

Local structures, worldwide networking

Partners in Power



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# SGB-SMIT Group at a glance



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## Global solutions for the world of tomorrow

A world in transition: power, power generation and power distribution are probably the most important challenges for the future. The SGB-SMIT Group provides you with key technologies and tools worldwide to capture markets and to shape the future.

„Best of both worlds“: The SGB-SMIT Group is the result of a merger of locally operating, highly successful medium-sized companies and represents an efficient international network today. A combination which links the best of both worlds for our customers: globally speaking, we offer world-class quality and market acceptance. Locally speaking, you benefit from customer focus, lean structures and short distances. This applies to planning, manufacture and service alike.

All this not only provides us with a considerable competitive edge but, due to close cooperation with our customers, results in focused development, ongoing structural improvements and optimization of the corresponding service.

Especially when it comes to innovative products such as the connection of offshore wind power plants, the interlinking of international networks or products with special licenses, we are driven by our customers' requirements.

**Those who dispose of experience are best equipped to shape the future: for decades, the SGB-SMIT Group has been synonymous with sustainable quality and demand-oriented solutions.**



### **SGB-SMIT for you:**

- Worldwide markets
- Local proximity
- Development at customer request

# Regenerative power generation...

## ... consistent quality

Renewable energy sources place a two-fold requirement on our products: on the one hand, smooth integration into cutting-edge technologies and the corresponding infrastructure, on the other hand, optimum environmental compatibility for application at the site of power generation. Providing newly developed products as well as enhanced well-proven solutions, we accompany regenerative power generation on its way towards further market penetration.



### Off-shore and in-time.

The SGB-SMIT Group is a partner to the wind power industry and a technology supplier for offshore wind power plants. Depending on the performance profile, cast resin or liquid-filled transformers are used. We are also able to provide efficient medium power or large transformers when it comes to connecting wind parks to the grid.

- Nacelle or tower-mounted cast resin transformers
- Liquid-filled transformers and compact stations as integral part of wind power plants.

### Sunny times – a service which secures returns.

Also when it comes to photovoltaic plants: extraordinary know-how and a service ensuring many sunny moments in solar power generation.

- Special 3- and 4-winding transformers
- Compact stations for easy connection of solar power to the grid
- Water-cooled Safe System: efficient, low-maintenance and ecologically sound

### Energy from nature, know-how from experience.

Biomass power plants are becoming increasingly important in the future energy mix. Compact stations by SGB-SMIT provide convincing quality from tradition, building a bridge between innovative technology and reliable energy distribution.

- Lahmeyer-Compactstationen® for biogas plants
- Lahmeyer-Compactstationen® for dry fermentation plants



### SGB-SMIT for the environment:

- Technology for renewable energies
- Special solutions for offshore windparks
- Proven in photovoltaic and biomass technology

# Conventional power generation...

## ... innovative support

On the way towards new, ecological energy generation, conventional resources are still indispensable. Be it for reasons concerning costs or development, or as a bridge technology: conventional power generation continues to maintain its right to exist – and is in safe hands with the SGB-SMIT Group.

Coal, gas and nuclear energy still have extremely interesting potential: Thanks to the modern technologies to whose development we contribute, pollution and CO<sub>2</sub> emissions are reduced efficiently and long-term.



## Performance profiles for every requirement.

The SGB-SMIT Group ensures safe connection to the grid via large-scale machine transformers with maximum ratings up to 1,200 MVA. The power plants' station supply is provided via medium range transformers, smaller power transformers, oil distribution transformers and cast resin transformers.

## On site. At all times.

A highly modern, mobile testing station is on site within a very short time; it enables precise diagnostics at the operating location. Availability of energy is safeguarded, downtimes are reduced and failures involving high consequential costs are avoided.

Proven, economically efficient and improvement-focused: conventional energy generation is not yet at the peak of its development.

## The SGB-SMIT Group brings you closer to your goals.

### **SGB-SMIT for improvement:**

- Optimization of proven energy carriers
- Network distribution and station supply
- Safety thanks to mobile testing station



# Transmission networks

## Networking in the best sense of the word.

The increasing interlinking of international networks calls for intelligent, efficient and failsafe system control. Thus, the SGB-SMIT Group does not only offer the usual mains transformers, but its range also includes special phase shifter transformers which permit power flow control within power networks.





The different types of generation of electrical energy and interfacing thereof to the power networks imply exacting requirements, especially as regards reactive-current compensation. To optimize extension of the systems, the SGB-SMIT Group provides low-noise shunt and series reactors.

- Many years of experience in production and operation of phase shifters.
- The SGB-SMIT design for these shunt reactors is unique world-wide and features many benefits in operation.



**SGB-SMIT  
for power systems:**

- Extremely low failure rates
- Extremely fast service
- Power flow control using specific phase shifters

# Power supply companies' distribution networks



## Minimum-loss distribution.

For many decades, the SGB-SMIT Group has been a highly esteemed business partner of the power supply companies. Unusually high reliability, comprehensive services and its position as market leader in Germany are achievements which the SGB-SMIT Group does not consider as a reason to rest on its laurels. With individual solutions such as compact stations or controllable local plant transformers, we support the services of the power supply companies in up-to-date systems with decentralized feed-in.



## Environmental protection with a lasting effect.

The SGB-SMIT Group produces transformers with extremely low no-load losses and minimum noise emissions. Thus, we contribute actively to the reduction of CO<sub>2</sub> emissions and cost containment. The overall ecological calculation, however, also means that our transformers excel thanks to their especially high manufacturing quality and operating reliability. In combination with the proven, excellent service and the efficient transformer/logistics package, distribution network products of the SGB-SMIT Group are synonymous with a long service life with an extremely low disturbance level, ecologically and economically speaking.



- Logistics package „All-round, care-free transformer“: a unique service within the industry
- Close network of service stations, extremely short response times in case of service requirements
- Especially low failure rates, market-wide
- Market leader in Germany, export to over 50 countries world-wide

### SGB-SMIT for the power supply companies:

- Reliability in terms of supply
- Individual solutions for decentral feed-in
- Extremely low losses and emissions



# Industry

## Power with control.

Industry has relied on us for many years as regards the internal power supply. In this context, they appreciate the capability of the SGB-SMIT Group to design perfectly coordinated, individual solutions. Depending on the power requirement, site conditions and customer requests, we design ideal energy infrastructure to take energy to where services are performed.



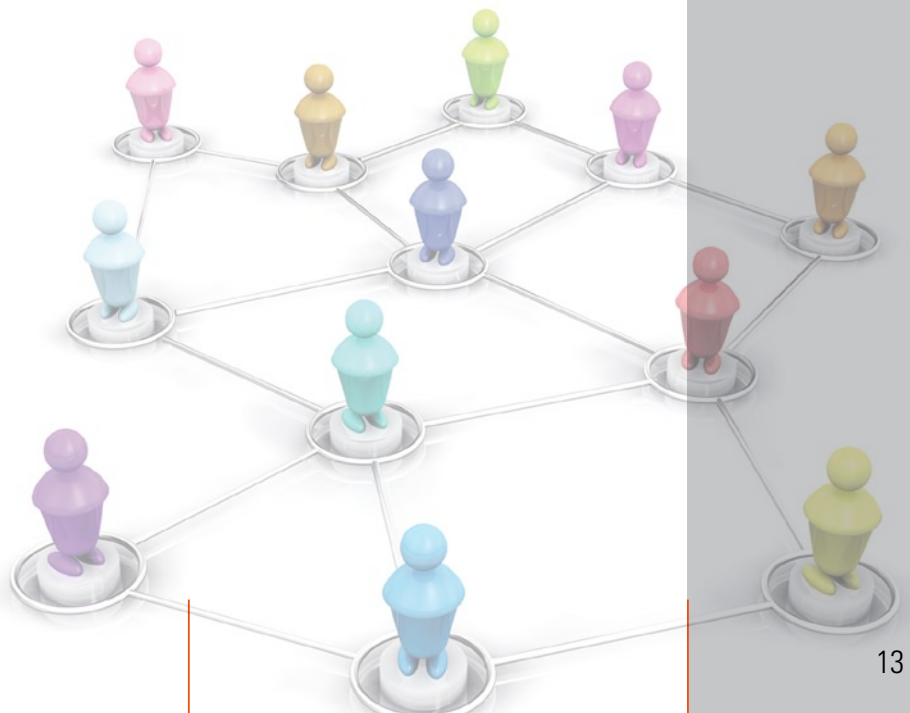
## Reliable under all circumstances.

High ambient temperatures in steel smelting, clean-room conditions in the IT industry, environmental obligations in a nature conservation environment, special conditions in the process industry: our designs are technically adaptable to an enormous variety of production environments.

- Arc furnace transformers made by the SGB-SMIT Group are operative without limitations up to the highest temperature ranges.
- Rectifier transformers, transformers with longitudinal and transverse regulation windings master all varieties of internal power supply systems.
- In coal mines, our compact stations have proved their worth for many years in the tough conditions prevalent in open-cast mining.
- Customer stations are mobile all-rounders e.g. for the automobile industry, oil, gas and steel industries, which can be applied precisely at the load center.
- We also design transformers which comply with high environmental standards, even under extremely exacting operating conditions.

### SGB-SMIT for the industry:

- Perfectly coordinated designs
- Transformers for extremely difficult conditions
- Mobile solutions for load centers





# Traffic & mobility

## Power for what drives us.

Mobility is one of the basic concerns of mankind - and one of the major challenges of our future. Finding economic and ecological alternatives to individual traffic is one of the most pressing tasks - in industrial countries, in order to reduce the strain on the environment, and in the emerging countries to fulfil the requirement for mobility and to enable the construction of necessary infrastructures.

The SGB-SMIT Group cooperates with railway operators world-wide and develops power distribution concepts according to customer specifications and the market environment. Our compact stations fulfil the specific requirements of a great variety of European railway companies and ensure stable operating conditions.

Moreover, the SGB-SMIT Group is a constant supplying specifically equipped transformers for vessel propulsion and a reliable factor in the energy supply of international airports.



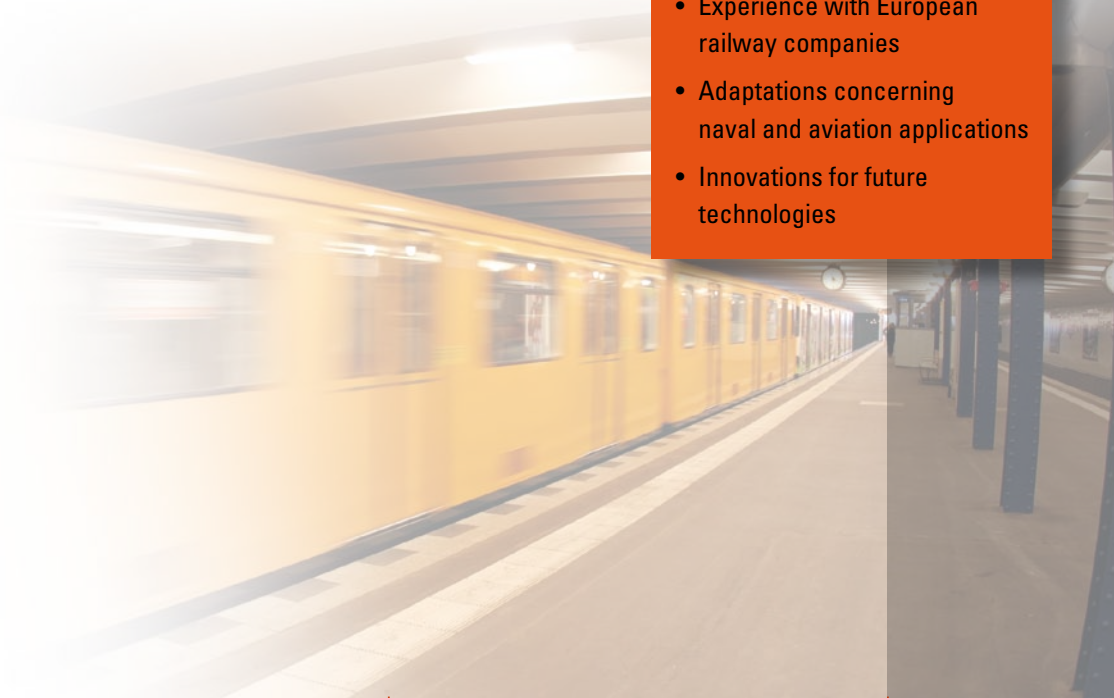
## Power for what drives us tomorrow.

The future of individual traffic is electric. The SGB-SMIT Group has been advancing research and design for many years to drive this exciting, demanding development forward.

A close network of power filling stations, high-voltage connectors for quick-charging, feed-in of current from the most diversified sources, increase in the efficiency of alternative power generation modes: the new mobility involves many challenges. To accept them and to design the future - the SGB-SMIT Group is magnificently positioned for this very goal.

### **SGB-SMIT for infrastructures:**

- Experience with European railway companies
- Adaptations concerning naval and aviation applications
- Innovations for future technologies



# Further fields of application

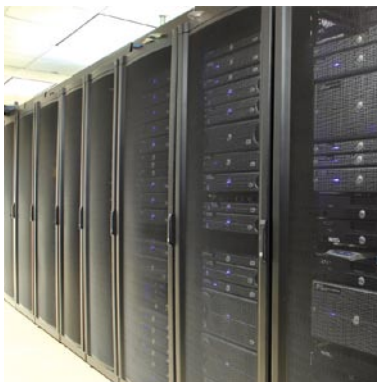
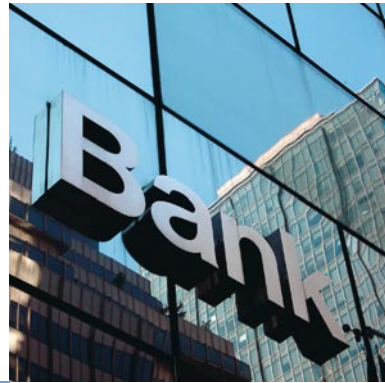




## The ideal, loyal companion.

Transformers, control engineering and distribution solutions from the SGB-SMIT Group can be found almost anywhere in everyday life. All the more important that our products work in a pleasingly discreet, durable and reliable way. The SGB-SMIT Group can be found wherever there is electrical power.

- Sea water desalination
- Hospitals
- Public facilities
- Building complexes
- Internet nodes
- Computer centres
- Shopping Malls

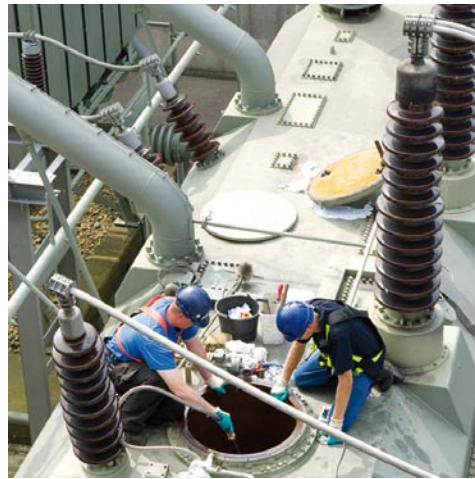


We are still there after delivery

A long life cycle and low operating costs are factors decisive as regards the economic overall performance of transformers. The SGB-SMIT Group provides you with services which ensure precisely that and which make our products a high-yield investment.

### **Servicing and maintenance measures.**

Maintenance and inspections are active damage prevention and help to reduce variable costs. They minimize downtimes, enhance availability and extend service life.



### **Overhaul, replacement and recycling.**

Over 100 years of experience: during this time, the SGB-SMIT Group has continuously improved its repair methods, perfected overhaul procedures and reduced downtimes dramatically. A specifically equipped test truck makes thorough diagnoses on site, and specialized and certified staff perform work in the control centres of nuclear power plants.

- Elaboration of overhaul and maintenance plans and on-site testing
- Overhaul and repair on site or in our own repair workshops

## SMIT Transformer Service (STS).

SMIT Transformer Service (STS) utilizes the entire wealth of experience of the SGB-SMIT Group, which is reflected by the perfection of transformer services. Transformer maintenance is directly linked to the transformer's operating conditions and is necessary to extend its service life. Conscientious transformer maintenance often implies collaboration between the transformer operator and the company commissioned with maintenance of the transformers. STS is proud to have achieved this special service quality within the market of transformer maintenance which is subject to high competitive pressure.



Our modern repair workshop and mobile testing unit are located directly at the port. There, we coordinate project management and the performance of all maintenance works, diagnosis, conservation and repair work for oil or cast-resin transformers as well as tap changers.

Thanks to our specialized repair and maintenance teams, this permits comprehensive transformer maintenance and overhaul as well as emergency repairs world-wide.

- Elaboration of overhaul and maintenance plans
- Local testing
- Overhaul and repair on site or in our own repair workshops

### **SGB-SMIT for service:**

- Service life prolongation
- Mobile service
- Optimization of overall performance



## Range of products

### Large transformers

Power: 1,200 MVA (3-phase)  
Power: 2,000 / 3 MVA (1-phase)  
Operating voltage: 800 kV  
BIL: 2,100 kV



### Power transformers

Power: 5 MVA - 140 MVA  
Operating voltage:  
6 kV - 245 kV  
BIL: up to 1,050 kV



### Medium-power transformers

Power: up to and incl. 16 MVA  
Operating voltage:  
up to incl. 66 kV  
BIL: up to 325 kV



### Oil distribution transformers

Power: up to incl. 2.5 MVA  
Operating voltage:  
up to and incl. 36 kV  
BIL: up to 200 kV





## Cast-resin transformers

Power: 50 kVA - 25 MVA  
Operating voltage:  
up to and incl. 36 kV  
BIL: up to 200 kV



## Lahmeyer-Compactstationen®

(compact stations)  
Operating voltage: up to and incl. 36 kV



## Shunt reactors

Power: 160 MVA  
Operating voltage: 800 kV  
BIL: 2,100 kV



## Phase shifters

Power: 1,000 MVA ; 2,800 MVA  
Phase angle:  
+/- 37 degrees; +/- 11 degrees  
Operating voltage: 800 kV  
BIL: 2,100 kV

## Locations

OTC Services Inc. / SGB-USA Inc.  
Louisville, USA



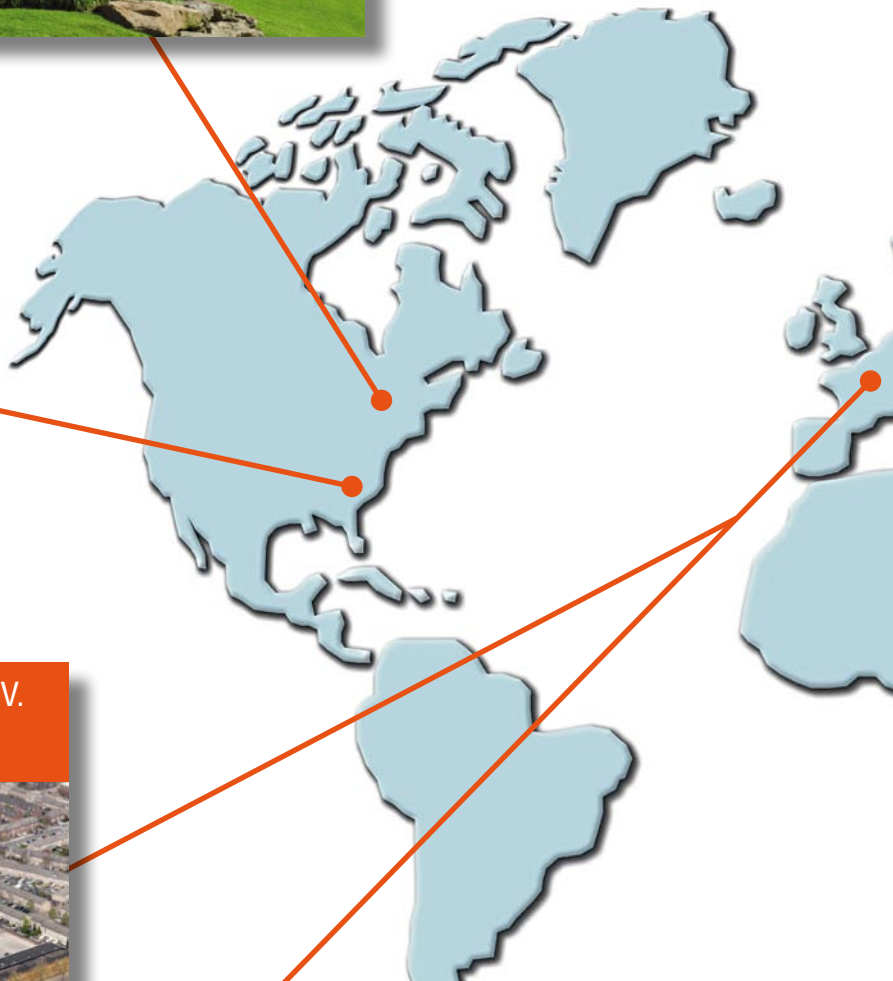
SMIT Transformer Sales, Inc.  
Summerville, USA



ROYAL SMIT Transformers B.V.  
Nijmegen, NL



SMIT Transformer Service  
Nijmegen, NL



SGB Starkstrom-Gerätebau GmbH  
Regensburg, D



SGB Sächsisch-Bayerische  
Starkstrom-Gerätebau GmbH  
Neumark, D



RETRASIB S.A.  
Sibiu, RO



SGB Cast Resin Sdn Bhd  
Nilai, MAL



AM SGB Sdn Bhd  
Nilai, MAL





# Sales channels

## Current representations:

Algeria  
Austria  
Belgium  
Botswana  
Canada  
China  
Czech Republic  
Denmark  
Egypt  
Finland  
France  
Great Britain  
Guam  
Hong Kong  
Hungary  
Iran  
Kuwait  
Malawi  
Malaysia  
Morocco  
Mozambique  
Myanmar  
Norway  
Philippines  
Poland  
Qatar  
Romania  
Saudi Arabia  
Singapore  
Slovakia  
South Korea  
Spain  
Sweden  
Switzerland  
Tanzania  
Uganda  
United Arab Emirates  
USA  
Zambia  
Zimbabwe





# Best of both worlds

Innovative and with lean structures characteristic of medium-sized companies, diversified and with an uncompromising quality focus like a global player: SGB-SMIT combines what is in their customers' interest.



- **Quality, reliability and after sales-service**
- **Dominant market position on the most important markets**
- **Distinct customer focus and high product competence**
- **International network with local contacts**

## Local. And global.

Over 1,500 members of staff and a turnover of over 500 million euros: the SGB-SMIT Group stands clearly out against smaller competitors. But never far away from their customers. The mobile test station is only one example for service which sets a standard.

## Trend-setters out of tradition.

We utilize the competence and experience we have gathered in the 100 years of our company's history today, in order to design the future. The SGB-SMIT Group ensures that energy from new and regenerative sources is also fed-in and distributed reliably.

## Co-designing a networked world.

As a company acting world-wide, we know the specificities of the markets and the differences characterizing their power supply systems. The SGB-SMIT Group is the technological leader in load flow regulation and fail-safe system control.

## Partner of demanding industries.

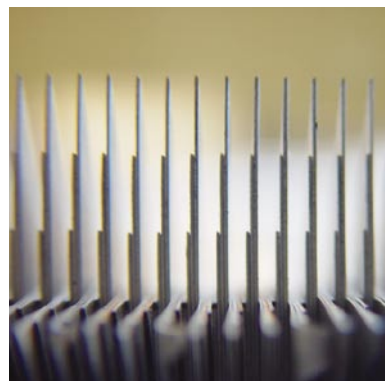
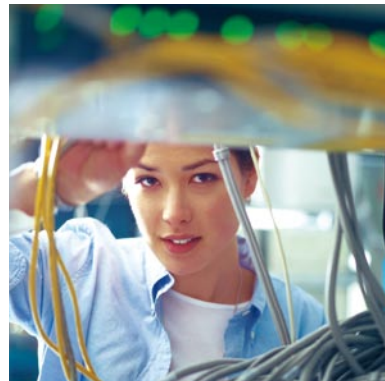
Thanks to technically adaptable designs, the SGB-SMIT Group adapts to a great variety of production environments. Our customer stations satisfy the requirements for flexible, location-independent power management.

## Precursors of international infrastructure.

Aircraft, ships, railway and individual traffic: the streams of traffic continue to grow and place high demands regarding the provision and distribution of energy. The SGB-SMIT Group optimizes the efficiency of proven technologies and works on the development of alternative paths leading to the future.

## Energy for individuality.

Wherever current is required, generated and distributed: the SGB-SMIT Group supplies products in line with demand, adapted to the customers and their requirements.



# Partners in Power

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