RETRASIB part of SGB-SMIT GROUP

RETRASIB
Your dedicated partner
of the SGB-SMIT Group

2022

Milestones

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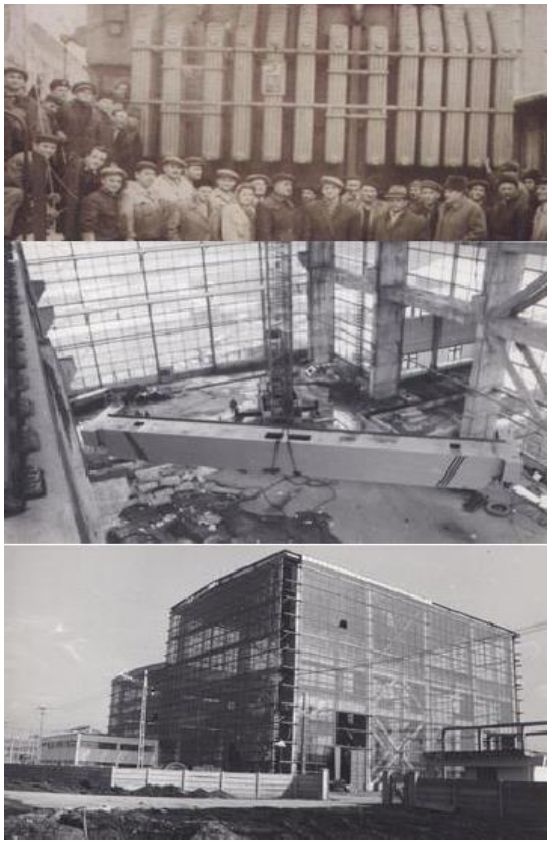

1895	Foundation of the Hermannstädter Elektrizitätswerk (HEV)
1924	Foundation of the Company of Electricity Transylvania
1917-1945	Foundation of repairing and maintenance workshops for HEV (mainly for engines up to 5 kW and transformers up to 400 KVA)
1948	Nationalization: merging of the electric companies foundation of the Regional Electricity Company Sibiu (SRE)
1956-1957	1st transformer repair for RS: 20 MVA, 110/5,5 kV transformer (manufacturer VEM Germany)
1999	Privatization – 100% private company, >5000 shareholders
2007-2010	Retrasib becomes transformer producer >2M€ investments in modernization and technological update
2009	1st 200 MVA; 231/121/10.5 kV autotransformer
2010	1st 400 MVA; 400/231/22 kV autotransformer 1st 250 MVA; 400/121/20 kV transformer
31.10.2014	**Retrasib became part of SGB-SMIT**

General informations

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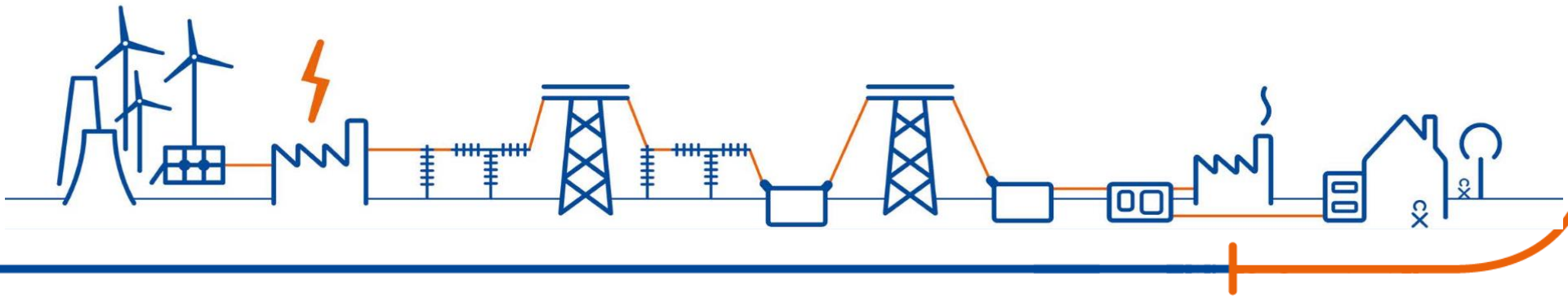
Products and Services:

- Power transformers and autotransformers up to 400 MVA and 440 kV

Factory data:

Total land	30.000 m²
Access	trailer and railway
No. of employees	~250
Actual production capacity	4.000 to 5.000 MVA / year
Major Customers	RO : Transelectrica, Enel, Electrogrup, Siemens Energy, Energobit DK : Energinet, Better Energy, European Energy, N1, Jysk Energi, Eurowind ES : Iberdrola, Iberdrola Renewables NO : Tensio UK : Western Power Distribution



Engineering & 3-D Design

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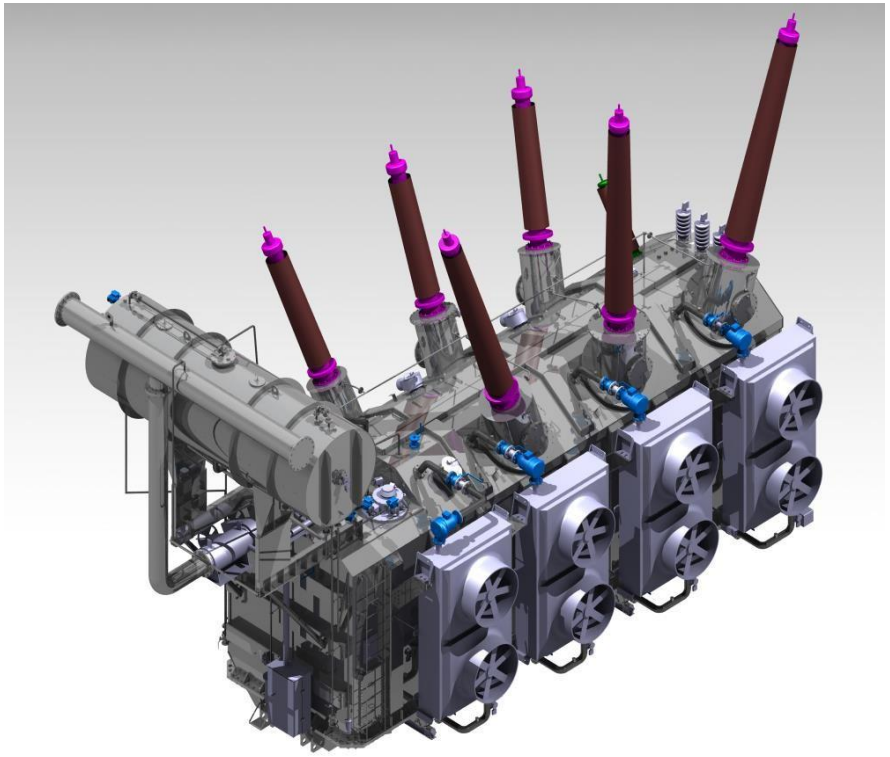
- SGB-SMIT calculation and design software
- Design reviews under close cooperation with SGB-SMIT design teams
- Electrical design supported by computer calculation programs, permanently optimised by cross checking results
- Any change in design propagated throughout the entire product
- Design Program Maxwell 2D/3D for FEM calculations and graphical illustration
- Voltage distribution calculation



Our professional team

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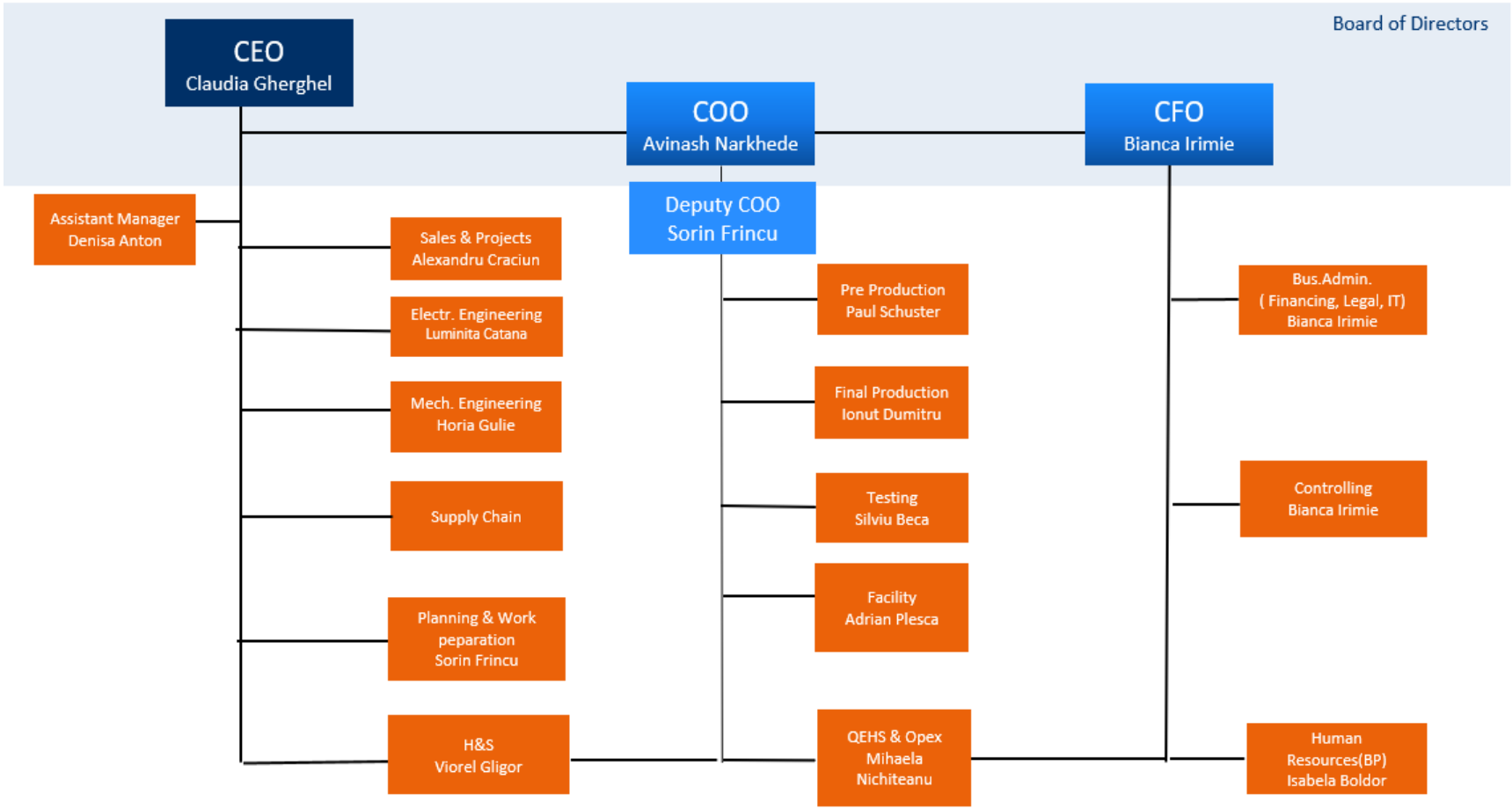

Certificates

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ISO 9001:2015- Quality Management System

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

SGB

Starkstrom-Gerätebau GmbH
Ohmstraße 10
93055 Regensburg
Germany

has established and applies
a Quality Management System for

Sales, design, production, testing,
assembly on site and service of
cast-resin- and medium power transformer

An audit was performed, Order No. 70013947.
Proof has been furnished that the requirements
according to

ISO 9001:2015

are fulfilled.
The certificate is valid in conjunction
with the main certificate from 2020-04-11 until 2023-04-10.
Certificate Registration No.: 12 100 11003/02 TMS.

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

RETRASIB

Retrasib S.A.
Stefan cel Mare nr. 156
550321 Sibiu - Hermanstadt
Romania

has established and applies
a Quality Management System for

Design, manufacturing, repairing and
modernisation of power transformers.
Manufacturing of accessories and equipment for
electrical substations, testing of electro energetic equipment.
Execution of electrical substations and of
works on the electrical part of the plants.

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Certificate Registration No.: 12 100 11003/09 TMS.

ISO 14001:2015 - Environmental Management System

CERTIFICATE

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SGB

Starkstrom-Gerätebau GmbH
Ohmstraße 10
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Certificate Registration No.: 12 104 11003/09 TMS.

ISO 45001:2018 - Occupational H&S Management System

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

SGB

Starkstrom-Gerätebau GmbH
Ohmstraße 10
93055 Regensburg
Germany

has established and applies
an Occupational Health and Safety Management System for

Sales, design, production, testing,
assembly on site and service of
cast-resin- and medium power transformer.

An audit was performed, Order No. 70013947.
Proof has been furnished that the requirements
according to

ISO 45001:2018

are fulfilled.
The certificate is valid in conjunction
with the main certificate from 2020-04-01 until 2023-03-31.
Certificate Registration No.: 12 117 11003/02 TMS.

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Our Vision and Mission

Business Unit Power Transformers

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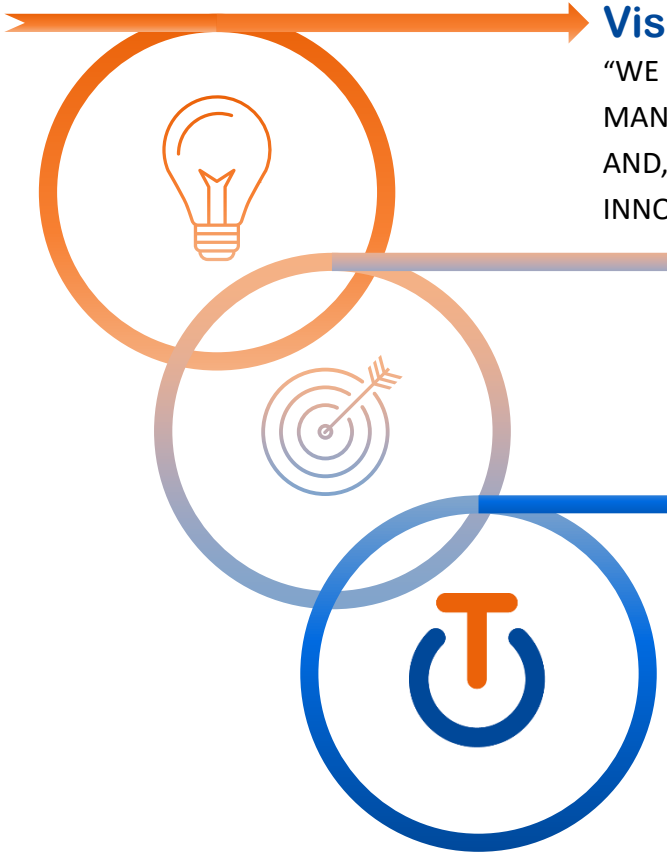

Vision

"WE ARE THE LARGEST EUROPEAN MEDIUM POWER TRANSFORMER MANUFACTURER. QUALITY AND PROCESS LEADERSHIP DISTINGUISH US AND, TOGETHER WITH OUR CUSTOMERS WORLDWIDE, WE DEVELOP INNOVATIVE SOLUTIONS."

Mission

- SHORT AND RELIABLE DELIVERY TIMES
- FLEXIBLE REALIZATION OF CUSTOMER REQUIREMENTS
- HIGH QUALITY STANDARDS FOR ENGINEERING & MANUFACTURING
- FAIR MARKET PRICES

Core Values

- TRANSFORMER SPECIALIST
- INDEPENDENT
- ROOTED
- HANDS ON
- FLEXIBLE IN ALL DIMENSIONS
- COMMITTED TO QUALITY
- RELIABLE PARTNER
- HEALTH &SAFETY
- SUSTAINABILITY

Retrasib will be developed to the high qualified component supplier in the SGB SMIT Group

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GENERAL CO-OPERATION PRINCIPLES

Ramp Up

- We have developed the Retrasib site as a component supplier since 2014,
- We always started with training in Regensburg over several weeks for all employees,
- We have moved machines from Regensburg to Retrasib,
- We have trained all employees to understand the production documents from Regensburg
- We have implemented all engineering tools from Regensburg identically in Retrasib
- We have full mutual access to the design rules and design documents

DESIGN

Ramp Up

- Since 2018 we developed Retrasib as work force support of engineering
- Due to the identical design platform and principles we started with design sections

Actual scope

- Complete designs for standard transformers
- Design of leadings
- Transfer of 3D to 2D designs

Outlook

- Complete designs of complex design components
- Increase of the volume for support
- Development for a basis of design hub of BU PT

MANUALS DOC'S

Ramp Up

- Since 2020 Retrasib delivered the first manuals
- Manual languages were German and English

Outlook

- We will shift 100% of manual preparations to Retrasib in all relevant languages

The components business secures economic growth through stable basic capacity utilization

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WINDINGS

Ramp Up

- Since 2014 Retrasib delivered windings for SGB
- In 2017-2021 Retrasib delivered more than 1000 windings for SGB per year

Quality Development

- Since the beginning of deliveries, Retrasib has been constantly improving in terms of quality
- In 2021 the total failure rate was lower than 1.2%

Outlook

- In 2022 we plan to produce 1100 windings for SGB

CONTROL CUBICLES

Ramp Up

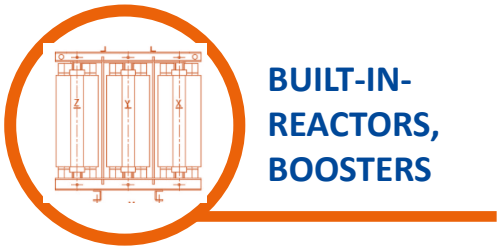
- In 2017 and 2018 Retrasib delivered all IEC control cubicles for SGB
- In 2017 Retrasib delivered the first cubicles for SMIT

Quality Development

- Several measures/ investments built the basement of stable quality in the future

Outlook

- In 2021 Retrasib delivered 205 cubicles for SGB and 12 cubicles for SMIT



BUILT-IN-REACTORS, BOOSTERS

Ramp Up

- Since 2017 Retrasib delivered more than 30 PAT‘s to SGB
- In 2018 Retrasib has been audited/certified by SGB customers to increase production

Quality Development

- Measures and invests into facility, processes and tools installed to increase quality and productivity by RS&SGB team
- The results of these measures have increased SMIT interest into evaluating PAT‘s and Reactor's production at Retrasib
- In 2021 pilot project was started with SMIT

Winding Workshop

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Production capacity: approx. **2.000 coils/year**

Winding machines (BR-tech, LAE, Stolberg):

- **8** horizontal winding machines
- **5** vertical winding machines

Winding types:

- Layer windings - on HWM
- Multi-start regulating windings - on HWM
- Coarse and fine regulating windings - on HWM
- Interleaved windings - on VWM
- Disc windings- SGB/SMIT type on VWM

Winding dimensions:

- Maximum weight/coil up to **10.000 Kg**
- Diameters between **200 - 2.500 mm**
- Maximum height **3.000 mm**
- No. of parallel conductors **1 - 32**




Assembly Workshop

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Major equipment's:

- 3 core tables (2 small - 40 tons for 2&3 limbs and 1 big - 150 tons for five limbs)
- 320 tons crane
- VPD oven 400mc , heating capacity 300 KW
- Vacuum machine and oil treatment plant

High Voltage laboratory

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Major equipment's:

- Cascade generator to perform tests in alternative current 1200/600 kV
- Impulse generator to perform tests for voltages up to 2400 kV
- Generator for induced voltage (150 Hz)
- Technologic equipments for simulating the operating modes
- Equipments for detecting the noise and thermo vision in infrared
- FRAnalyzer Omicron Type VE000660
- Partial discharge localization Omicron Type PDL 650
- Partial discharge measurement system Omicron bridge MPD 600 – 6 channels

Oil laboratory

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Oil Tests:

- appearance, color
- particles in oil
- dielectric breakdown voltage
- dissipation factor, tg d at 90 ̊C
- flash point
- density at 20 dgr.C;
- water content [ppm] Karl Fisher method
- particle content> 5 µm/100 ml

Equipments:

- oil tester BAUR DPA 75 C
- oil tester BAUR DTL C
- flash point tester PENSKY MARTENS NPM 440
- coulometer Mettler Toledo DL 32
- particle counter HYDAC MM S5 M

400 MVA Autotransformer

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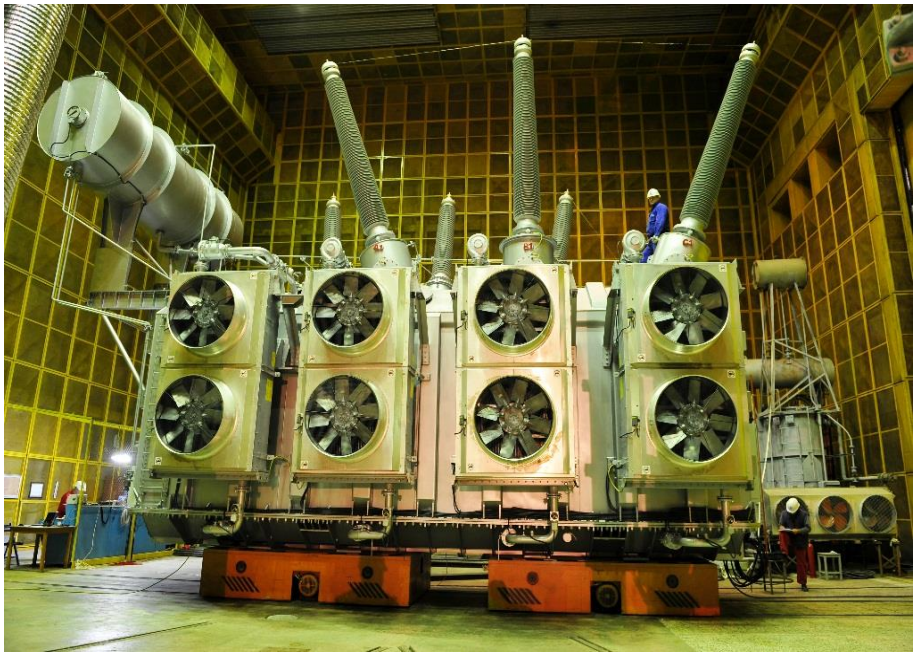
of the SGB-SMIT Group

Rated power (MVA)	Rated voltage (kV)	Connection group	Total weight (Kg)	Overall dimensions L x l x h (mm)
DOTAR OFAF 400	400 / 231 / 22	YNa0d5	255.000	13160 x 5750 x 8669



250 MVA Autotransformer

RETRASIB
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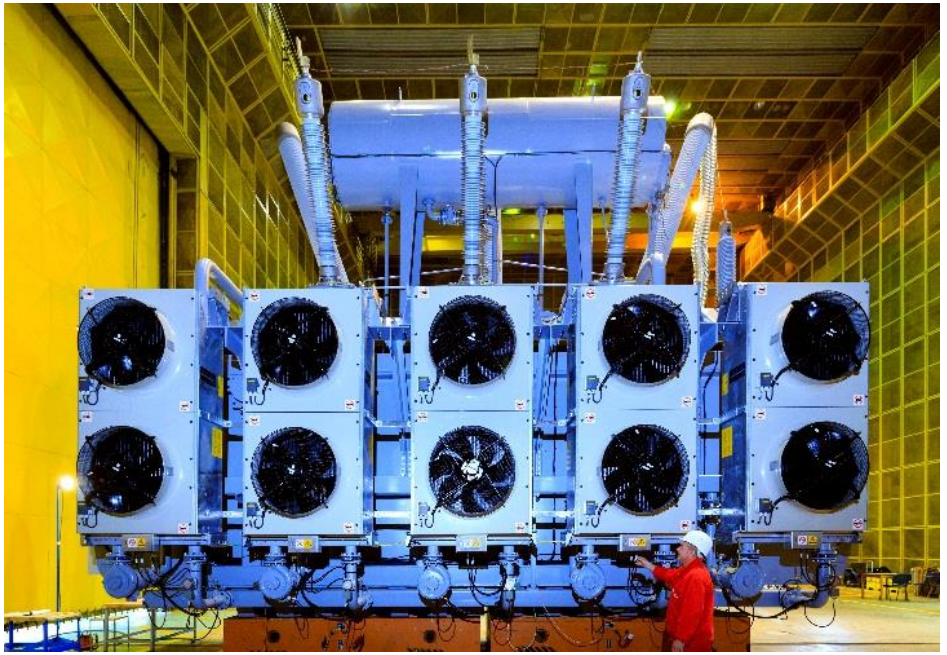
of the SGB-SMIT Group

Rated power (MVA)	Rated voltage (kV)	Connection group	Total weight (Kg)	Overall dimensions L x l x h (mm)
DOTAR OFAF 250	400 /128 /18	YNa0d11	195.000	10600 x 5700 x 9500



200 MVA Autotransformer

RETRASIB
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of the SGB-SMIT Group

Rated power (MVA)	Rated voltage (kV)	Connection group	Total weight (Kg)	Overall dimensions L x l x h (mm)
DOTAR OFAF 200	231/121/10.5	YNa0d5	155.000	10234x 4912 x 8059

250 MVA Transformer

RETRASIB
Your dedicated partner
of the SGB-SMIT Group

Rated power (MVA)	Rated voltage (kV)	Connection group	Total weight (Kg)	Overall dimensions L x l x h (mm)
DOTR OFAF 250	400 / 121 / 20	YNyn0d11	296.000	12190 x 5720 x 9160

Winding shop Improvements

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- In the following slides the most important improvements in the past 4 years will be presented
- Implementing winding pressing and drying in vacuum oven;
- Implementing of winding hydraulic press
- Implementing and mounting on HWM2, HWM3, HWM8 horizontal winding machines of semi-automatic pressers.
- HWM7 upgrade by end of October 2022
- Purchasing of 10 new windings templates with diameters between 350-2200mm

Winding shop Improvements

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- Purchasing and installing of 5 new automatic adjustment winding drum supports
- Purchasing and installing winding drum support with 12 positions on HWM 6 machine
- Installing of die and brake devices with polyamide rollers for winding machines VWM1 and VWM2
- Purchasing and installing of a new 250 To winding press.

Assembly workshop improvements

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- Purchasing and installing of the core staking table according to SGB process
- Purchasing and installing of 2 new superior core holding devices for upper yoke stacking,
- Purchasing of 4 new height adjustable working devices
- Purchasing of 2 new 200 To, electrical wagons for internal transformer handling
- Purchasing of 1 new 90 To wagon for extending the active part drying capacity of the VPD oven.

Assembly workshop- other improvements

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- Implementation of 245kV and above, drying process in the Autoclave Vacuum oven,
- Implementation of connection joints according to SGB process and procedure
- Contracting an external company to take care of internal cleaning of the workshops.

High Voltage Laboratory improvements

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- Production and installation of a new 110 MVA transformer for increasing the transformer testing capacity,
- Implementing of a new fire protection system,
- Purchasing and installation of new capacitor banks up to 81 Mvar,
- Purchasing of Winding analyser Tetex bridge,
- Purchasing of new sound noise measuring device,
- Purchasing of a new Megger equipment,
- New current transformer and voltage transformer Epro, +/- 0,05% accuracy class,
- Purchasing of ABB new switchgears for HV lab main supply. Will be installed during 2022-2023,
- Purchasing of new Omicron equipment for testing multiple phases windings

General improvements

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- Renewal of transformer station,
- Integration of transformer design process in the SGB-Group system,
- Aligning our electrical and mechanical design departments at the levels of the ones of SGB Group,
- Dedicated warehouse for the storage of the incoming cores = no cores are stored in the final assembly any more,
- Contract in place with an external company that checks monthly the overhead cranes,
- The lifting straps are monthly checked internally and replaced if any signs of ware arise,
- Purchased one defibrillator for the manufacturing facilities,

Future investments

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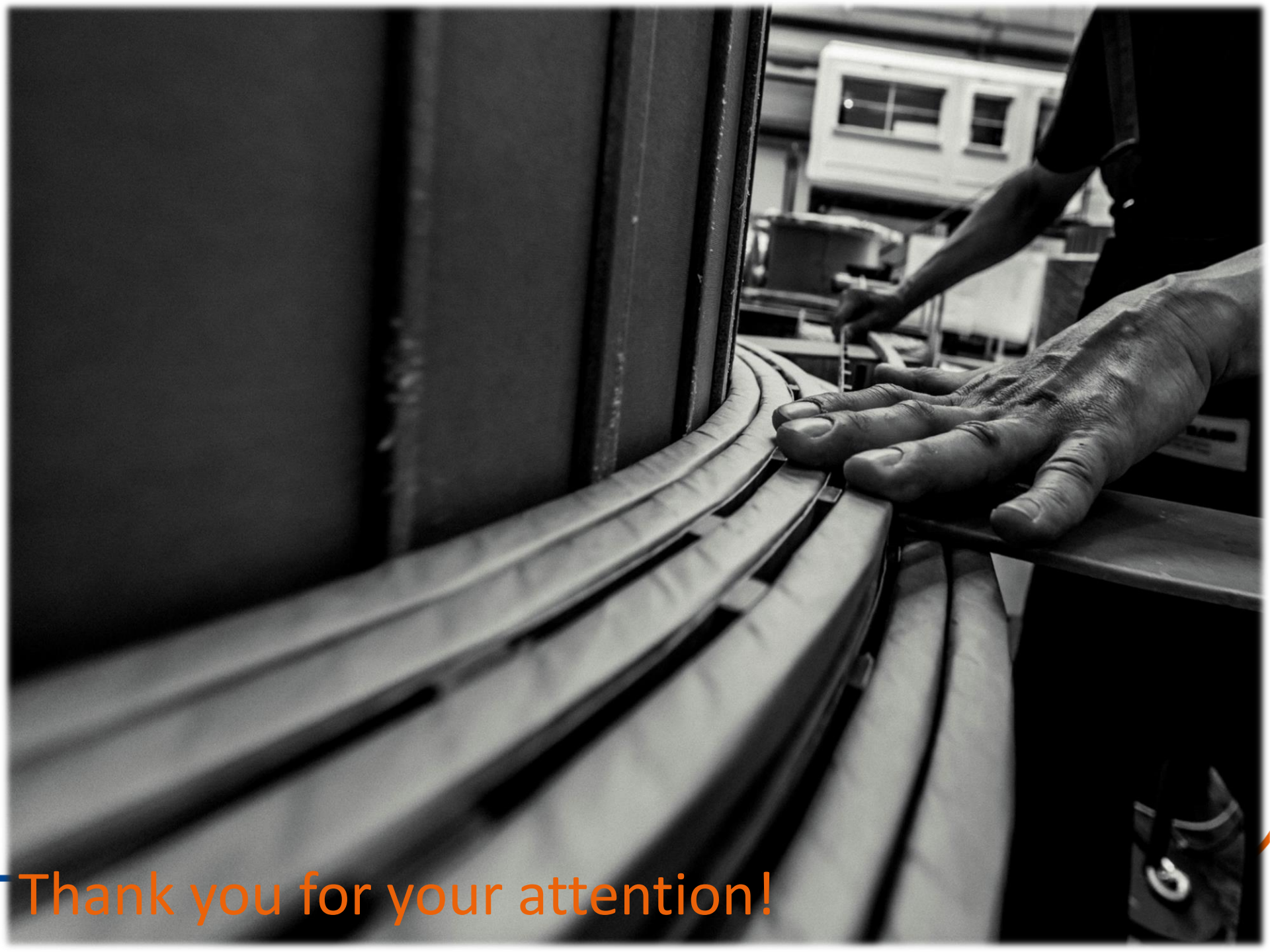
- For 2023 we are in progress to purchase a new latest technology, efficient and environmental friendly active part and winding drying oven
- Installation during 2022 of the purchased ABB switchgear for the HV laboratory
- New windings machines planned for purchasing during 2023


Thank you for your attention!