans the drive systems locally according to the applicable guidelines and safety standards. The very highest level of safety and reliability is ensured among other things by a redundant braking system for the geared motors, as well as the the motors being sized for double the load placed on the gear units used for the hoists.

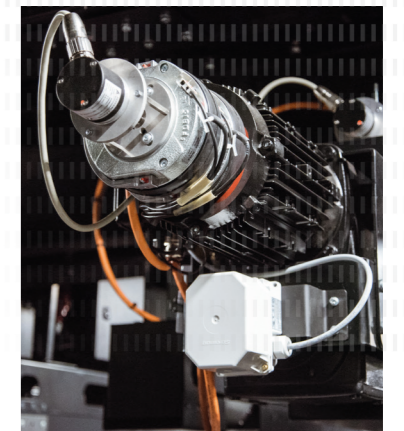
Application solution

The new overhead machinery installation in the Theater aan het Spui in The Hague sets standards with regard to its design and drive technology. Approximately 40 drive units from NORD DRIVESYSTEMS ensure that everything can be moved. The drive solutions are compact, robust, dynamic and quiet, and provide a high level of safety. In addition they are easy to use, install and maintain.

High power in a small space – Only 2.5 metres below the ceiling was available for the entire overhead machinery. The NORD parallel shaft gear units feature a flat design and are therefore ideal for use in confined spaces. The helical gear units are also very compact. Reliable gear units with one-piece

Unicase housing can also cater for any load. The UNICASE design enables high axial and radial load capacities, excellent reliability, long life and quiet running.

Successful together – NORD has over 20 years' experience in the field of stage technology and is completely familiar with the requirements of this sector. A comprehensive modular system is available to optimise the required drive solution, which can be simply and easily adapted to customers' individual requirements. In addition, the co-engineering from NORD also includes topics such as energy efficiency, reduction of variants as well as compliance with legal standards and safety regulations.



Whisper-quiet technology

Thanks to a special counter-bearing concept to reduce noise, the NORD drive units are especially quiet in operation.



Customer Profile

The stage technicians from DTS² in Groningen are specialised in the development, planning and maintenance of highly complex, automated theatre installations and control systems that bring movement onto the stage – as in the Theater aan het Spui in The Hague. The theatre, which was founded in 1993, is part of Het Nationale Theater and has two auditoriums: a large auditorium with 346 seats and a small auditorium with 162 seats.



The project at a glance

Approximately 40 geared motors from NORD DRIVESYSTEMS were installed by DTS² in new installation for the Theater aan het Spui. Helical gear units provide horizontal movement and parallel shaft gear units are used for vertical movements. The following are used:

- ▶ two-stage NORDBLOC.1 helical gear units with powers of 0.75 kW
- ▶ two-stage parallel shaft gear units with powers of 2.2 kW
- ▶ two-stage parallel shaft gear units with powers of 4 kW