



**CONTROL**   
**TECHNIQUES**

# **NO DRAMA PROGRAMMING AND OPERATION**

TREKWERK | STAGE & THEATRE

**DRIVE OBSESSED**

# CUTTING EDGE AUTOMATION

**As part of a four-year £112 million transformation at the Royal Shakespeare Theatre in Stratford-upon-Avon, Dutch theatre automation company Trekwerk was responsible for the renovation of the over-stage installation. The contract was awarded to Control Techniques' Rotterdam Drive Centre and around 100 AC drives and servo motors were used throughout the project.**

## The Challenge

**The challenge was to automate the movement of back-drops and scenery, and the complex system of lighting arrays, which included the development, design, manufacture and installation of 60 winches plus hoists for 30 light arrays.**

Often different productions are performed in the matinee and the evening and the RSC has just two hours to complete the changeover, so it must be swift and easy to control.

The theatre renovation was designed to bring actors and audiences closer together with stage remodelling and lighting effects that could only be achieved with the cutting-edge electronics offered by Trekwerk and Control Techniques.

## The Solution

**A total of 46 drives were fitted to 60 winches with at least half positioned above the thrust stage.**

Any of these could be configured for different duties from lifting scenery to controlling actors' 'flight'. Sixteen of these winches were positioned in the 'slot area' specifically for reconfiguring the stage and 14 unique Trekwerk Synchro Disc winches provided silent five-line lifting of the 'flybars' for rapid scenery changes during productions.

All of the winches were fitted with Control Techniques 15 kW Unidrive SP AC drives operating in servo mode and twinned with Unimotor 190 fm servo motors, fitted with double encoders for precise positioning and speed control.

## Overview

- **Extremely flexible**
- **Virtually silent**
- **Safe operation**

## The Benefit

**All drives communicate with each other using Control Techniques' own high-speed network CT Net, as well as communicating via CT Net with the Trekwerk control system.**

Three TNM control desks were pre-programmed with all critical movements for each performance and override joy-stick control can be used to provide manual speed up/slow down control to maintain synchronicity.

The detailed motor movements are programmed within the SM-Applications Plus module in each drive, and all programmed movements can be reviewed in the 3D graphics within the control system to flag up any potential problems and eliminate any chance of collisions.

