



BAUER Gruppe

# SCHACHTBAU NORDHAUSEN

Innovative shaft hoisting systems and special underground works

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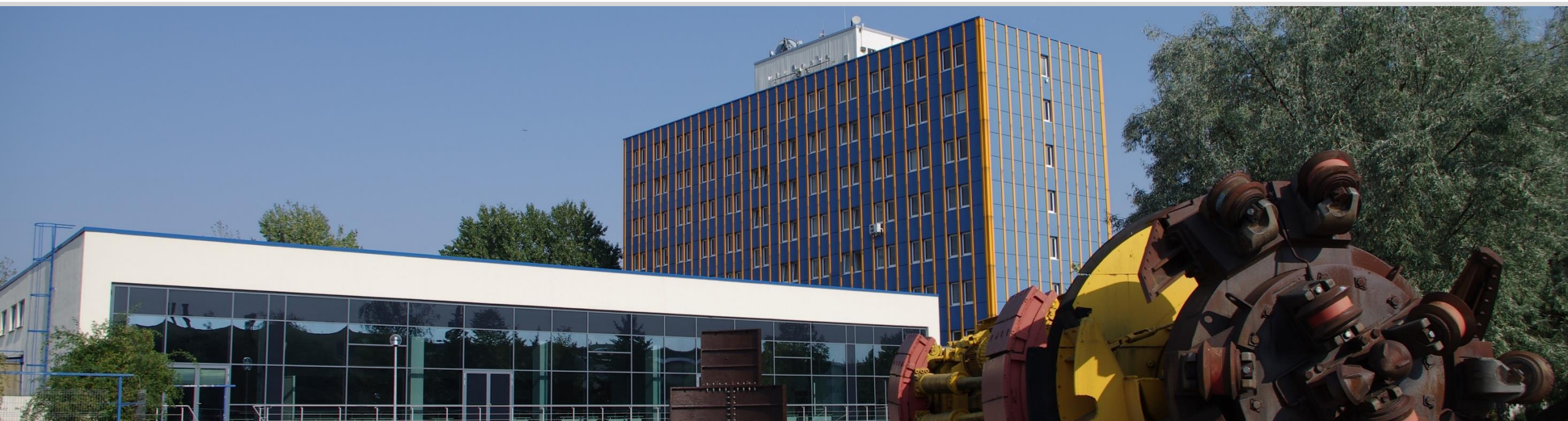
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# Agenda



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# 1 Introduction





# Location and key data



- Based in the city Nordhausen, Germany
- Established in 1898
- Since 1992 a part of the BAUER Group
- 144 m€ turnover in 2019
- Almost 1.000 employees



# Core competencies



Mining



Construction



Plant Engineering



Steel Construction



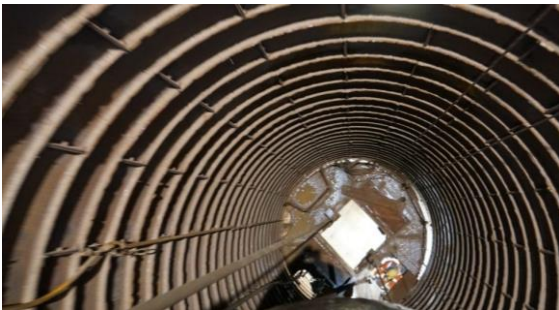
Mechanical Engineering



International



# Business activities in the mining branch



- Shaft sinking
- Heading of roadways and tunnels
- Slope development
- Shotcrete and anchor works, steel and wood support
- Wide range of stabilization and securing methods
- Sealing and grouting works
- Mining and wastewater treatment handling
- Mine closure and backfilling
- Safekeeping of shafts
- Maintenance of shafts
- Old mining and special services
- Planning services

# 2 Mining hoists





# State of the art of small mining hoists

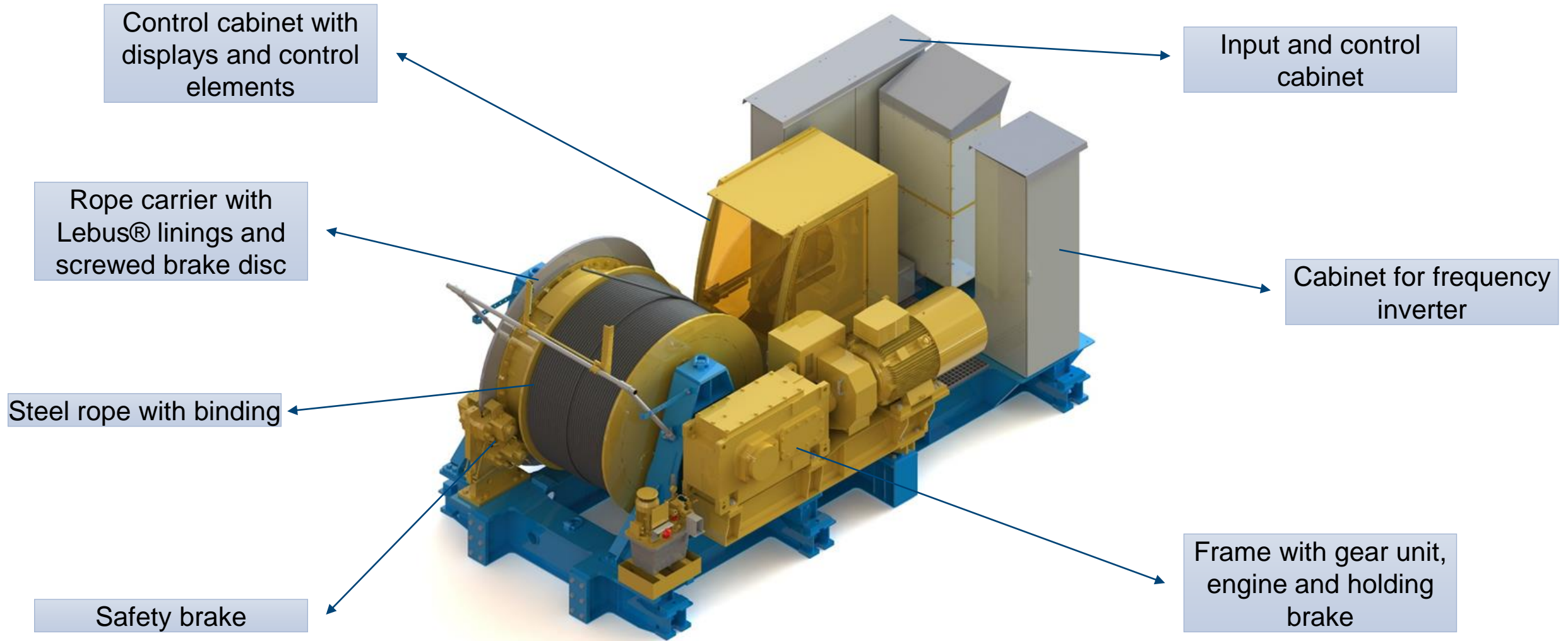


- Mining hoists are designed for hoisting tasks in vertical and inclined mine shafts
- Their main intended purpose is the operation on construction sites, providing access for personnel and supply material to underground mining works
- The structure design of the hoists must be carried out in compliance with the technical requirements and the mining regulations for shaft and inclined hoisting systems





# Mining hoists structure



# Mining hoists fabrication



- Development, layout design, documentation according to the technical requirements and mining regulations for shaft and inclined hoisting systems
- In-house fabrication of relevant structural steelwork components
- Corrosion protection and coloring at the highest level
- Complete and professional assembly

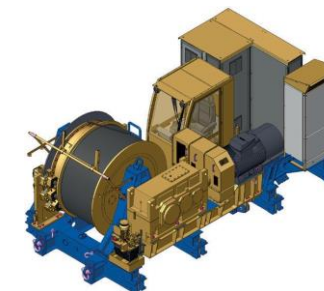
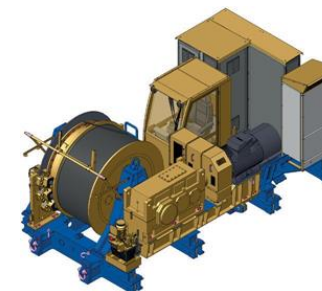
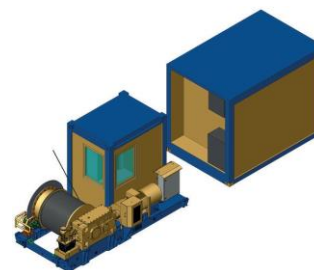
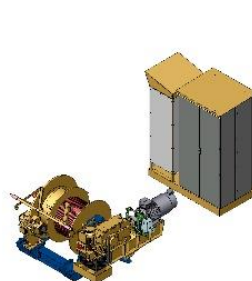






- Our mining hoists are equipped with:
  - a depth indicator, which shows the current status of the haulage means
  - a speed monitoring system, which safely evaluates if the maximum permitted speed is exceeded by more than 20%
  - torque monitoring in case of the under cage transport of the haulage means
  - a 2-fold hanging rope control
  - two braking devices: one brake acts as safety brake directly onto the rope carrier and the second serves as a holding brake
  - an emergency stop equipment, safety circuit

# Product line mining hoists SBN



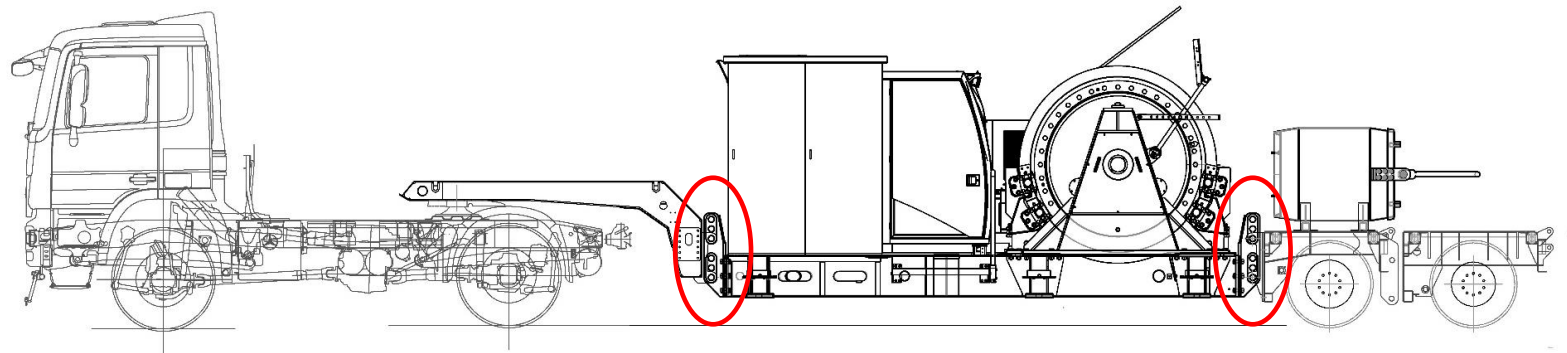
	<b>SBN FH-15</b>	<b>SBN FH-25</b>	<b>SBN FH-55</b>	<b>SBN FH-100</b>
Weight without rope	~ 3,2 t	~ 9,5 t / 3 t Container	~ 16,5 t	~ 23 t
Nominal pulling power drum base	15 kN	25 kN	55 kN	100 kN
Nominal load torque	3500 Nm	11775 Nm	42240 Nm	76800 Nm
Conveyor speed	0-1 m/s	0-2 m/s	0-2 m/s	0-2 m/s
Rope outlet angle	0-90°	0-65°	0-70°	0-70°
Rope breaking load	< 180 kN	< 240 kN	< 440 kN	< 900 kN
Typ. drum base capacity for rope diameter	800 m / Ø 16 mm	1000 m / Ø 18 mm	1500 m / Ø 24 mm	1250 m / Ø 28 mm
Typ. rope weight per meter	~ 0,83 kg/m / Ø 16 mm	~ 1,28 kg/m / Ø 18 mm	~ 2,3 kg/m / Ø 24 mm	~ 3,9 kg/m / Ø 28 mm



# Auxiliary mining hoists



- They are installed in shafts and serve exclusively to rescue people from the shaft in emergencies
- Rescuing cage with a capacity for 4 or 6 people
- SBN delivers its auxiliary hoisting system by using a modular chassis, which is bolted to the reel base frame, advantages:
  - faster transport
  - simple relocation of the hoist
  - the hoist is simply jacked up by the equipment available on the machine and braced to the prepared foundation
  - self-sufficient electrical power supply possible by carrying an emergency power generator on the rear of the modular chassis



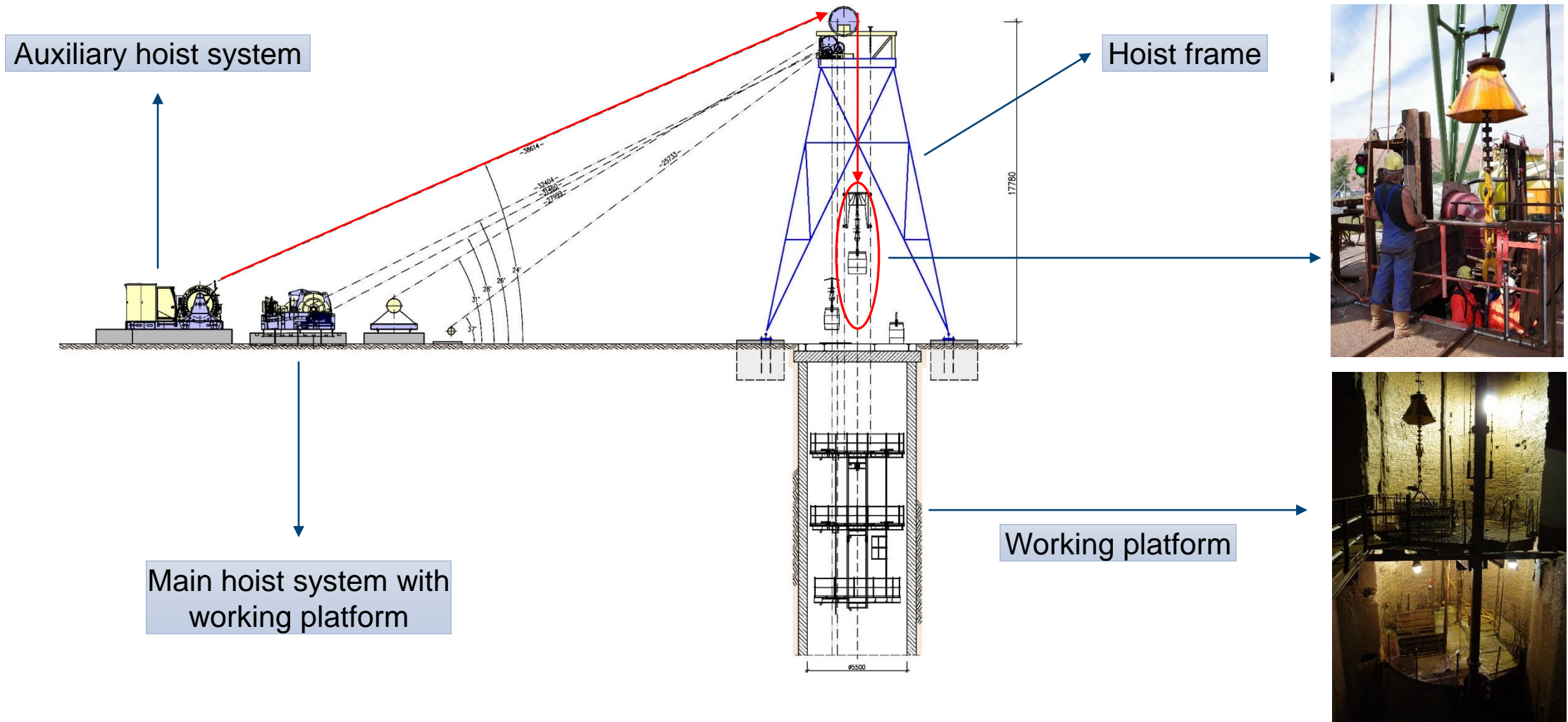
# 3

## Hoist frames and working platforms

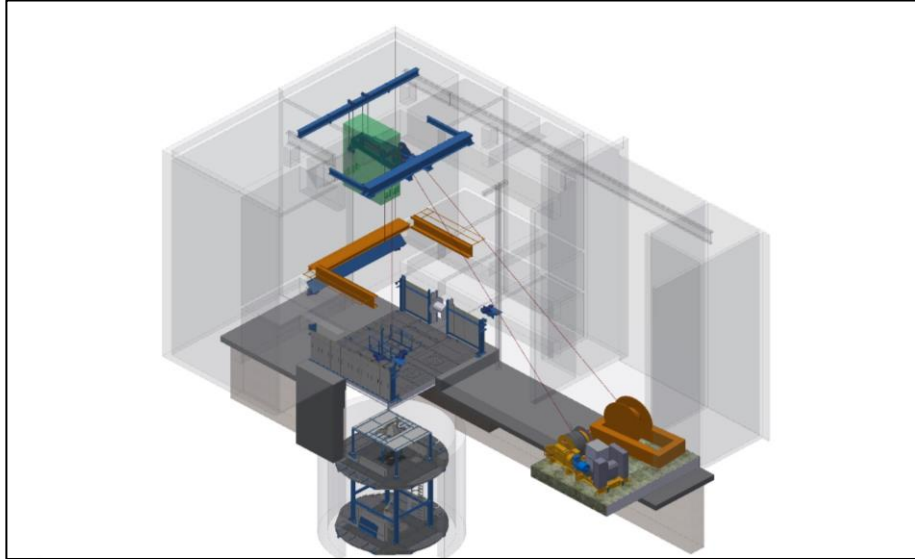




# The hoisting plant

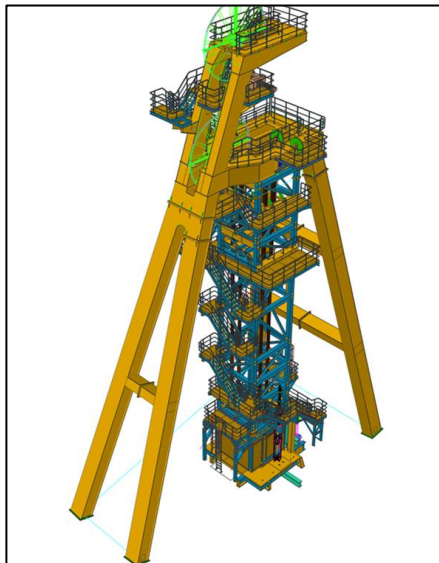


# Additional special mining services



## ■ SCHACHTBAU provides:

- Planning, fabrication, delivery and assembly of **hoist frames** and **working platforms** (fixed and mobile)
- Hoisting cages and vessels
- Shaft internals (e. g. guide rail)
- Shaft covers





# Hoist frame of Shaft V – GSES, Sondershausen



## Replacement of the shaft hoisting frame

- Scope of services
  - Design and structural analysis of the hoist frame, pulley wheels, mining shaft buildings, foundation, pile foundation and auxiliary construction
  - Disassembly of existing scaffolding, mining shaft buildings, foundation and shaft head
  - Fabrication, delivery and assembly of the hoist frame, pulley wheels, auxiliary cages and lifting hoist
- Technical data
  - 250 t steel construction
  - 74 bored piles and 300 m<sup>3</sup> reinforced concrete
- Particularities
  - Conversion during ongoing plant operation in 51 days

### Client

GSES GmbH

### Contract value

4,0 mEUR

### Construction time

2017 – 2018

### Location

Sondershausen, Germany

# Working platform of Shaft I – Zielitz, Kassel



## Construction and installation of a temporary working platform in the salt and potash mine “Zielitz”

- Scope of services
  - Renewal of the shaft traps
  - Planning, fabrication and assembly of the rope pulley platform and shaft working platform
  - Delivery of the platform and small rope drive system
- Particularities
  - Newly developed special design
  - Extremely short set-up times
  - Confined space conditions
  - Consideration of 19 existing ropes in the shaft cross section

### Client

K+S KALI GmbH

### Construction time

2017 – 2018

### Contract value

2,5 mEUR

### Location

Kassel, Germany



# 4

## Lateral and inclined development in different types of rocks





# Lateral development with a road header in a salt mine

## Salt and potash mine “Glückauf Sondershausen” – Sondershausen, Germany





# Lateral development for an access tunnel of a dolomite mine

## Dolomite mine “Caaschwitz” – Caaschwitz, Germany





# Lateral development for a drainage tunnel of a polymetal ore mine

## Polymetal ore mine “Rammelsberg” – Goslar, Germany





# Lateral development for a radioactive waste deposit in a former iron ore mine

## Iron ore mine “Schacht Konrad” - Salzgitter, Germany





# Lateral development for infrastructure of a mine section in a chromite ore mine



**Chromite Ore Mine “10th anniversary of independence of Kazakhstan”, ERG (Eurasian Resources Group) - Nur-Sultan, Kazakhstan**



- AO TNK KAZCHROME, Aktobe, Kazakhstan
- Subsidiary Donskoy GOK, Chromtau, Kazakhstan





# 5

## Subsidiaries and shareholdings



## Other activities and involvements



Surface facilities of the salt and potash mine Bleicherode, DEUSA/NDH-E

- MMG – Mitteldeutsche Montan GmbH (100%)
  - Engineering Consultants
- SBS – Schacht- und Bergbauspezialgesellschaft GmbH (50%)
  - Subsidiary for international projects
- DEUSA International GmbH (10%)
  - Liquid salt mining
  - Underground waste disposal in an old salt and potash mine
- OOO Trakmechanika (100%)
  - Subsidiary for steel works in Russia
- TOO SCHACHTBAU Kazakhstan (50%)
  - All mining portfolio in Central Asia





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