

The AS7 wire rope hoist



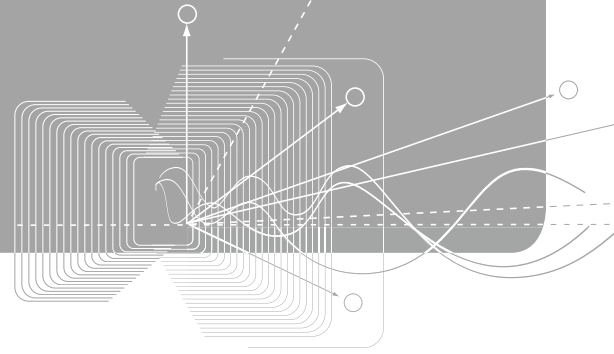
11.2012

Partner of Experts

STAHL
CraneSystems



The AS7 wire rope hoist



The AS7 wire rope hoist programme is worldwide the innovative classic in lifting and crane technology. Users, crane manufacturers and system manufacturers appreciate the modular system based on field-proven, low-maintenance components. Series manufacture of the standard components brings economic advantages for you. And this combined with the precise manufacture of off-standard components makes the AS7 wire rope hoist a widely acknowledged top quality product.

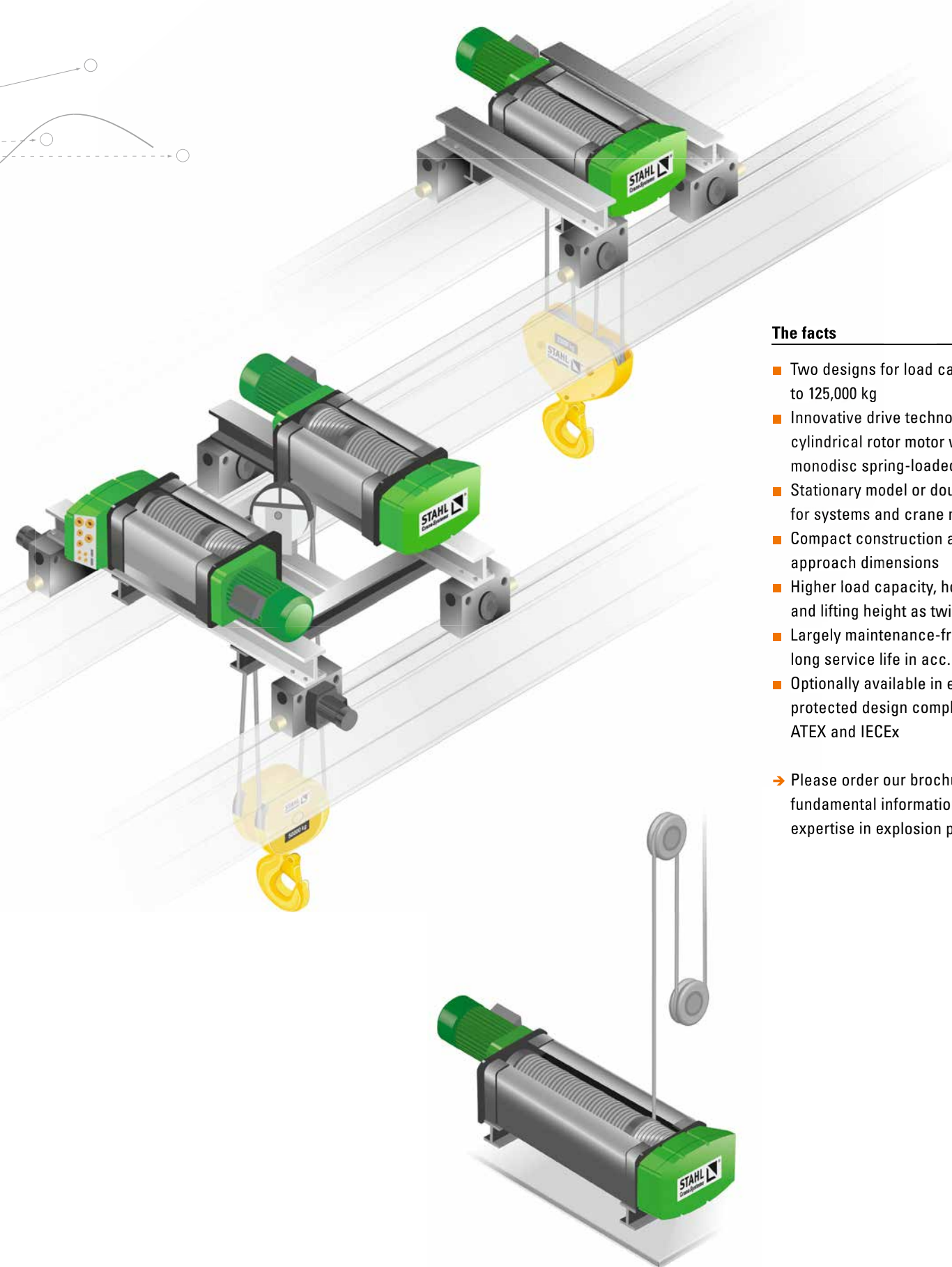
The modular system permits practically unlimited combinations of the sub-assemblies to produce your individual solutions. The AS7 series from STAHL Crane-Systems is available in two designs for the upper load capacity range up to 125,000 kg. The wire rope hoists can be used with crabs on double girder cranes or as stationary lifting or towing equipment with different angles of installation and rope lead-offs. The slimline construction is of particular advantage in systems manufacture. Motor, gear and rope drum are arranged in line. This central gear concept permits high outputs and loads.

The revised design as twin hoist opens up the same areas of application as the AS7 wire rope hoist, but with higher load capacity, greater lifting height and faster hoisting speed as standard. An important safety feature of the AS7 twin wire rope hoist is the precise load positioning. As the rope of the twin hoist runs simultaneously in opposite directions, the load is raised or lowered without any sideways motion of the hook.

Various off-standard designs are available for use in particular conditions. Even in explosive atmospheres you do not have to manage without the AS7 wire rope hoist. On request, the entire wire rope hoist programme is available in explosion-protected design for Zone 1, Zone 2, Zone 21 or Zone 22. It's no coincidence that we are market leader for explosion-protected lifting technology and crane components.



These AS7 wire rope hoists are equipped with maintenance platforms to make maintenance work safe. The ramshorn hooks of the bottom hook blocks can be electrically rotated ensuring precise handling.

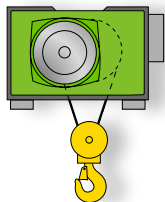


The facts

- Two designs for load capacities up to 125,000 kg
 - Innovative drive technology with cylindrical rotor motor with monodisc spring-loaded brake
 - Stationary model or double rail crab for systems and crane manufacture
 - Compact construction and low approach dimensions
 - Higher load capacity, hoisting speed and lifting height as twin hoist
 - Largely maintenance-free, low wear, long service life in acc. with FEM
 - Optionally available in explosion-protected design complying with ATEX and IECEx
- Please order our brochure with fundamental information on expertise in explosion protection.

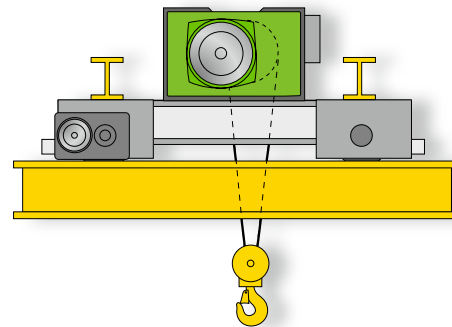
The models and crab variants

Different models and crabs for the AS7 wire rope hoist open up the most varied applications. Individually tailored to your specific requirements as stationary hoisting or towing equipment, for use with a double rail crab, or for systems manufacture. The crabs are equipped with two travel speeds as standard. But in this too we are receptive to your requirements. Other speeds are available as options. Our wire rope hoists are known worldwide for their flexible and versatile use. Compact dimensions and extremely short approach dimensions help to make optimum use of your production shop.



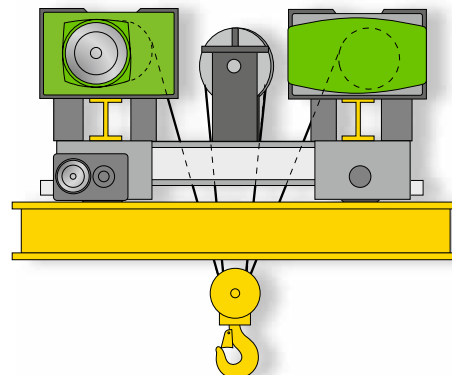
Stationary model

The AS7 wire rope hoist can be used as stationary hoisting or towing equipment, for example in systems manufacture. Depending on the application, the rope lead-off angle, the hoist mounting and the mounting position of the hoist motor can be varied.



OE double rail crab

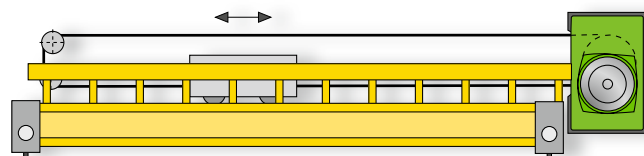
The OE double rail crab is intended for use on double girder cranes. The extremely compact construction makes very low approach and headroom dimensions possible and the available space can thus be used to the full. The double rail crab is available with various track gauges for the whole load capacity range.



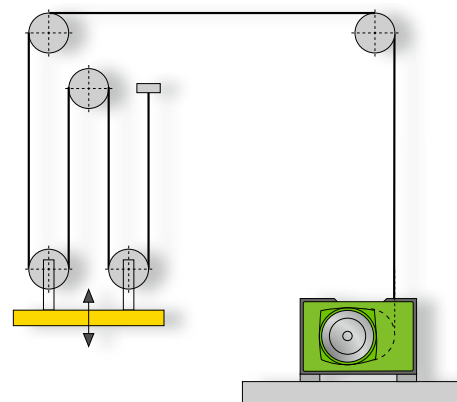
Twin hoists

The AS7 wire rope hoist as twin hoist can also be used as stationary lifting equipment or with an OE double rail crab.

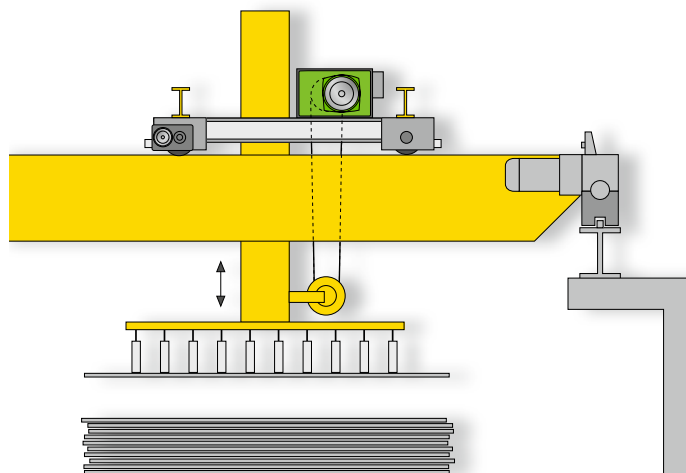
Application examples



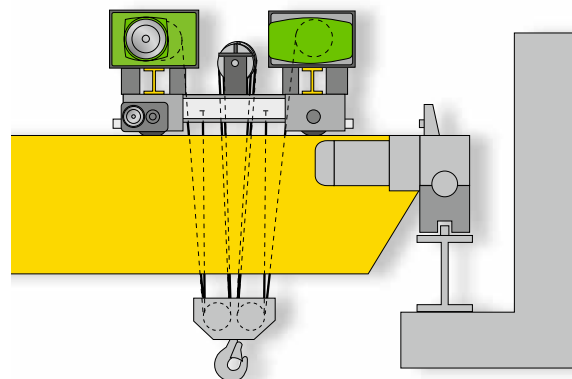
The AS7 wire rope hoist used as horizontal towing equipment in systems manufacture.



The frequency controlled AS7 wire rope hoist used bolted to the floor as vertical towing equipment in systems manufacture.



The AS7 wire rope hoist with guided load pick-up.

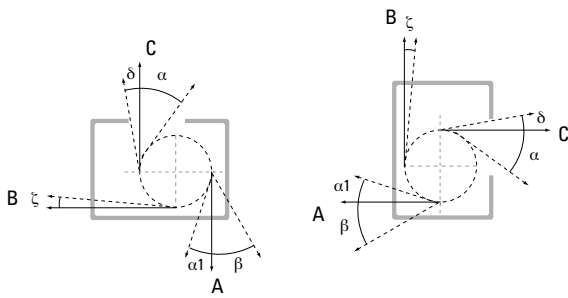


The AS7ZW wire rope hoist is mainly used with double rail crabs on double girder overhead travelling cranes.

■ Standard

Type	Load capacity up to [kg]	Standard reeving	Reeving for true vertical lift	Stationary	OE double rail crab
AS7	50,000	2/1, 4/1	2/2, 4/2, 8/2	■	■
AS7	63,000	–	10/2-1	■	■
AS7	80,000	6/1	–	■	■
AS7ZW	125,000	–	ZW 4/2-1, ZW 6/2-1, ZW 8/2-1, ZW 10/2-1	■	■

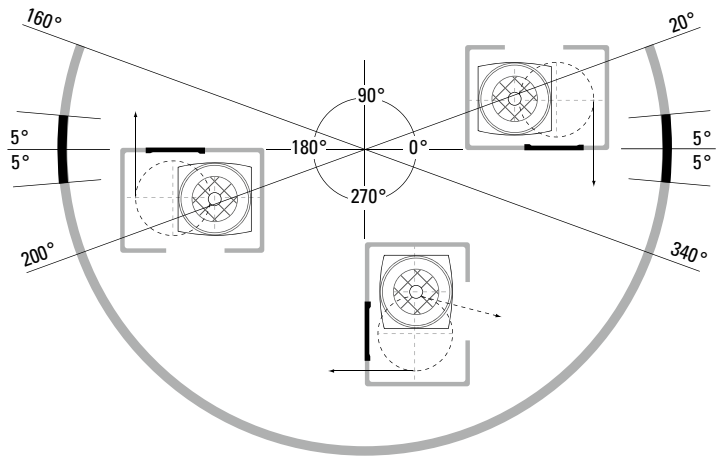
You call the shots. Whatever you want to move, the AS7 wire rope hoist will follow. As stationary lifting or towing equipment with different angles of installation and rope lead-offs it moves factory doors and storage and retrieval machines or can be used as a traversing hoist with more than one rope lead-off, for example in long goods storage technology. Its outstanding flexibility is appreciated and acknowledged by systems manufacturers.



Rope lead-off angle C possible on request.

Rope lead-off angle

Various rope lead-off angles are made possible by rotating the rope guide on the rope drum and setting the wire rope hoist up accordingly. The rope guide is adjusted to suit the rope lead-off angle.



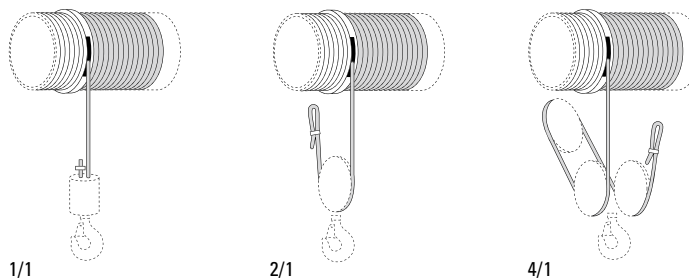
Angle of installation

The AS7 wire rope hoist can be mounted in various angle ranges. For rope drives with bottom hook block the wire rope hoist must always be installed with its longitudinal axis horizontal.

Single-grooved rope drum

The model with single-grooved rope drum is used for stationary hoisting or towing equipment or combined with a double rail crab.

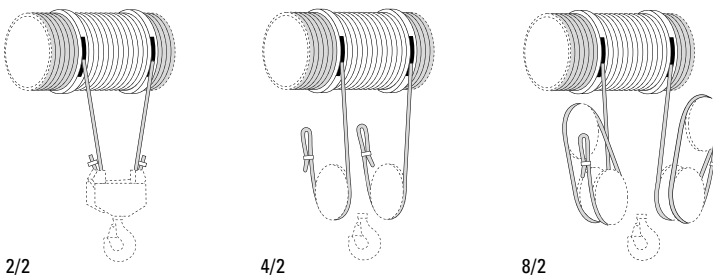
Standard reeving



Double-grooved rope drum

If true vertical lift is required, we recommend this model with double-grooved rope drum (right-/left-hand thread). This version can be used both in stationary form or with a double rail crab.

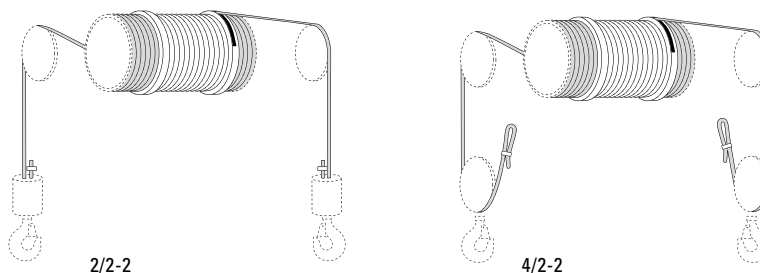
Reeving for true vertical lift



Double-grooved rope drum

The model with double-grooved rope drum (right-/left-hand thread) is used for many lifting and towing tasks where the load must be picked up at more than one point and true vertical lift is required.

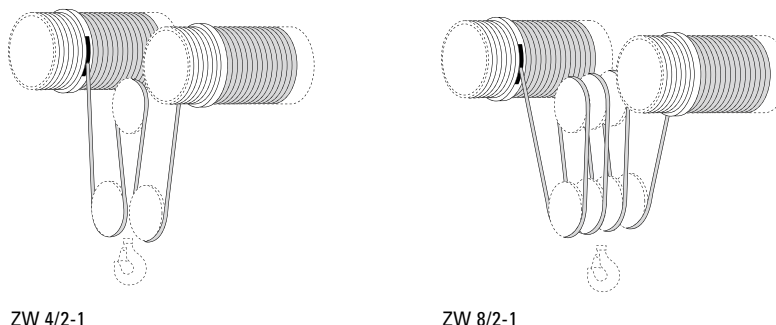
Reeving for multiple load pick-up points



Twin hoist

Independent of the grooving of the rope drum, stable guiding of the hook and precise positioning of the load are guaranteed.

Reeving for true vertical lift



The technology

It's reassuring to know what convincing technology is concealed in the AS7 wire rope hoist. The largely maintenance-free components of the modular wire rope hoist are optimally matched to each other. They guarantee continuous productivity, high efficiency and long service life. One of the most important characteristics of this wire rope hoist is the arrangement of motor, gear and drum on one axis. It is particularly suitable for systems manufacture and can be used in restricted spaces.

1 Rope and rope guide



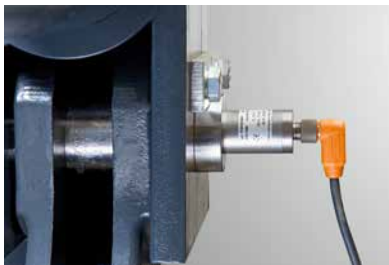
- Highly flexible special rope with long service life
- Field-proven enclosed rope guide in spheroidal graphite cast iron has no temperature limitations
- The GJS material (previously designated GGG40) is suitable for highest and lowest temperature ranges
- 360° rope tensioner, avoiding the formation of slack rope

2 Paint



- Standard paint treatment as per RAL 6018 yellow-green and RAL 7021 greyish black
- High-quality primer and top coats for standard applications
- Off-standard paint treatment for outdoor use or corrosive ambient conditions
- Shade as per customer's requirement

3 Overload cut-off



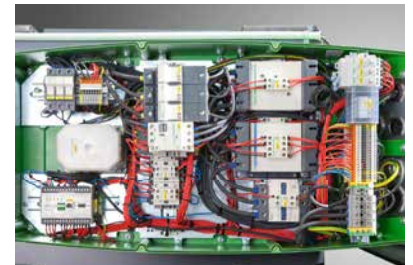
- Continuous electronic monitoring of suspended loads
- For systems manufacturers: overload cut-off is also possible for 1/1 or 2/2 reeving, measuring the load on the gear
- Maximum load limited by gear sensor. With multiple reeving, load measurement at rope anchorage is possible as an option.

4 Hoist gear

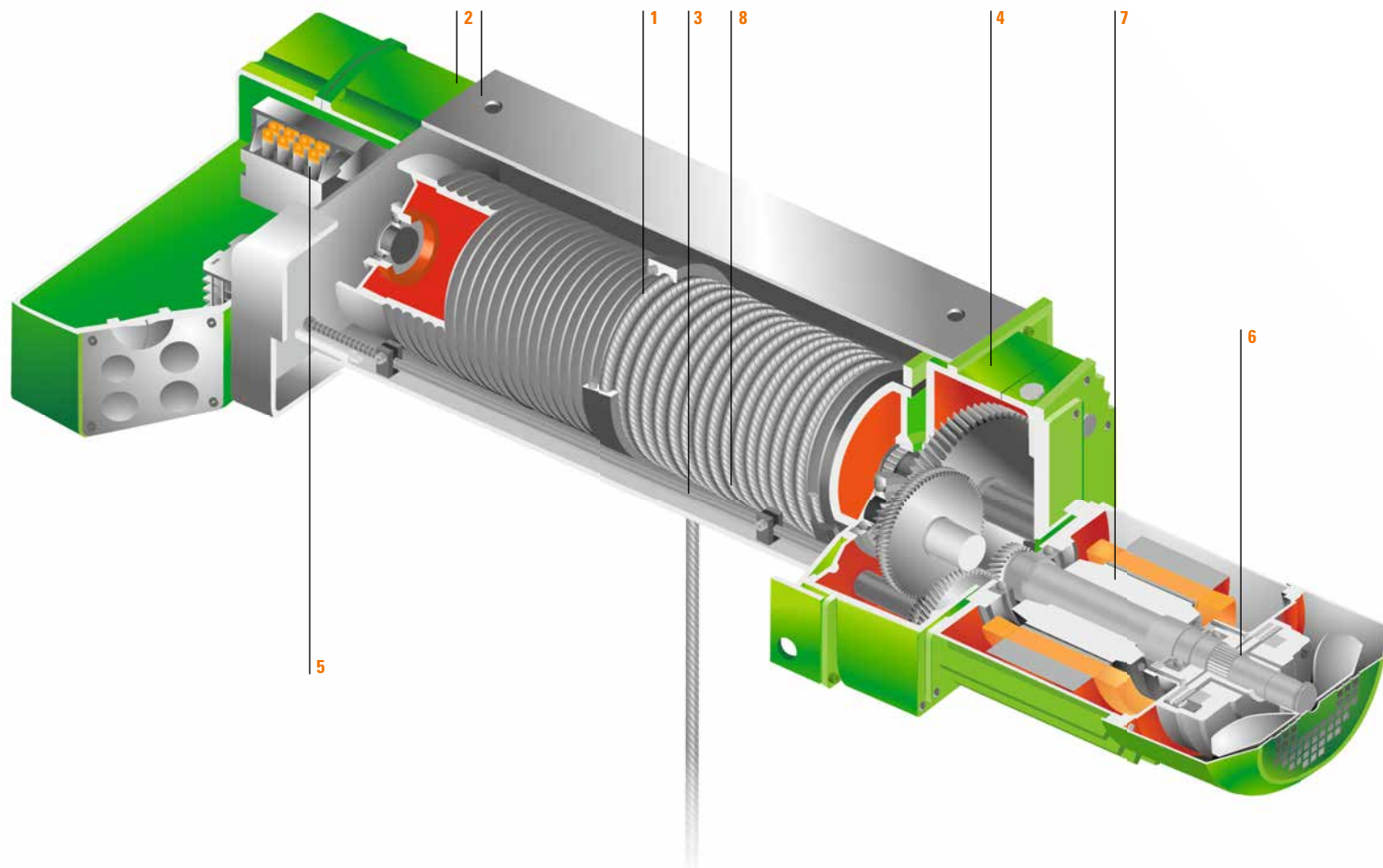


- All gear steps with lifetime lubrication in oil bath
- Minimum noise development thanks to state-of-the-art technology

5 Control and SLE motor management



- Condition monitoring as standard
- Inching operation is suppressed thus reducing stress
- All common control voltages available
- High degree of safety thanks to overdimensioned contactors



6 Brake



- Low-maintenance asbestos-free brake; needs no adjustment
- Long service life thanks to overdimensioned braking torque
- Brake easily accessible for inspection from outside
- Motor management ensures low wear
- IP 65 protection

7 Motor



- Special-purpose motor for hoisting applications
- Classified according to FEM (ISO), high duty cycle and switching operation frequency
- IP 55 protection, insulation class F
- Motor outside rope drum, highly efficient motor cooling, maintenance-friendly
- Temperature control by ptc thermistors

8 Rope drive



- Optimised ratio of drum to sheave diameter ensures low wear on rope
- Flexible and long-lived wire rope
- Wear-resistant return sheaves, fine machining provides rope-friendly grooves in rope drum
- Drum easily accessible for rope replacement
- Robust bottom hook block with low headroom in spite of large dimensioning of hook

The equipment

There's always room for improvement. Although it is first-class in the standard version, you have the option of making your AS7 wire rope hoist even safer, more cost-effective, more convenient with numerous mechanical, electrical and electronic features. As a welcome side-effect, the service life of the wire rope hoists is prolonged. The extensions to the programme boost the productivity of the wire rope hoist and adapt it to your individual requirements. Here we show you a few examples of supplementary equipment and options. If you need further detailed information, please pay a visit to our website at www.stahlcranes.com, or contact us directly.

STH control pendant



- Robust control pendant with EMERGENCY STOP palm button and control cable
- All switching elements for hoist, cross and long travel are 2-step
- IP 65 protection
- Additional buttons, for example to activate a horn, can easily be fitted.
- Optional load display. All data displayed can be read out on a notebook with the aid of the SMC Multicontroller.

Radio remote control units



- Micron push-button transmitter with belt clip, as an option signal feedback from crane
- Spectrum joystick transmitter with harness
- Automatic battery chargers with replacement batteries

Emergency hoist limit switch (gear limit switch)



- In standard version, the hoist is equipped with a gear limit switch for top and bottom hook position and an operational limit switch for top hook position
- As an option, up to eight switching elements can be fitted to the switch. This permits for example further stopping positions and operational limiting in bottom hook position.

SMC Multicontroller



- Continuous load monitoring by overload cut-off even if hoist is idling
- Overload protection with ALC automatic load control
- Load spectrum memory for load-related operating time summation
- Monitoring of motor temperature for hoist and travel motors
- Operating data registration, e.g. operating hours, load spectrum, motor switching operations and load cycles
- Data exchange with PC possible

SSC cumulative load control



- Load control by overload cut-off, increased safety when operating with more than one load hook
- Maximum of four separate loads can be registered
- Separate loads are measured and hoisting disconnected if permissible limit load is exceeded
- Differential load monitoring possible
- Using the flexible SSC cumulative load control increases the safety of material transport and prevents overloading the system.
- As an option with certified load summation in category '3 performance level d' and EN 954

Load display



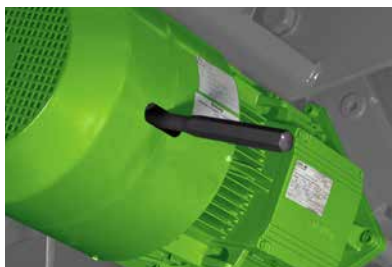
- SLD four-digit 7-segment load display (Stahl Load Display), large format, luminous red, available with various interfaces including CAN.
- Choice of 60, 100 or 150 mm digit height
- No additional sensor is required as the standard load sensor is used.

Signal transmitters



- Visual and acoustic signal transmitters such as horn and flashing light can be mounted on crabs.
- The signal transmitters can be activated by a button on the control pendant.

Manual release of hoist brake



- The brake release device permits the hoist brake to be released manually and thus the load to be lowered during a power cut.
- As an option, every hoist can be equipped with this equipment to supplement the standard brake.

Rope drum brake



- Redundant brake system provides increased safety
- Intercept and holding brake, prevents the load falling even if the gear should break
- The rope drum brake is controlled by the SBC brake controller

Frequency control

SFH frequency inverters for ›hoisting‹



- Smooth starting and braking characteristics
- Load swing greatly reduced
- Fast, precise positioning of the load, corrective switching operations rarely necessary
- The reduced dynamic load means a longer service life for hoist motor and gear and reduces stress on the whole system.
- All frequency inverters have world-wide approvals (EN, IEC, UL, CSA) and are certified to DIN ISO 9001.

SFD frequency inverters for ›cross/long travel‹



- Simple to instal, parametrise and operate
- Standard speed range 1:10, up to 1:30 as an option
- SPS compatible to super-ordinate systems (optional)
- All internationally customary mains voltages are available
- Also available in design for installing in panel box

		Standard	Options
Ambient temperature		–20°C to +40°C	–20°C to +70°C
Protection to IEC/EN 60529		IP 55	IP 66
Paint	Colour	Greyish black/yellow-green RAL 7021/6018	All other colours from RAL colour chart
	D.F.T.	80 µm	120 µm to 240 µm
	Paint	Polyurethane topcoat	Epoxy-resin base (240 µm)
Control pendants		–	STH 1 control pendant STH 1 control pendant with load display Radio remote control
Control		The electrical devices are wired onto a terminal strip in the hoist panel box	Complete control with transformer, crane switch contactor (main contactor) Crane manufacturers' control without transformer and without crane switch contactor
Hoist motor control		Pole-changing or frequency controlled, control range 10–100 %	Frequency controlled, control range 10–100 %
Travel motor control	50 Hz	5/20 m/min	2.5/10 m/min or 8/32 m/min
	60 Hz	6.3/25 m/min	3.2/12.5 m/min or 10/40 m/min
	50/60 Hz	2.5...25 m/min frequency controlled	4.0...40 m/min frequency controlled
Motor supply voltage	50 Hz	380–415 V	All voltages possible
	60 Hz	440–480 V	
Rope	to DIN 3063, DIN 3067	Bright or galvanised	–
	Rope safety factor	Generally ≥ 5,0	Off-standard rope and higher rope safety factor
Rope drive		Bottom hook block, rope return sheaves, rope suspension and wire rope with 1/1, 2/2-1, 2/1, 4/1, 4/2-1, 6/1, 8/2-1, 10/2-1, 2/2-2, ZW 4/2-1, ZW 6/2-1, ZW 8/2-1, ZW 10/2-1 reevings	Ramshorn hook Additional bottom hook blocks and/or return sheaves
Limit switch	Emergency hoist limit switch (gear limit switch)	For top and bottom hook position and operational limit switch for top hook position	With additional switching elements for further stopping positions of hook
	Travel limit switch	–	For up to four switching functions – pre- and end limiting in both directions of travel
Overload cut-off		SLE	SMC
	Signal transmitter	–	Horn, flashing light
	Visualisation	–	Large-format load display, display in control pendant, with PC
	Data exchange	–	RS 232, RS 485, CAN
Cumulative load controller		–	SSC
Temperature control of travel motors		Ptc thermistors including tripping device	–
Mechanical protective device		Wheel arresters	–
		Double rail crabs with buffers	–
Hoist brake		Monodisc spring-loaded brake with asbestos-free brake linings	Manual brake release SBC rope drum brake

The engineering

Engineering means innovation and individuality. Constantly redefining the lifting and transporting of loads for complex requirements even in explosive areas is a job for our experts. Drawing on one of the widest product ranges of standard components, they regularly develop modern, individual off-standard and customised solutions. Hardly any other manufacturer of lifting and crane technology can offer you this diversity of precisely designed top quality customised solutions with maximum cost-effectiveness.

The modular AS7 wire rope hoist programme forms the basis for the most varied solutions. The slimline construction, different angles of installation and rope lead-offs are ideal for flexible use, not only in systems manufacture.

Customised system solutions, individually adapted to your precise requirements, are our forte. The experience and knowledge gained from over 130 years of crane technology give us the flexibility to develop and produce the optimum solution for your project in short time. On request, all off-standard wire rope hoists and customised solutions are available in explosion-protected design for Zone 1, Zone 2, Zone 21 and Zone 22.

The facts

- Perfectly matched to your project
- Every hoist is the result of over 130 years of experience and expertise
- Cost-effective thanks to modular system
- Technically mature thanks to the use of field-proven standard components
- High quality and reliability ensured by in-house production
- All customised solutions are available as an option in explosion-protected design complying with ATEX and IECEx.



AS7 wire rope hoist in systems manufacture of a high bay warehouse

STAHL CraneSystems' engineers developed an overall concept in a high bay warehouse for the storage and retrieval of stacks of concrete weighing up to 50 t. During storage, the spreader beam of the storage and retrieval machine is raised. After it has reached the required level, a rail-bound carriage moves into the storage box and picks up or sets down precast concrete sections. The four frequency controlled AS7 wire rope hoists working in synch are mounted on the base of the storage and retrieval machine. Each is designed for a load capacity of 21.5 t and they raise the telescopic platform at up to 15 m/min with four falls of 25 mm diameter rope. These are high flexibility off-standard ropes with a rope safety factor of 10:1.

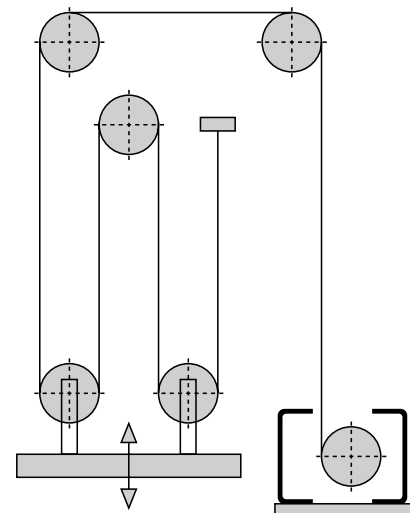
The wire rope hoists are driven by high-powered 36 kW frequency controlled motors. This inverter technology enables the speed to be regulated steplessly and precisely, the maximum speed being optimised dependent on the suspended load.

The smooth starting of the motors avoids impact forces; supporting structure, ropes and rope sheaves are protected from damage. Forced ventilation mounted on the motors permits a duty cycle of 80 % DC and ensures that the motors do not overheat even in continuous operation.

As the outdoor high-bay warehouse is exposed to all weather conditions, the SPC control is mounted in a climate-controlled panel box. This control regulates the synchronisation of the hoists and prevents operating errors and accidents.

The facts

- Storage and retrieval machine weighing 110 t with four synchronised frequency controlled AS7 wire rope hoists
- Track gauge: 14.1 m, height: 15 m, length: 13.5 m, load capacity: 50 t
- Hoisting speed max. 15 m/min
- Travel speed max. 90 m/min
- SFD frequency inverters
- SPC control
- High FEM classification



The explosion-protected AS7ex wire rope hoist

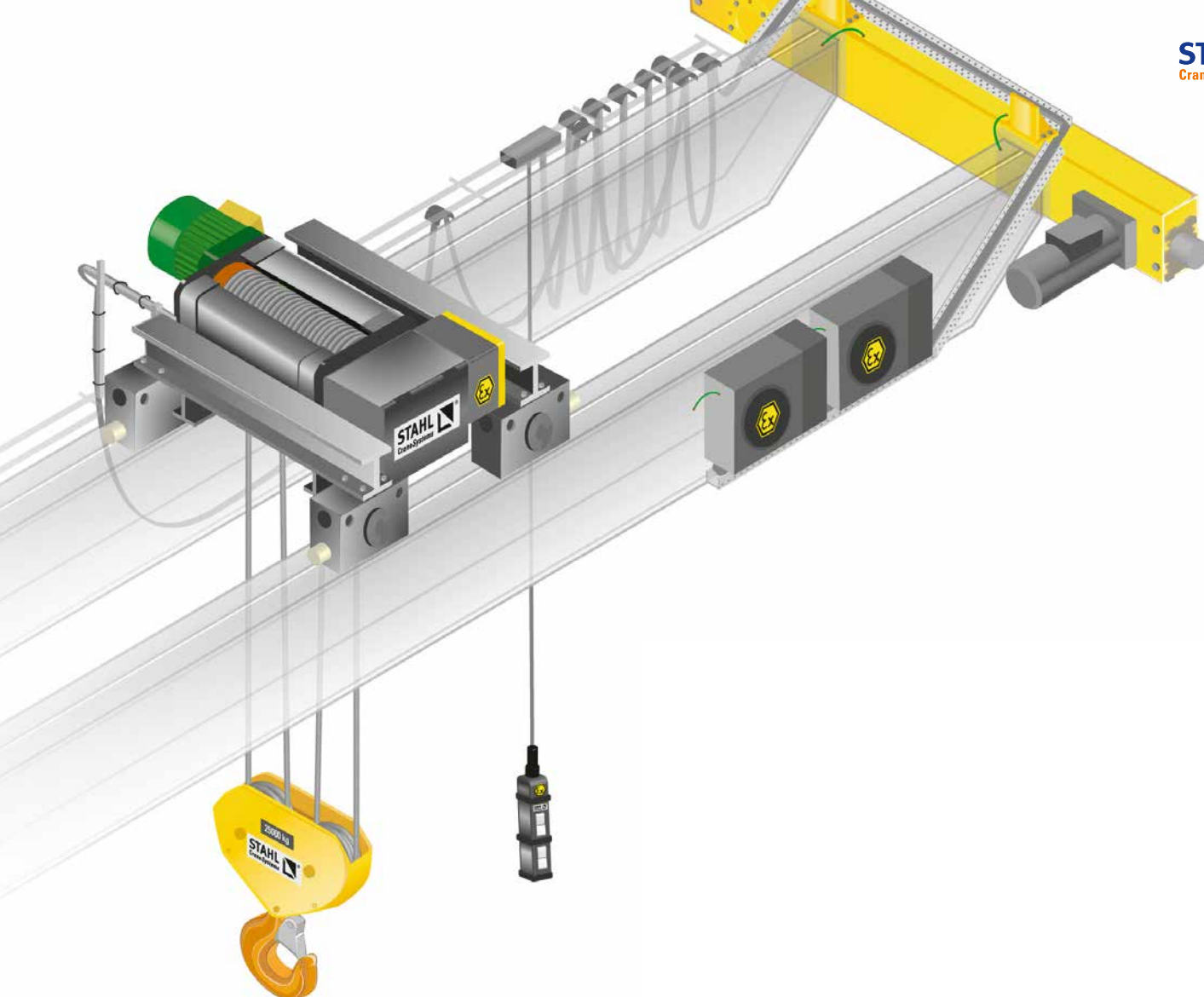


STAHL CraneSystems is known internationally as an explosion protection specialist and is regarded as world market leader in explosion protection technology. The safety of people and machines in areas subject to gas and dust explosion hazards is our top priority. Here we make no compromises. As developer of numerous innovations in this field we have had palpable influence on crane technology. Experience and know-how from many decades, our own fundamental research and development, approvals from the Federal Physico-Technical Institute (PTB) and other test institutes in many countries underline our expertise. Hoisting technology from STAHL CraneSystems ranks among the safest technology on the market in the chemical, petrochemical and pharmaceutical industries, the food processing industry, power supply, shipbuilding, offshore and natural gas liquefaction industries (LNG).

Without exception, the AS7ex wire rope hoist programme is based on the modular AS7 wire rope hoist programme. All components of the explosion-protected hoists come from our own production, from motor and brake to controls and control pendant. For this ensures the complete, high-quality explosion protection on which users, crane manufacturers and system manufacturers all over the world have relied for decades. The strict ATEX directives and IECEx regulations on mechanical and electrical explosion protection are of course met.

- The facts
- Internationally leading specialist for explosion protection technology
 - The world's first complete, most comprehensive wire rope hoist programme for Zone 1, Zone 2, Zone 21 and Zone 22
 - Based on the AS 7 wire rope hoist programme
 - Design and maintenance to ATEX and IECEx in certified quality
 - All equipment available in explosion-protected design

Use	Category	Protection against	Explosion protection class
Zone 1	Ex II 2 G	Gas	Ex de IIB T4 or Ex de IIC T4
Zone 2	Ex II 3 G	Gas	Ex de nA IIB T3 (T4) or Ex de nA IIC T3 (T4)
Zone 21	Ex II 2 D	Dust	Ex tD A21 IP 66 T 120 °C
Zone 22	Ex II 3 D	Dust	Ex tD A22 IP 66 T 120 °C



Explosion-protected wire rope hoists in twin design with auxiliary hoist facilitate compressor maintenance in a hydrogen liquefaction plant.

The support

Quality right down to the most minor detail is the standard STAHL CraneSystems is committed to. Not only in the field of crane technology, but also on the subject of support. You will find lifting and crane technology from STAHL CraneSystems all around the world. Developed by engineers and experts, manufactured with maximum care following our well-known standard of quality. All around the world, many companies from various fields have decided on maximum safety and quality, on products from STAHL CraneSystems.

When it comes to sales, we are committed exclusively to capable, professional crane manufacturing partners. You can expect optimum support from them when your individual crane system with components from STAHL CraneSystems is at stake. Consulting and erection of a new system, system-oriented testing and maintenance, modernisation, spare parts supply and training courses. Together with our subsidiaries and crane manufacturing partners we offer you perfectly coordinated support all over the world.





Spare parts – accessible right around the clock

Our own subsidiaries and numerous partners around the world ensure reliable spare parts supply and expert assistance in your area. Even decades after a series has been discontinued, spare parts are available all over the world right around the clock.



Training courses

We constantly keep our regional crane manufacturing partners up to date with training courses, seminars and information material. You too can profit directly from our expertise. We impart practical and theoretical knowledge in our own training centre or on your premises. The seminars on offer in the form of individual, basic and advanced courses cover all main product groups. However we would also be pleased to match a special programme to your individual specifications and requirements.

You will find our current seminar programme at
www.stahlcranes.com/en/support



Factory service centre – in action all over the world

Our factory service centre is a service for our customers: wherever you are we assist your crane or systems manufacturer with our experience and expertise whenever he needs us. Up-to-date diagnostic apparatus and condition monitoring systems stand by to support professional service and maintenance work. Not only you, but your system, are in safe hands. You can rely on us.

Your will find our online service at
www.web.stahlcranes.com
 and you can reach our factory service centre on
customer.service@stahlcranes.com



The AS 7 wire rope hoist in action

Experts in all countries immediately recognise hoist and crane components from STAHL CraneSystems. For the AS 7 wire rope hoist is in action all around the world in the most diverse variants and solutions. Innovative, thought through down to the most minor detail and manufactured with greatest care, the AS 7 wire rope hoist continues to conquer new areas of application. It thus proves its well above average flexibility and cost-effectiveness. STAHL CraneSystems is represented on all continents by subsidiaries, sales and crane manufacturing partners.



1 The double girder overhead travelling crane with 24 m span is equipped with an AS 7 wire rope hoist with a load capacity of 5 t. Two load ropes ensure that the bulk goods grab is stable and can operate without swinging. The grab has a volume of 5 m³ with a deadweight of 2.2 t and was designed especially for the requirements of the biomass to be transported. The weight of the wood chippings varies between 200 kg/m³ and 400 kg/m³. The crane, whose long and cross travel drives are equipped with frequency inverters, is controlled from a central control station.

2 This double girder overhead travelling crane with two AS 7 wire rope hoists is mounted on an ocean-going vessel. The hoists each have a load capacity of 20,000 kg. This system was made seaworthy with rack- and pinion gearing and off-standard paint.

3 Double girder overhead travelling crane with three AS 7 wire rope hoists for handling paper reels and for maintenance work. Two wire rope hoists operating in synch remove a 22 t paper reel from the paper machine every 30 minutes. The hoist with a load capacity of 30 t for maintenance work is mounted in the centre of the double girder overhead travelling crane. The integrated electronic load summation ensures that a maximum of 30 t is lifted.

4 This double girder overhead travelling crane with AS 7 as twin hoist, with a load capacity of 80 t, operates in a power station and facilitates maintenance work on the turbines. The hoists are equipped with double-grooved rope drums and have 6/2-1 reeving for true vertical lifting and lowering of the load.

5 Double girder overhead travelling cranes with AS 7 wire rope hoists and load capacities of 41 t and 60 t are in use in Bergen in one of the largest power stations in Norway. The frequency controlled hoists are used for maintenance work.





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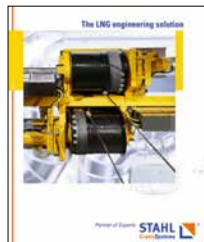
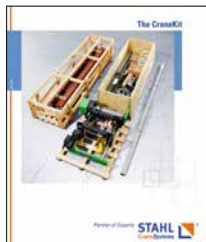
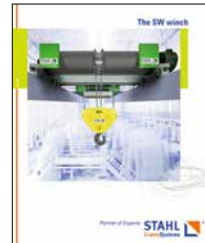
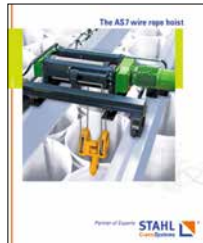
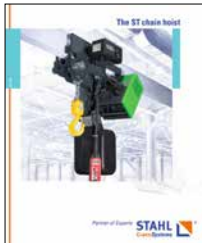
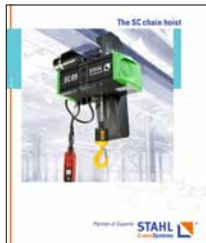
- 1 Three bridge cranes with two identical AS7 wire rope hoists each are equipped with stepless drives. Each of the AS7 wire rope hoists is designed for a load capacity of 40,000 kg. The ramshorn hooks of the bottom hook blocks can be electrically rotated so that the loads can be handled precisely. The catwalks make inspection and maintenance work easier. A comprehensive condition monitoring package is part of the maintenance concept.
- 2 These frequency controlled AS7 wire rope hoists with four-point
- 3 load pick-up are ready for use regardless of weather conditions. Each wire rope hoist is equipped with two load ropes which are attached to return sheaves on the load beam and ensure that the load is transported steadily without swinging. The height-adjustable rope suspensions ensure that the load beam maintains its completely horizontal position. It is equipped with a motorised rotating mechanism so that the load can be rotated horizontally if necessary.
- 4 Double girder overhead travelling cranes, equipped with AS7 and
- 5 AS7 twin hoists, are in use in the modern mechanised production
- 6 of a foundry for high-tensile cast elements. The double rail crab with the AS7 twin hoist has a load capacity of 40 t and is used to transport the heavy moulds into the vibrator. After the high-quality cast elements have cooled off an AS7 wire rope hoist with a load capacity of 25 t transports them to the next station.

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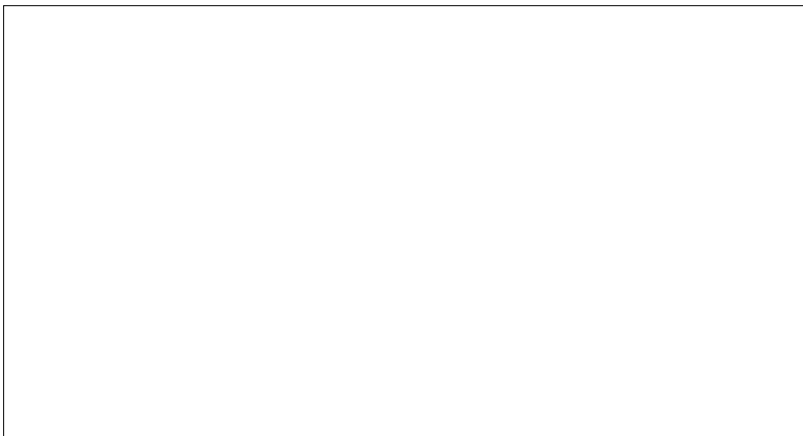
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