

# Large Power Transformers



Partners in Power



## SGB-SMIT Group

Smit Transformatoren B.V. is part of the SGB-SMIT Group alongside with Starkstrom-Gerätebau, Sächsisch-Bayerische Starkstrom-Gerätebau and AM SGB. The SGB-SMIT Group's slogan is Partners in Power. This is a slogan which the companies can justifiably use, and which is based on expertise, experience, technological knowledge, reliability and economic efficiency. As a group we are able to develop and manufacture power transformers ranging from 50 kVA to 1,200 MVA and voltages up to 800 kV. The product range includes oil-filled transformers, quadrature voltage controllers, cast resin transformers, compact stations and compensating and series coils. The exchange of knowledge and experience within the group is encouraged.

### **Smit Transformatoren B.V. is part of the SGB-SMIT Group**

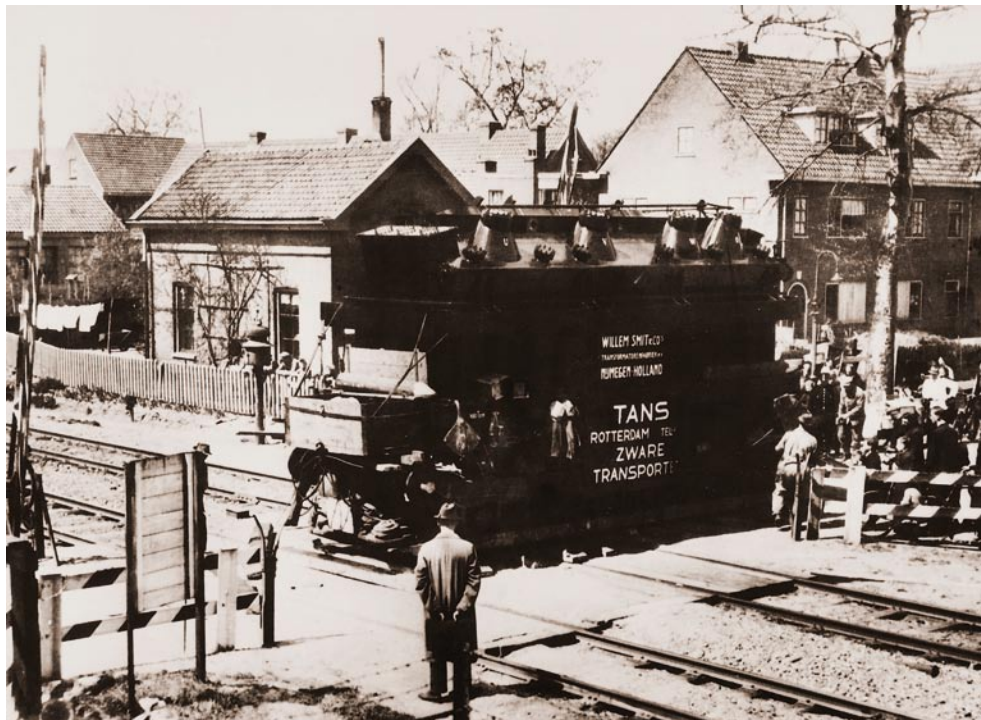
SMIT's extensive experience and highly motivated team of employees make it a stable organisation with strong ambitions. SMIT is nearly 100 years old, but remains a business with a youthful spirit and a constant drive towards innovation. As a result, proven technology goes hand in hand with innovation and lean manufacturing at SMIT, resulting in the best product for our customers.



## History



SMIT has been building transformers which are used all over the world for nearly 100 years. Messrs Roßkopf, Bergsma and Smit established the limited company N.V. Willem Smit & Co's Transformatorenfabriek on Groenestraat in Nijmegen in 1913. The business started with 38 employees, and was to grow steadily over the years. N.V. Willem Smit gave birth to other companies such as Smit Draad, Smit Ovens and Lincoln Smitweld, all of which operate completely independently. SMIT became part of the SGB-SMIT Group in 2000.





# Customers

## Customers

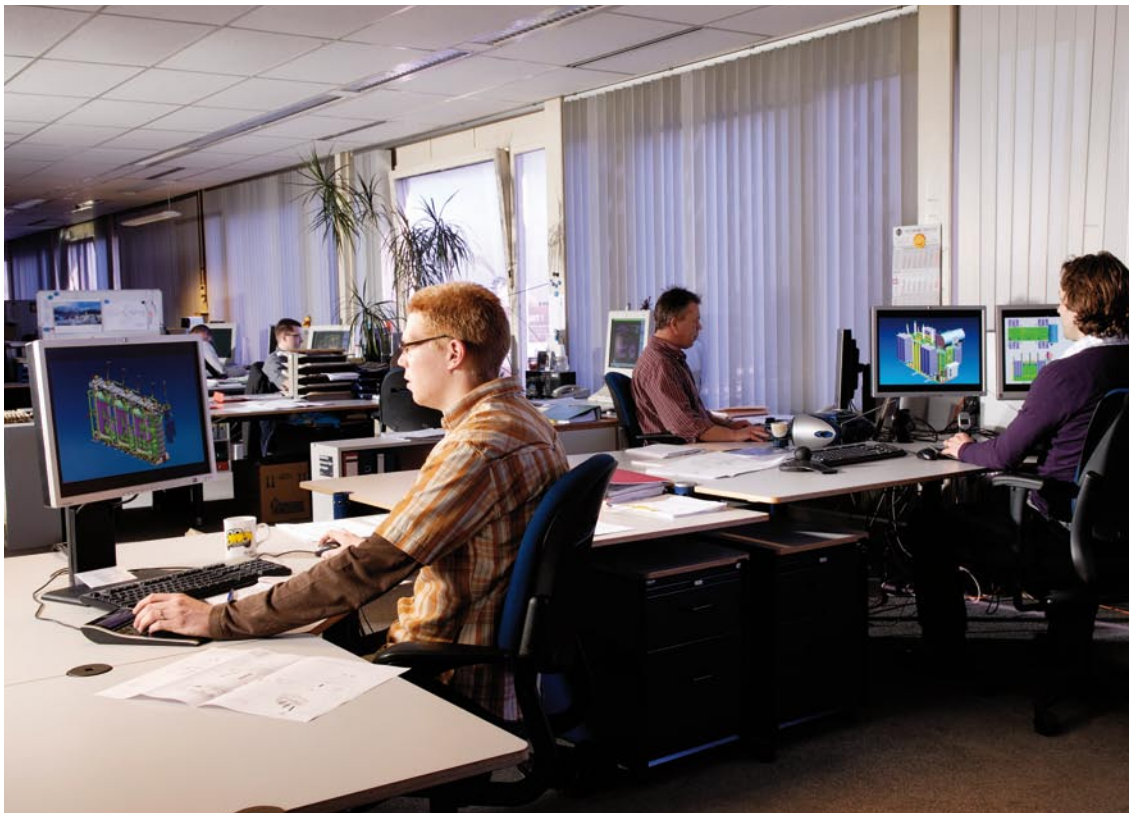
SMIT is an international business which manufactures power transformers for major energy companies and industries in Europe, North America, Africa and the Middle East. Smit's customers also include transmission and distribution companies. Customers choose high quality, reliable transformers from SMIT because we combine in-house expertise, designs and products with flexibility and a service-oriented approach. We are open to coengineering if our customer prefers to go down that path.

During the often lengthy relationship with both our customers and carefully selected suppliers we constantly achieve the best result.



## Research & Development

SMIT works to international standards, whereby our strength lies in the design of transformers based on the customer's specific requirements and wishes. SMIT thereby uses fully integrated design software which has been developed in-house. This software is linked to a 3D-CAD package which enables our designers to produce effective and efficient customer-specific models. In order to be able to meet the growing demand from the energy sector, SMIT's engineers devote a considerable amount of time and resources to research and development. Designs are optimised both through constant attention to training and education and by emphasising the importance of inventiveness and creativity in the field of engineering criteria and production methods. Important tools in this research are 3D modelling and the use of the Finite Element Method. SMIT also works closely with KEMA Arnhem for tests and with the Universities of Technology in Eindhoven and Delft on dielectric research, amongst other things. SMIT's engineers take part in international working groups in their professional field such as Cigré and IEEE.





# Product

## Product

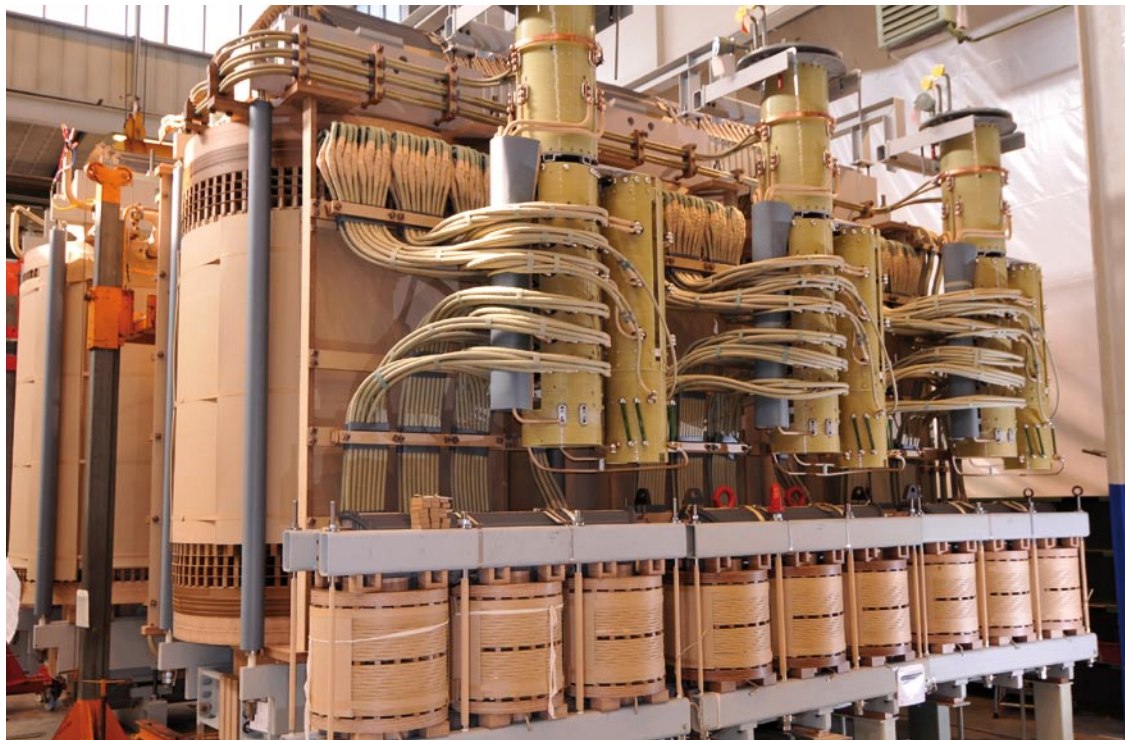
SMIT develops, manufactures and installs transformers, phase shifters and reactors between 100 and 1,200 MVA and up to 800 kV. One unique aspect of the SMIT design is the way in which the short-circuit forces are catered for by means of an independent coil clamping structure. This structure gives each coil a pre-defined compression strength. There is also no link between the clamping structure for the coils and that of the core. This ensures the ability to withstand short circuits and results in minimal transfer of noise from core to coils.





## Manufacturing

Almost 100 years of expertise and experience combined with the latest equipment provide an important basis for SMIT's further optimisation of its production processes. This leads to continuous improvements in the area of quality and reliability of the end-product. We link the fully integrated design programs to a balanced production and testing environment which includes horizontal and vertical coil winders, advanced core stacking jigs, a vapour phase drying process and air cushion transport.



Manufacturing

A large industrial testing facility, likely a high-voltage laboratory. The image shows a massive blue cylindrical structure, possibly a test chamber or a large capacitor, with yellow vertical supports. Various electrical components, including insulators and wiring, are visible. The word "Testing" is written vertically in white text across the center of the image.

# Testing

## Testing

SMIT tests its products in a laboratory setting with equipment which can be considered "state of the art". The complete units are subjected to electrical and functional tests in one of the two high voltage laboratories in accordance with the requirements of recognised standards such as ANSI and IEC. It is not just routine tests that take place in the laboratory, but also specific tests such as temperature rise tests, impulse voltage tests and noise measurements.



## Transport

SMIT uses air cushion transport for the internal movement of both individual components and complete units. This unusual form of transport delivers both an enormous time saving and a flexible manufacturing process.

SMIT has its own loading quay on the Maas-Waal channel, a stone's throw from the factory. Roll-on roll-off ships give us direct access to the world ports at Rotterdam and Antwerp. The company has relationships with specialist international shipping companies for the transport to customers.



# Installation



## Installation

During installation the transformer is assembled and given a full oil treatment. Limited tests are carried out. Customers often carry out these activities with their own employees, but always under the supervision of an expert from SMIT. We also have contracts with a number of specialist firms – particularly in the USA, France and Great Britain – that can carry out the full build and testing on site.



## Service



We have our own service department in the form of "Smit Transformator Service", which provides repairs, preventative maintenance and service on SMIT's own transformers and those of other manufacturers. The professionals from "Smit Transformator Service" have all the requisite expertise, make accurate diagnoses and have excellent problem-solving skills. The engineers provide their services on a 24/7 basis.



Service

# Partners in Power

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