

STATEC

THE WHISPER OF THE OPERA



The Royal Opera House, Covent Garden, re-opened in December 1999 with 192 whispering winches® in the mightiest fly tower of the world.

The Whispering Winch®



The Whispering Winch® is a registered trademark of STATEC Bühnentechnik GmbH

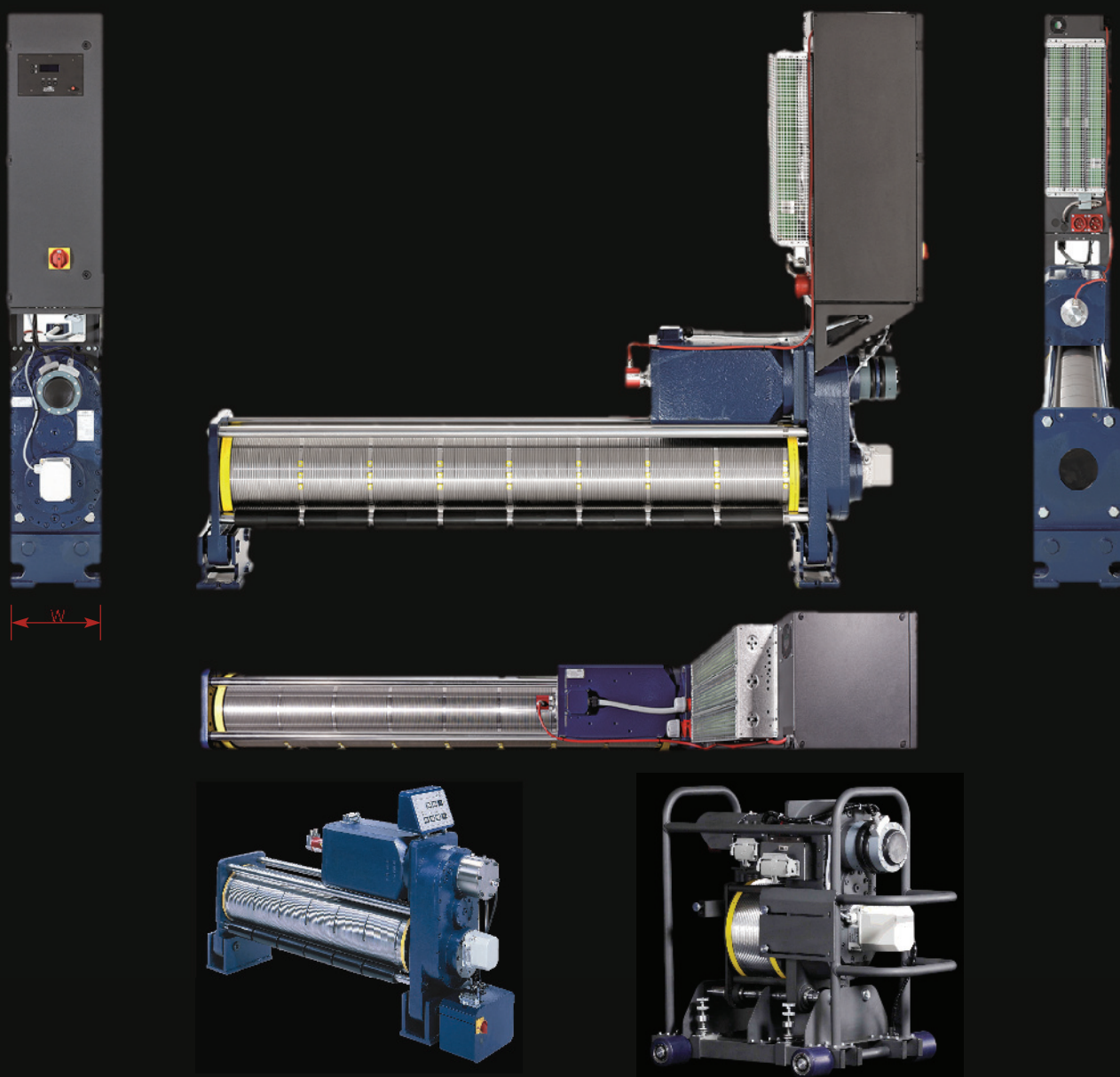
STATEC Bühnentechnik GmbH

P. O. Box 62 66 · D-76042 Karlsruhe GERMANY

Tel. +49 - 7 21 - 1 51 07 - 0 · Fax +49 - 7 21 - 1 51 07 - 70

e-mail: info@statec.de · www.statec.de

2 The Whispering Winch®



Technical Data

Whispering Winch®	Max. Load [N]	Nom. Speed [m/s]	Max. Speed [m/s]	Max. Power [kW]	Drum -Ø [mm]	W = Width of the winch [mm]
FW 390-1,8	18.750	1,2	1,8	28	350	390
FW 390-2,4	13.000	1,2	2,4	20	350	390
FW 290-1,8	12.000	0,9	1,8	15	270	290
FW 290C-1,8*	12.000	0,9	1,8	15	270	290
FW 240-1,8	7.000	0,9	1,8	11	216	240
FW 240-1,8*	7.000	0,9	1,8	11	216	240

* Zero fleet angle 0 ° with compensation of groove pitch

General Features

- Electro-mechanical winch especially developed as a noiseless prime mover for theatre and stage. Sound level in the first seating row < 35 dBA.
- High control range from lowest to maximum speed.
- Winch as a compact unit for heavy duty.
- All components optimized regarding flux of force and vibrations by using special cast-iron.
- Layout of all components to save space.
- Optimal accessibility to all components such as double-safety-brake, limit-switch, motor and coupling.
- No toothrim drives requiring intensive service.
- Vibration absorbing elements between winch and supporting structure.

Motor

- SIEMENS-AC-Servomotor designed for use in stage machinery.
- Special bearings and sheet metal packets.

Safety

- Design of all components in order to standards, guidelines and regulations for theatres and stage machinery, i. e. VBG 70, DIN 56950 (Entertainment technology - Machinery installations - Safety requirements and inspections), GUV 6.15, GUV 66.15, IEC 61508, EN 292, EN 954.
- 100%-inspection of noise, leakages, action and brake-testing before delivery.
- Machinery with EC declaration of conformity and corresponding inspection certificate according to Directive 2006/42/EC of the European Parliament and Stage Control System STACON® IT complying to the requirements of the Safety Integrity Level 3 (SIL 3)/IEC 61508.
- Try-out tests of all components on our own test bed with total load and with special test schedules.
- Welded joints deliberately avoided in all driving elements between motor and drum.
- Exclusive use of positive shaft/hub connections and no shrink fits or other similar friction based connections.
- Winch equipped with 2 encoders, one mounted to the motor and one to the drum to monitor each other and to monitor defects in all parts of the power transmission between motor and drum.

Option: The double brake can be mounted to the drum shaft instead of the motor shaft. In this case possible damages or ruptures in the gearbox or all other drive elements between motor and drum won't cause an accident because movements can be stopped safely.

Gearbox

- Noise optimized R & O. PULS - flat gearbox especially developed for use in theatres.
- Remarkable reduction of noise and vibrations by optimization in the selection of materials, bearings and toothing.
- Special gear-design for noiseless and uniform power transmission.
- Fatigue strength of all gears.
- High resistance to twisting, low mass movement of inertia and low backlash. This is necessary for a good control system reducing vibrations in the drive.
- Level of efficiency up to 97 %.
- All parts of the machine casing are sealed with O-rings, which guarantees maximum security against leakages.

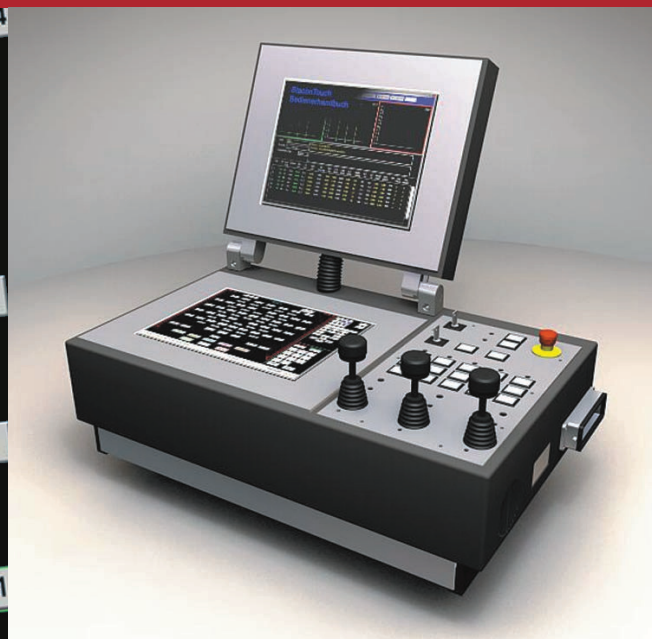
Brake

- Noiseless double-brake for highest static and dynamic braking loads.
- Maintenance-free design.
- Each individual brake designed to stop the movement safely unaffected by the function of the redundant brake.
- Internal layout and design optimized to avoid overload conditions in the drive and in double brake operation.

Power Electronics

- Each hoist can have its own power electronic cabinet (power box) mounted and fixed on top of the winch. This is useful for maintenance, commissioning, trouble shooting, diagnostics, change of spare parts by making these works much more easier and quicker.
- The hoists are delivered to the theatre fully assembled, tested and pre-commissioned.
- If the power electronic cabinet is mounted on top of the winch no additional space and no separate technical room will be needed. Only for the racks of the central computer control system and the cabinet of the central power distribution some space is needed.
- All cable connections to the power box are fitted with plugs for easy and safe installation and exchange.

4



Features

- Control System based on the use of industrial tried out components with long-term spare part guarantee.
- Safe high speed data and signal transmission by means of industrial fibre optic bus systems.
- Architecture and layout of the system optimized regarding cycle time of central process control and monitoring system.
- Signal transmission > 11 Mbit/s.
- Integral remote diagnostic and maintenance services for the whole control system with access to all components including the encoders.
- Easy and fast electrical installation and cabling by using industrial bus systems.

Computer Operating System

... for the computer motion of the scenery, the lighting, the curtains, the lifts and the turntable.

Our control system STACON® IT complies to the Safety Integrity Level 3 (SIL 3) according to IEC 61508 type approved by the German TÜV-authorities.

Windows-based operating software for use in theatres, operas and music halls. The system is designated to operate the whole stage machinery on one 18" or two 15"-TFT touch screen displays.

The software comprises all the required and necessary functions for an effective and successful use of the machinery for the whole range of the different kind of shows and performances.

It is possible to program individual cues and performances and to save them on hard-disk or ZIP-disk. Setting and varying the speed, the acceleration, the travel, selecting groups, selecting synchronised groups etc. are only some of the features.

The computer operating panel is a portable robust steel case. The dimensions over all are 700 mm x 420 mm x 200 mm. It can be put on a desk, a trolley or on a foldable board on rails.



If there is one socket on the working gallery and one on the stage it is possible to move the console and plug it into the different sockets to operate either from the stage or from the working gallery. It is also possible to install a second operating console having then one console on the stage and one on the working gallery.



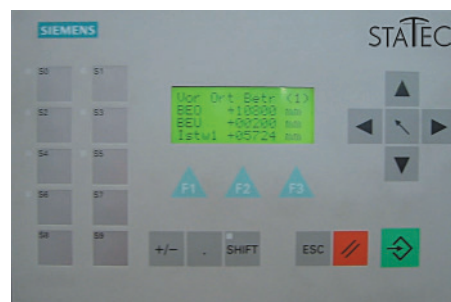
Remote Operating System

The Manual Operating System allows to operate every hoist with an individual small operating panel each equipped with a joystick, a digital display for position, speed and load, an override switch for speed and dynamic, and a button for >teach in< saving of the bottom position.

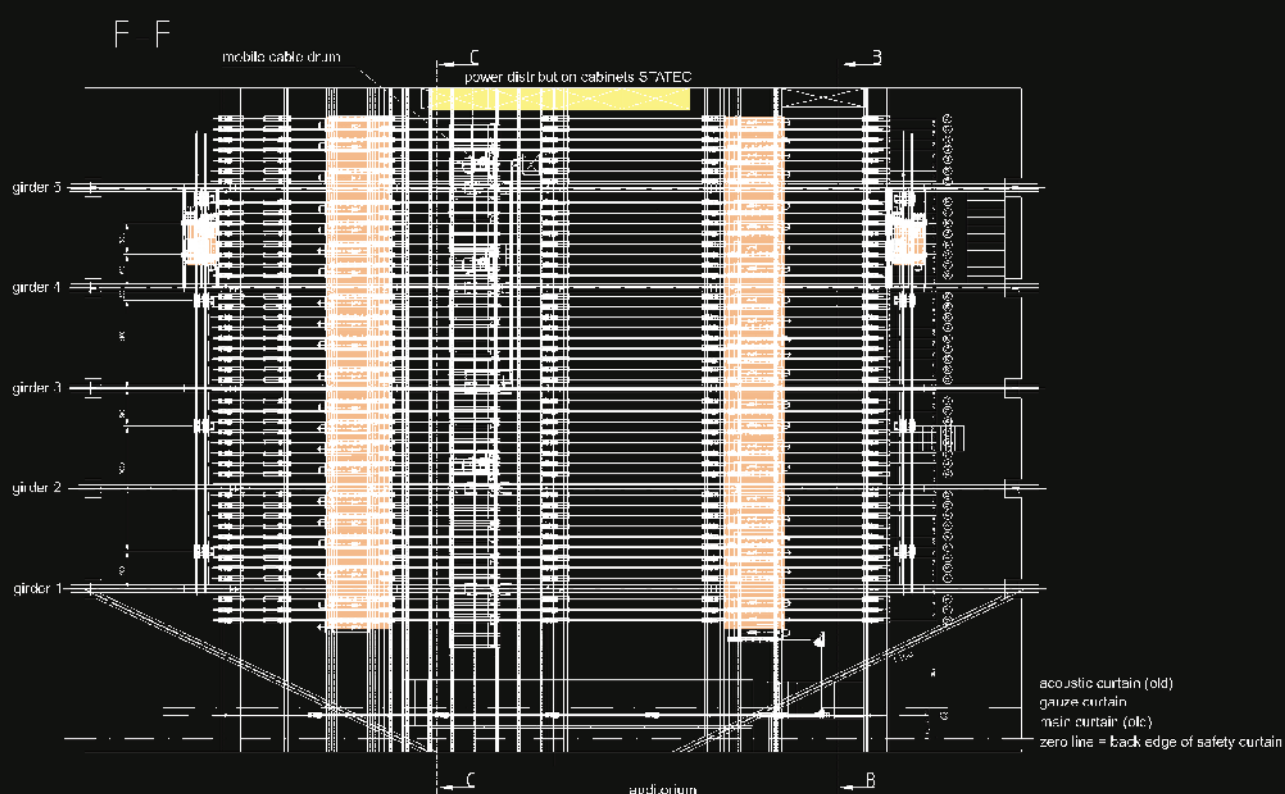
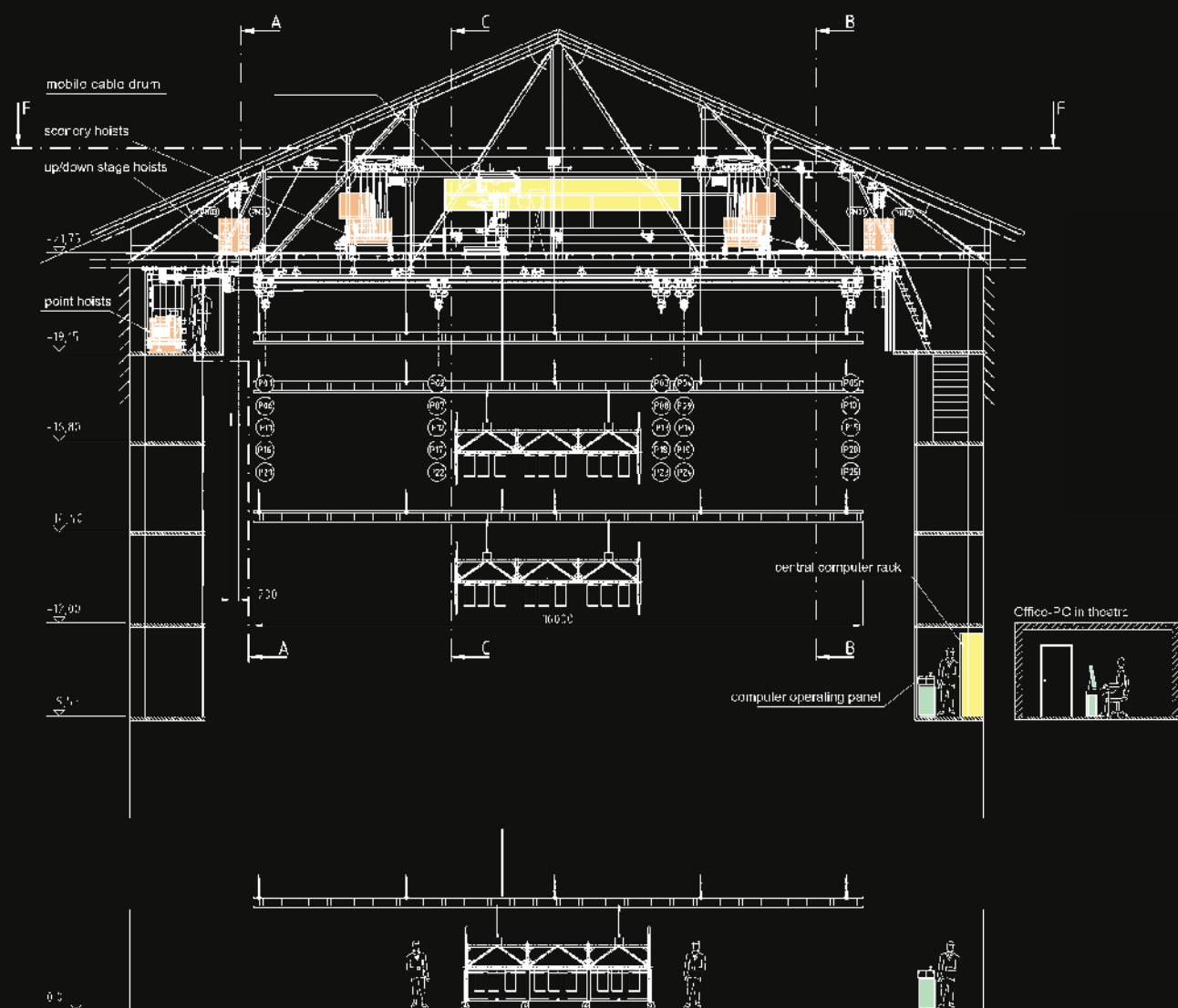
Indication of failure, button for E-Stop, lamp-test, keys for switching on the system are also included in the panel.

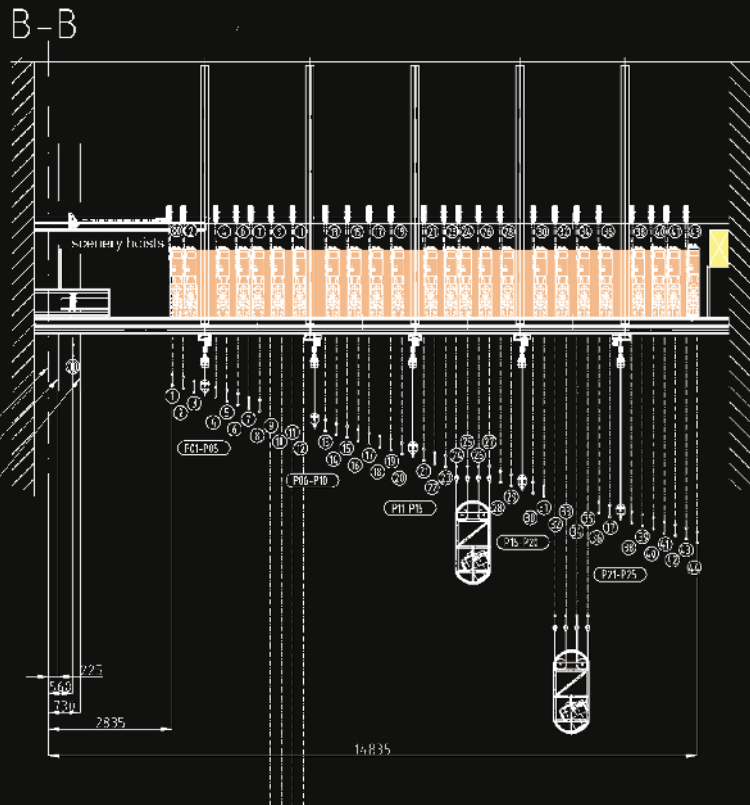
Local Operating System

The Local Operating System allows to operate the hoist locally in case of a failure of the computer operating system and the manual operating system.

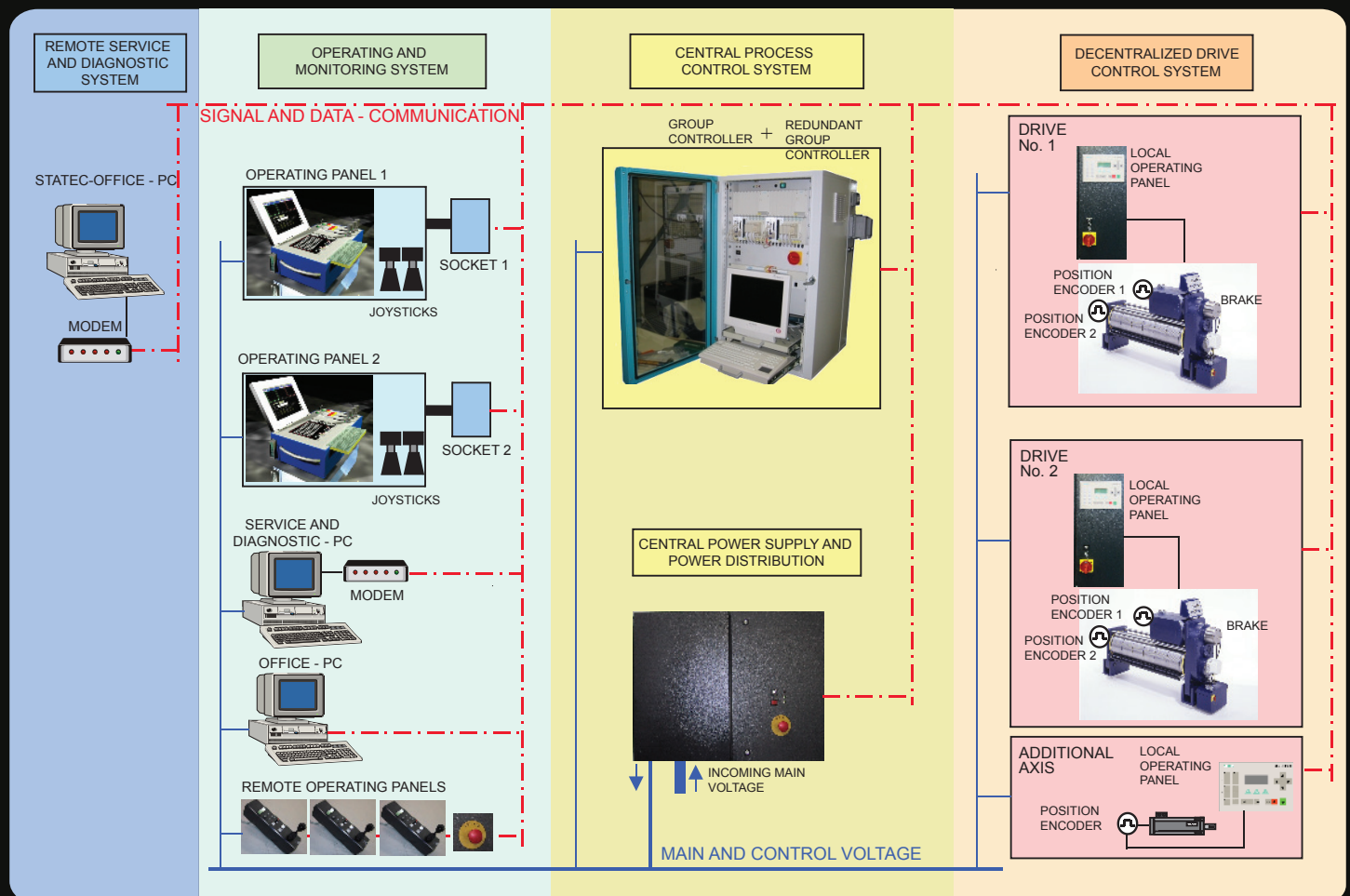


6 The Whispering Winch[®] System integration

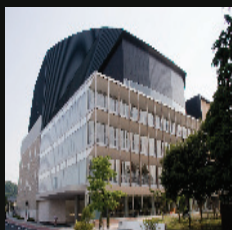




Office-PC in theatre



Whispering References



2011 Theater Mönchengladbach
Rheydt, Germany

Over stage machinery, 35 Whispering Winches[•]
and stage control system STACON[•]IT, SIL 3

2011 Shimizu City Hall
Shimizu, Japan

Over stage machinery, 38 Whispering Winches[•]
and 8 Twittering Winches[•]

2010 Teatro San Carlo
Naples, Italy

Over stage machinery, 79 Whispering Winches[•]
and stage control system STACON[•]IT, SIL 3

2009 Yokohama Yamasitu Tyou
Yokohama, Japan

Over stage machinery, 62 Whispering Winches[•]
and control system STACON[•]IT

2008 Myung Dong Theatre
Myung Dong, Korea

Over stage machinery, 26 Whispering Winches[•]

2008 Kariya City Hall
Kariya, Japan

Over stage machinery, 24 Whispering Winches[•]
and control system STACON[•]IT

2007 Iwaki City Theatre
Iwaki, Japan

Over stage machinery, 78 Whispering Winches[•]
and control system STACON[•]IT

2007 Jung Dong Theatre
Jung Dong, Korea

Over stage machinery, 10 Whispering Winches[•]

2006 Hans-Otto-Theatre
Potsdam, Germany

Over stage machinery, 20 Whispering Winches[•]

2006 Theater 11
Zurich, Switzerland

Over stage machinery, 13 Whispering Winches[•]
and stage control system STACON[•]IT, SIL 3

2006 National Theatre Prague
Prague, Czech Republic

Over stage machinery, 40 Whispering Winches[•]
and stage control system STACON[•]IT, SIL 3

2006 Republic Polytechnic
Singapore, Singapore

Over stage machinery, 13 Whispering Winches[•]

2005 Teatro San Carlo
Naples, Italy

Over stage machinery, 16 Whispering Winches[•]
and stage control system STACON[•]IT

2005 Miyakonojou
Miyakonojou, Japan

Over stage machinery, 39 Whispering Winches[•]
and control system STACON[•]IT

2003 Matsumoto Performing Arts Center
Matsumoto, Japan

Over stage machinery, 85 Whispering Winches[•]
and control system STACON[•]IT

2002 Deutsche Oper am Rhein
Düsseldorf, Germany

Over stage machinery, 74 Whispering Winches[•]
and stage control system STACON[•]IT

1999 – 2002 Teatro Lirico di Cagliari
Sardagna, Italy

Over stage machinery, 49 Whispering Winches[•]
and stage control system STACON[•]IT

2002 Expo.02«Die Werft»
Murten, Switzerland

Stage wagons, 8 Whispering Winches[•]
and stage control system STACON[•]IT

1999 – 2000 Stadttheater St. Gallen
St. Gallen, Switzerland

Over stage machinery, 40 Whispering Winches[•]
and stage control system STACON[•]

1999 – 2000 Thessaloniki Music Hall
Thessaloniki, Greece

Over stage machinery, 48 Whispering Winches[•]

1997 – 1999 Royal Opera House
Covent Garden, London, UK

Over stage machinery, 192 Whispering Winches[•]
and control system STACON[•]

1995 – 1997 Cultural and Congress Centre Am See
Lucerne, Switzerland

Stage machinery, 20 Whispering Winches[•]
and stage control STACON[•]