

1. COMPANY

silicon products

RESEARCH ENGINEERING PRODUCTION

Silicon Products Engineering (SPE) is part of the German medium-sized, privately owned and owner-managed group of companies Silicon Products. SPE focuses on process engineering and equipment as well as providing services for the silicon industry.

The group has been operating a mid-scale silicon production plant in Germany since 2007. Our production experience as well as our research and development have led to an excellent knowledge of processes and equipment in the silicon and chlorosilane industry.



Head Office

The plant was designed for production of solar grade silicon, and extended processes were implemented to achieve high-quality polysilicon including feedstock for the Float Zone (FZ) process and semiconductor applications.



Production facilities

Several years of proven experience and know-how in production and solid high international standards in quality and service enable us to offer tailor-made solutions to our customers.

Silicon Products Engineering GmbH
Alu-Strasse 5, D-06749 Bitterfeld-Wolfen
Germany

phone: +49 3493 3456 100
fax: +49 3493 3456 150
e-mail: info@silicon-products-gmbh.com

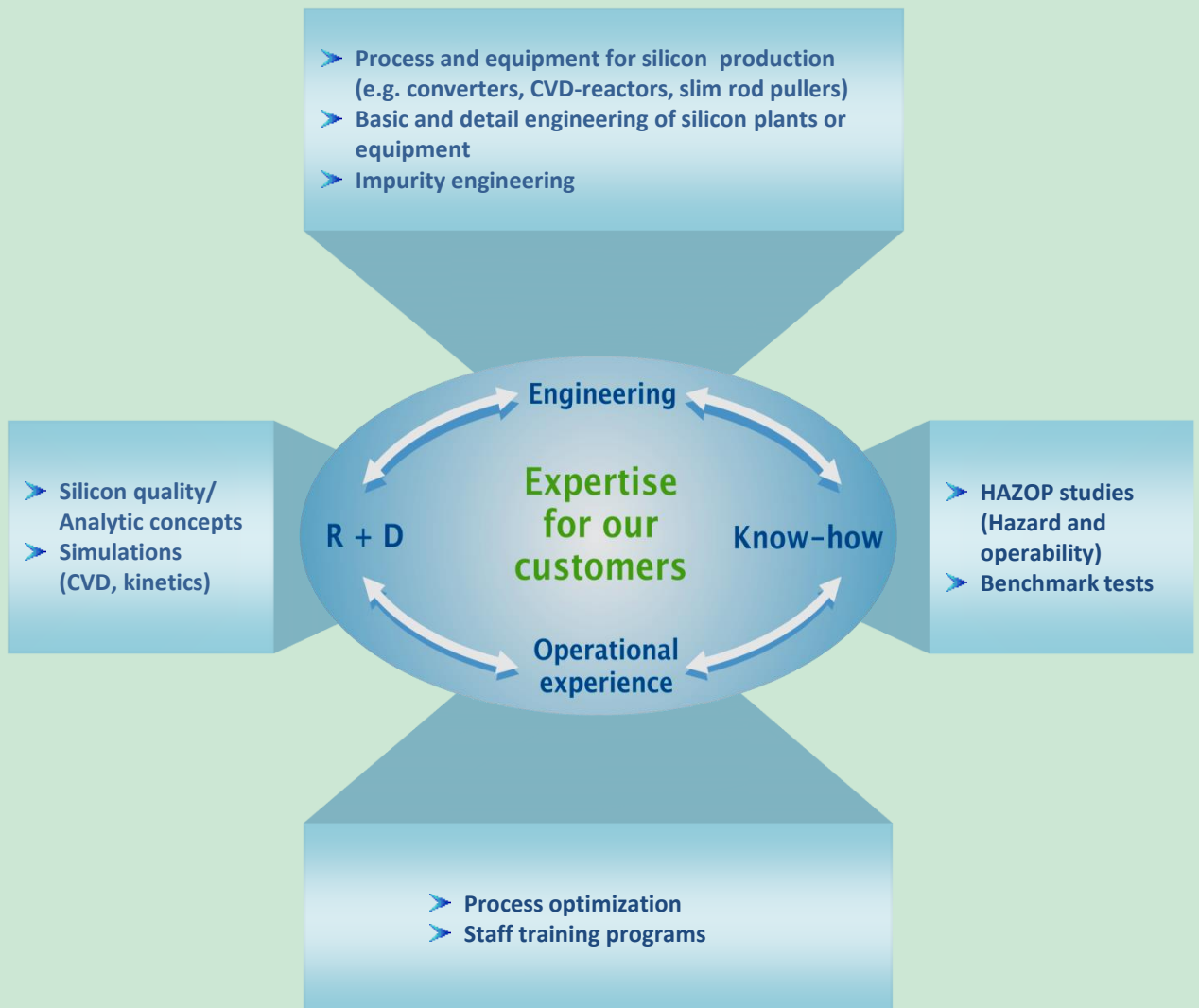
www.silicon-products-gmbh.com

2. EXPERTISE

silicon products

RESEARCH ENGINEERING PRODUCTION

SPE has a broad expertise in silicon production and processes. We take great care to ensure that the solutions for our clients are cost-effective and efficient.



In order to offer up-to-date solutions, SPE has established a wide network with leading universities, technological and research institutes that will benefit our customers.

Silicon Products Engineering GmbH
 Alu-Strasse 5, D-06749 Bitterfeld-Wolfen
 Germany

phone: +49 3493 3456 100
 fax: +49 3493 3456 150
 e-mail: info@silicon-products-gmbh.com

www.silicon-products-gmbh.com

3. UNIQUE BENEFITS

silicon products

RESEARCH ENGINEERING PRODUCTION

The group's production plant gives **SPE** access to continuous technology and equipment improvement. In your production plant this unique situation will lead to **the highest**:

- **ENERGY EFFICIENCY**
- **PRODUCTIVITY**
- **QUALITY**

The advantages of our **converters** compared to competitors' are:

- energy savings (> 60 %)
- high yield of TCS (> 16.5 %wt)
- long up-time due to optimized components and design



Converter in operation



CVD-reactor during assembly

The advantages of our **CVD reactors** compared to competitors' are:

- less energy losses due to high reflectivity of silver-plated bell jar
- longer and thicker rods (up to 3.2m long and 180mm thick)
- higher throughput per run
- more homogenous silicon growth and less mechanical stress
- less down-time as bell jar needs less cleaning

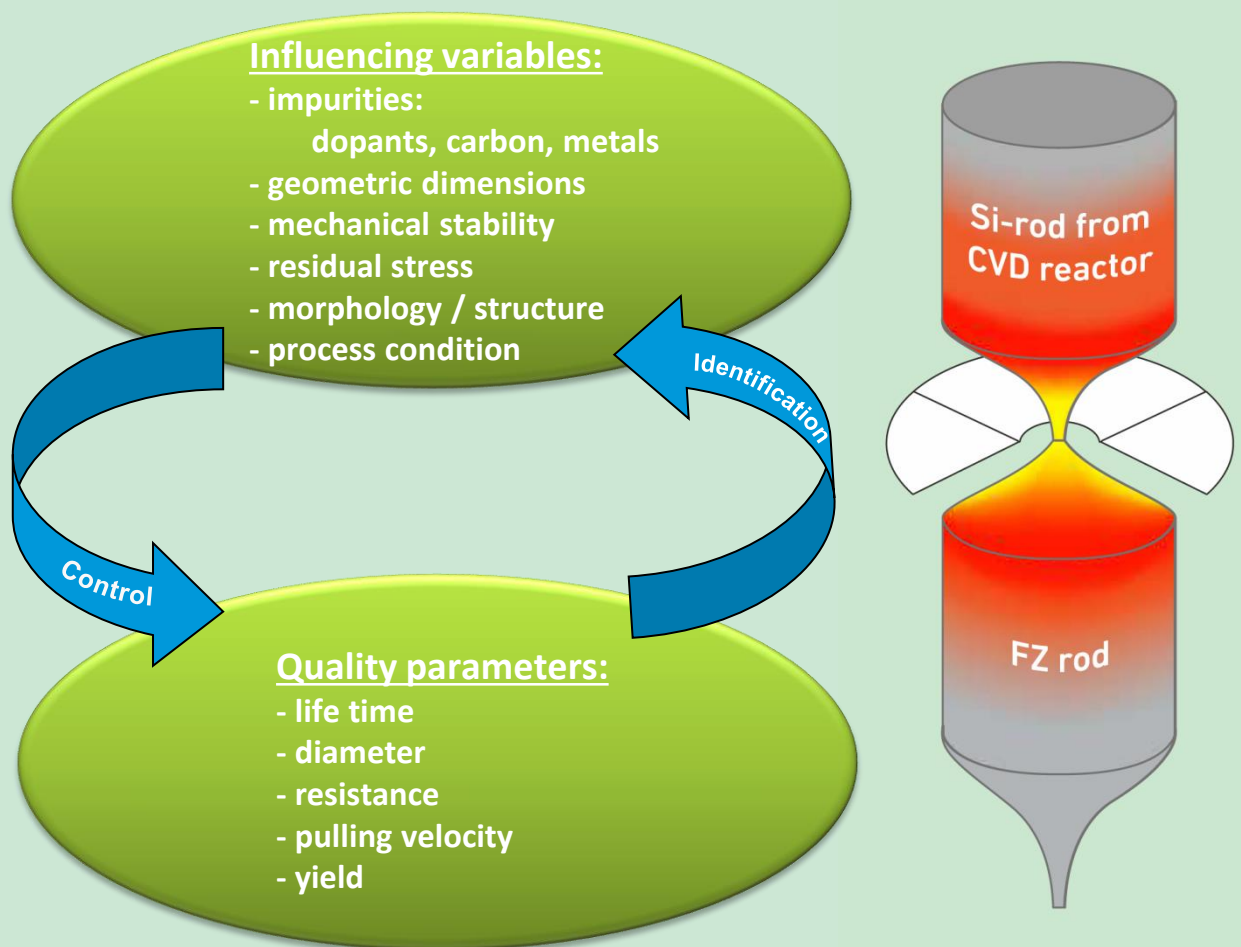
Silicon Products Engineering GmbH
Alu-Strasse 5, D-06749 Bitterfeld-Wolfen
Germany

phone: +49 3493 3456 100
fax: +49 3493 3456 150
e-mail: info@silicon-products-gmbh.com

www.silicon-products-gmbh.com

silicon products

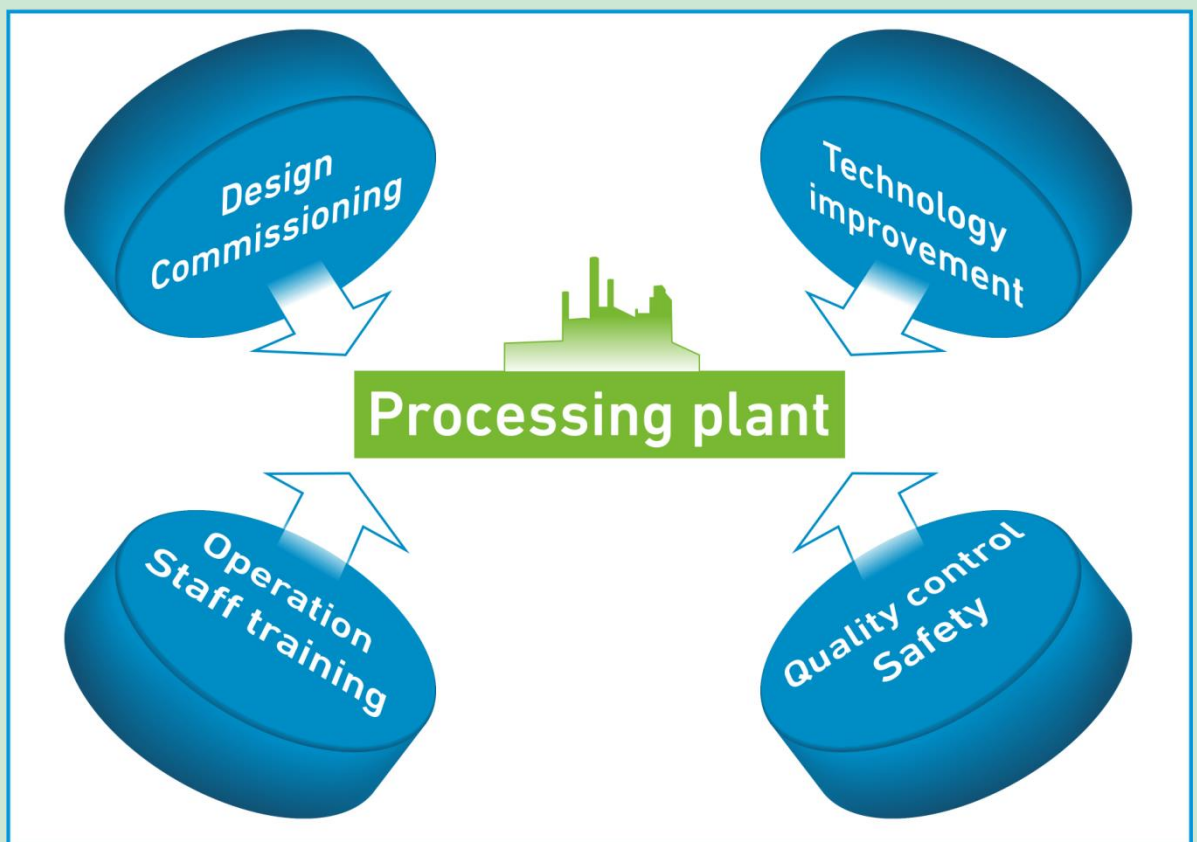
Solar, wind and hybrid electric vehicle technologies favour FZ silicon-based components for voltage transmission, motor control and power conversion. Most high-performance power management devices preferentially use Float Zone polysilicon due to the intrinsically low levels of impurities.



The continuous efforts for the optimization and development which we implement in our plant lead to the production of high quality polysilicon for the FZ processes. We are able to identify the influencing variables and to control quality parameters to achieve target specification for the FZ rod.

The Silicon industry faces a variety of challenges. **SPE** supports customers to decide which technology or manufacturing process is the best. **SPE** implements also improvements to an existing operation. Our own manufacturing experience and know-how, German engineering, continuous research & development are the basis for delivering success to our customers.

SPE expertise for our customers: innovation meets experience!



**Professional team of our engineers,
technicians and operators**

Our team delivers our experience by working at any location and providing hands-on assistance. Our goal is to bring manufacturers up to world class standards as quickly as possible to be successful in this competitive market.

Silicon Products Engineering GmbH
Alu-Strasse 5, D-06749 Bitterfeld-Wolfen
Germany

phone: +49 3493 3456 100
fax: +49 3493 3456 150
e-mail: info@silicon-products-gmbh.com

www.silicon-products-gmbh.com