

CENTRE OF CONVEYOR AND LIFT TECHNOLOGY

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1. ABSTRACT

The centre was founded in 1995 in Rosswein. Rosswein is a 105 years old place of educational establishment of masters, technicians and engineers in the fields of steel construction and conveyor engineering as well as others. Since the fifties of the last century there has been a laboratory for the students, which has been instructed with problems of development and testing by private companies.

The new centre supports the industry and companies with research, development and education of staff. An experimental tower with three variable lift shafts is going to build. The centre is registered as Notified Body No. 0734, according to Lift Directive 95/16/EC.

2. TASKS AND AIMS

The centre is established as centre for technology, validation, testing and continued professional education and closely connected with the praxis.

As an independent and neutral place of testing and certification for safety construction the centre is available to private companies.

Accreditation of the centre in Rosswein by the ZLS - Centre of german countries for safety technology as

- Testing centre for safety construction
(**DAR-Reg.-No.: ZLS-P-201/98**)
- Place for certification for safety construction
(**DAR-Reg.-No.: ZLS-ZE-173/98**)

Notification as a place for certification by the "Labour and Social Ministry"
(**No. 0734**)

- The "ZFA Rosswein" as Notified Body tests and certifies the safety construction of lifts according to the Directive 95/16/EC.
- Because there is a lack of capacity of available research and development which is usually covered by national centres in other countries within the EC and oversee the Saxon Centre will fill (space) out this hiatus in Germany.
- The centre is part of the University of Applied Sciences Mittweida and contributes to existence and improvement of the connection between education and research and as a capacity for experiencing, scientific education.

Furthermore it is available to:

- The development of solutions for engineering, business and environmental problems of conveyor and lift engineering which could be used for application, testing technique and quality safety;
- The continued professional education in the fields of conveyor and lift engineering as well as the support of the education of “Diplomingenieuren (FH), Technicians and Masters;
- The support of interested companies for the presentation of there products
- The centre will publish the work results in order to support interested companies.

3. TESTING EQUIPMENT

3.1. *Testing Equipment for high Forces and Pressures*

Purpose of use:

- Testing of characteristics of forces versus buffer strokes under similar static conditions
for plastic buffers
for metallic spring buffers

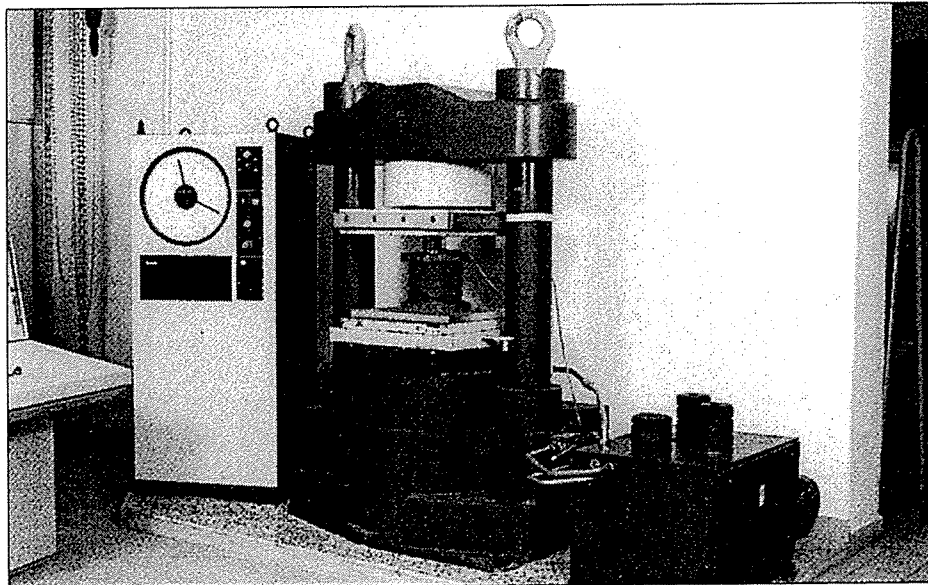


Figure 1: Testing Equipment for high Forces and Pressures

3.2. Tower for free Fall Test

Purposes of use are different tests of safety gears and rail brakes under dynamic conditions and of buffers.

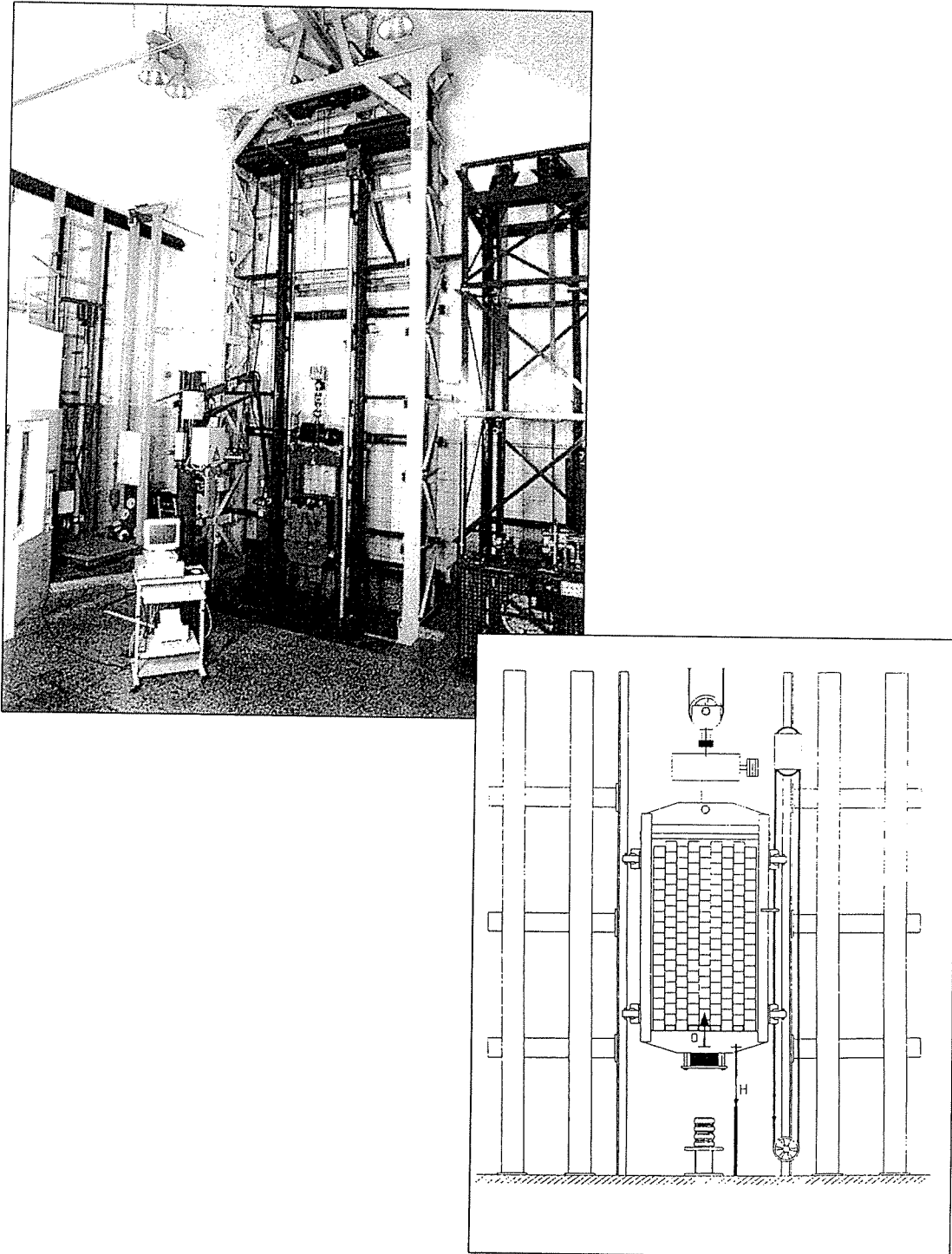


Figure 2: Tower for free Fall Test

3.3. The Stand of Safety gears for High Speed

Purpose of use:

- Function tests of safety gears and rail brakes under dynamic conditions
- Testing of friction behaviour from friction materials under dynamic conditions

In this system the testing device stands still and the rail rotates up to a speed of 25 m/s. There ist the possibility of simulating car masses up to 6000 kg and shafts with a height of 200 m.

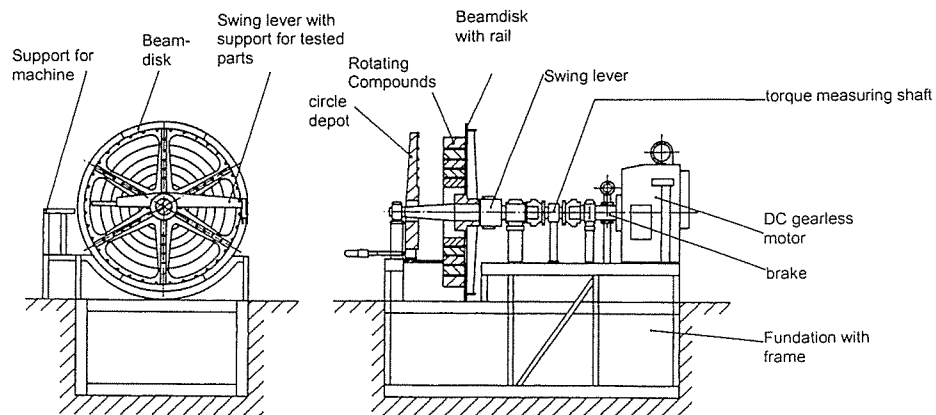


Figure 3: Test stand, driven by rotating compounds and a 100 kW DC-motor

3.4. Test stand of Safety Gears

Purpose of use:

- Function tests of safety gears under low speed conditions respecting as it were static tests

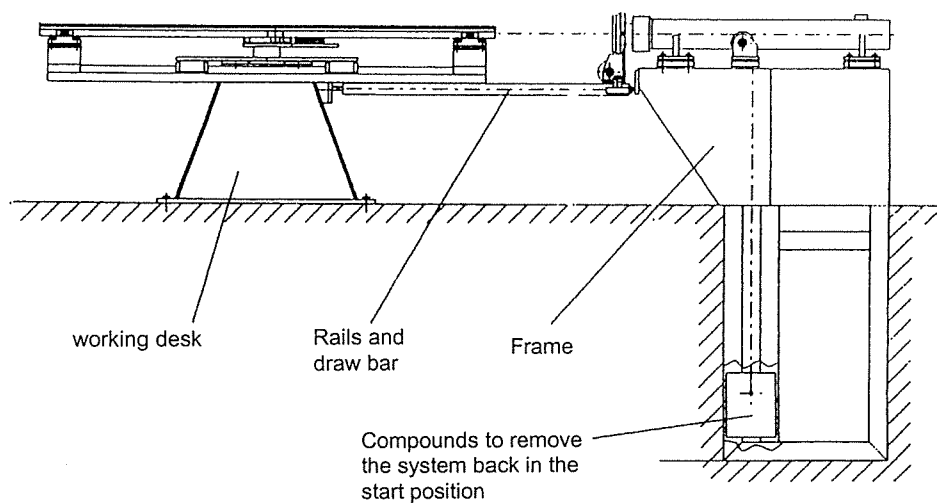


Figure 4: Test stand of safety gears

4. TRAINING

The seminar on “lift fundamentals” contains the following topics:

Safety and legal fundamentals

- Lift provisions and laws
- Engine regulations
- Building and planning law
- Supervision of safety

Technical fundamentals of lift driving systems

- Traction sheave drives
- Drum drives
- Chain drives
- Hydraulic drives

Safety components

- Safety gear
- Overspeed governor
- Buffer
- Door closer
- Electric safety circuit
- Measures for the prevention of not-intended movement

Mechanical components

- Suspension ropes, rope anchorage fixing, rope pulley
- Cabins
- Counterweights
- Guide rails with guide fixing
- Guide shoes
- Lift doors
- Sound isolation

Lift control

Receipt control documents and calculation

Laboratory practise

- Tests on one overspeed governor
- Tests on one safety gear
- Tests on one rope brake
- Tests on one lift control
- Demonstration attempts on a hydraulic lift
- Tests on a buffer

5. FUTURE

The laying of the foundation stone for the new building and the testing tower was on the 9th of December, 1999.

The “Research and Education Centre”, Rosswein, consists of four independent parts. One of them is the “Centre of Conveyor and Lift Technology”.

The racks and service towers, which exist in the laboratories of the “ZFA”, are not sufficient in order to solve the problems of the industry, research and science.

That is why, a lift tower, which is not available in the centre of Germany, is necessary.

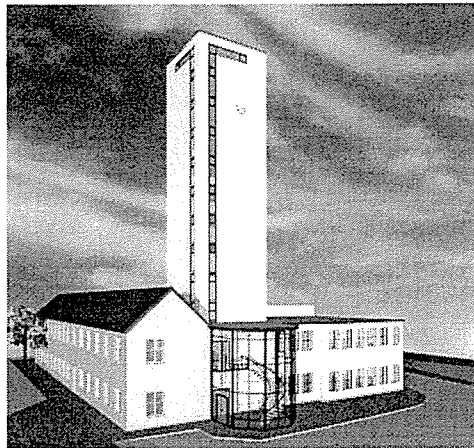


Figure 5: The new centre

The following fields could be covered by the new construction:

1. Research and special experimental analysis, for example on safety gears, overspeed governors, rope brakes and innovative products of lift construction
2. Receipt control (certificate control) of safety technical elements of the lift construction
3. Testing and development of lift gears, controls and other innovative products of lift engineering
4. Presentation of the function of lift elements for the purpose of education and training

The construction measure includes:

- A new building of a 38 m high tower
The tower shall contain a four divided lift shaft, where three of the shafts shall be used in order to solve the above mentioned problems. The fourth tower will be equipped with a lift to operate between the floors.
- Two new buildings of modern laboratories
- Building and rebuilding of working rooms

To make allowance for the examination of

Relevant safety products
Special demands by customers

is one of our aims.

The new building will be in keeping with the existing architecture.

With that, a project will be established which is unique in the centre of Germany.

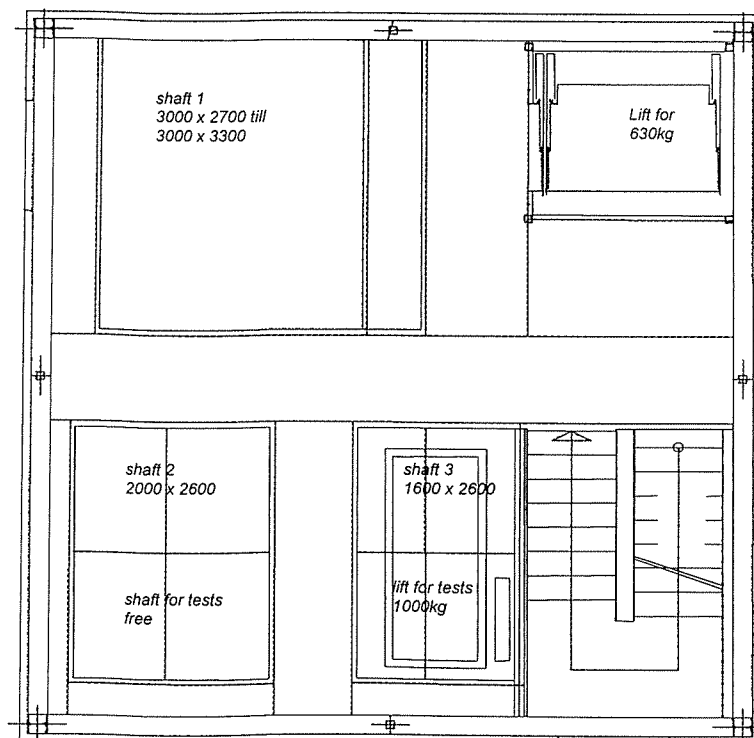


Figure 6: The ground-plan of the tower

BIOGRAPHICAL DETAILS

Dr. Dietmar Küntscher has been employed as a the leader for scientific technological development at the Centre of Conveyor and Lift Technology in Rosswein, Germany. He has worked before in the industry, most of the time as a leader at a sales and service office for lifts.

In the years of a divided Germany until 1990 he has worked in the eastern part also in the lift industry. During this period he was a leader of a lift projecting department, technical director, a university lecturer at the College of Transport and Communication in Dresden and in the Research & Development – field.

Dr. Küntscher wrote 30 articles about lifts and is the editor of the book „Aufzuganlagen“.