

# SANDVIK MATERIALS TECHNOLOGY MEETING THE ENERGY CHALLENGE



# SAFETY FIRST

OUR MINDSET: NEVER WALK BY

Towards zero accidents because we care. There are many good reasons for working safely. What are yours?



PROTECTIVE  
EQUIPMENT



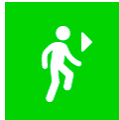
FIRST AID  
KIT



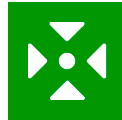
ALARM



EMERGENCY  
NUMBER



EMERGENCY  
EXIT



ASSEMBLY  
POINT



# SANDVIK GROUP: WORLD-LEADING POSITIONS IN THE FOLLOWING AREAS



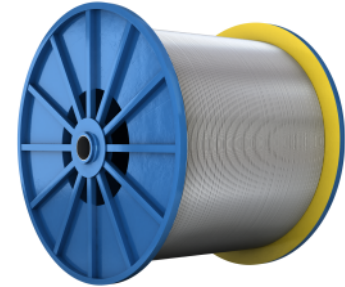
## TOOLS AND TOOLING SYSTEMS

as well as components in cemented carbide and other hard materials



## EQUIPMENT AND TOOLS FOR THE MINING AND CONSTRUCTION INDUSTRIES

as well as various types of processing systems



## HIGH VALUE-ADDED PRODUCTS IN ADVANCED STAINLESS STEELS

and special alloys and titanium  
as well as metallic and ceramic  
resistance materials

43,000  
EMPLOYEES

---

82 BILLION  
SEK  
INVOICED  
SALES

---

60  
R&D CENTERS  
GLOBALLY

SALES IN OVER  
150  
COUNTRIES  
AROUND THE GLOBE

---

3.5 BILLION SEK  
INTO R&D  
EACH YEAR

---

7,900  
ACTIVE PATENTS AND  
OTHER IP RIGHTS





# GLOBAL R&D LEADER

60

R&D  
CENTERS

2,850

EMPLOYEES  
GLOBALLY

3.5

BILLION SEK  
INTO R&D  
EACH YEAR

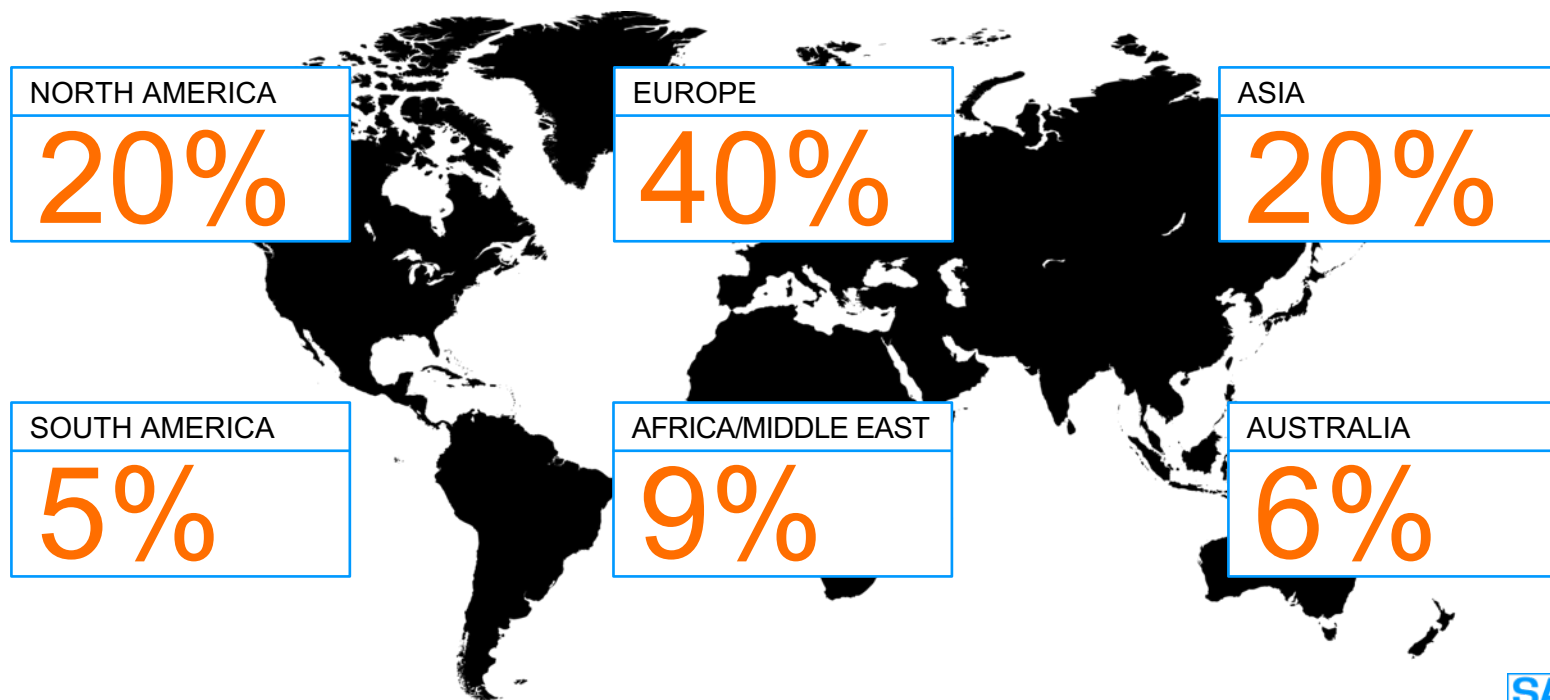
7,900

ACTIVE PATENTS  
AND OTHER  
IP RIGHTS



# REVENUES BY MARKET AREA

SHARE OF GROUP TOTAL 2016\*



\* Figures refer to Group total 2016 excl. Mining Systems

# BUSINESS AREAS – OUR PORTFOLIO

## SANDVIK MACHINING SOLUTIONS

40%

63%

## SANDVIK MATERIALS TECHNOLOGY

16%

10%

## SANDVIK MINING AND ROCK TECHNOLOGY

38%

29%

Share of revenues 2016 excl. Mining  
systems and group activities

Share of adjusted operating profit 2016,  
excl. Mining systems and group activities

Other operations (non-strategic assets)  
contributed by 6% to revenues 2016  
and 5% to adjusted operating profit 2016



# OUR ROOTS GIVE US WINGS

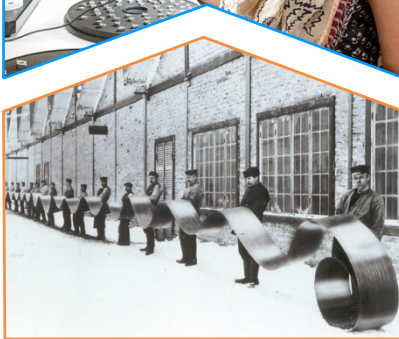
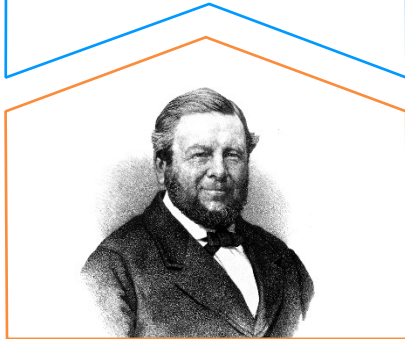
DRIVEN BY CUSTOMER VALUE FROM THE START

TODAY

CUSTOMER FOCUS  
INNOVATION  
FAIR PLAY  
PASSION TO WIN



1862





# OUR VISION:

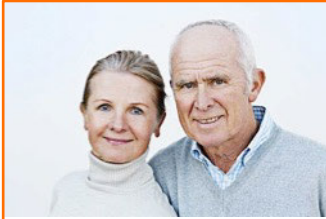
## WE SET THE INDUSTRY STANDARD

It is our guiding principle. *We set the industry standard* means that we strive for nothing less than being number one – in the eyes of our customers.



# LEVERAGING GROWTH DRIVERS

## TRENDSPOTTING TO SERVE OUR CUSTOMERS



### DEMOGRAPHIC CHANGES

Shifting our footprint towards growth

Adapt our offering to meet the needs of an aging population



### URBANIZATION

Strong equipment and service for the construction industry

Intra-urban solutions to develop housing, infrastructure and transport solutions



### GLOBALIZATION

Being true to our brand

Mid-market offering

Speed in R&D: Products to enhance productivity and energy efficiency



### CLIMATE CHANGE & SCARCITY OF RESOURCES

Driving the materials evolution

Recycling

Energy efficient processes



### INFORMATION & COMMUNICATION TECHNOLOGY (ICT)

Digitalized customer offerings

ICT solutions

# OUR STRATEGIC AGENDA

## WE SET THE INDUSTRY STANDARD

FOCUS ON CORE  
AND BE No 1 OR 2  
IN CHOSEN  
MARKETS AND  
SEGMENTS

TECHNOLOGY  
LEADERSHIP AND  
INNOVATION

ACCOUNTABILITY  
AND DECISIONS  
CLOSE TO  
CUSTOMERS

STABILITY AND  
PROFITABILITY  
BEFORE GROWTH

EFFICIENCY AND  
CONTINUOUS  
IMPROVEMENTS

CULTURE OF  
DOING THINGS  
RIGHT

EXCEPTIONAL  
PEOPLE

SUSTAINABLE BUSINESS

SHAREHOLDER  
VALUE

CUSTOMER  
VALUE

EMPLOYEE  
VALUE

# CONDUCTING SUSTAINABLE BUSINESS

## TWO IMPACT AREAS – EIGHT DIMENSIONS

### OUR OFFERINGS

*The impact occurs outside of our operations*



INNOVATION &  
PRODUCTIVITY



HEALTH  
& SAFETY



ENVIRONMENTAL  
IMPACT



USE, REUSE  
& RECYCLE



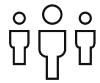
GOVERNANCE



PARTNERS



ENVIRONMENTAL  
FOOTPRINT



PEOPLE

### OUR OPERATIONS

*The impact of our operations - everything we  
do to produce products and services*

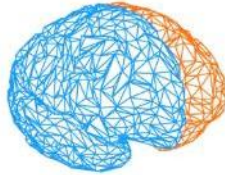


# OUR CORE VALUES

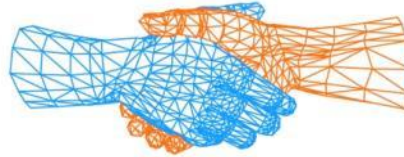
*Guide us in our actions and  
day-to-day business*



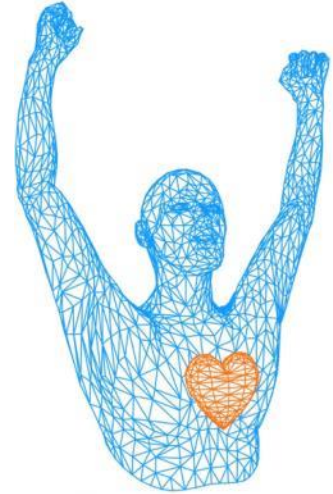
CUSTOMER FOCUS



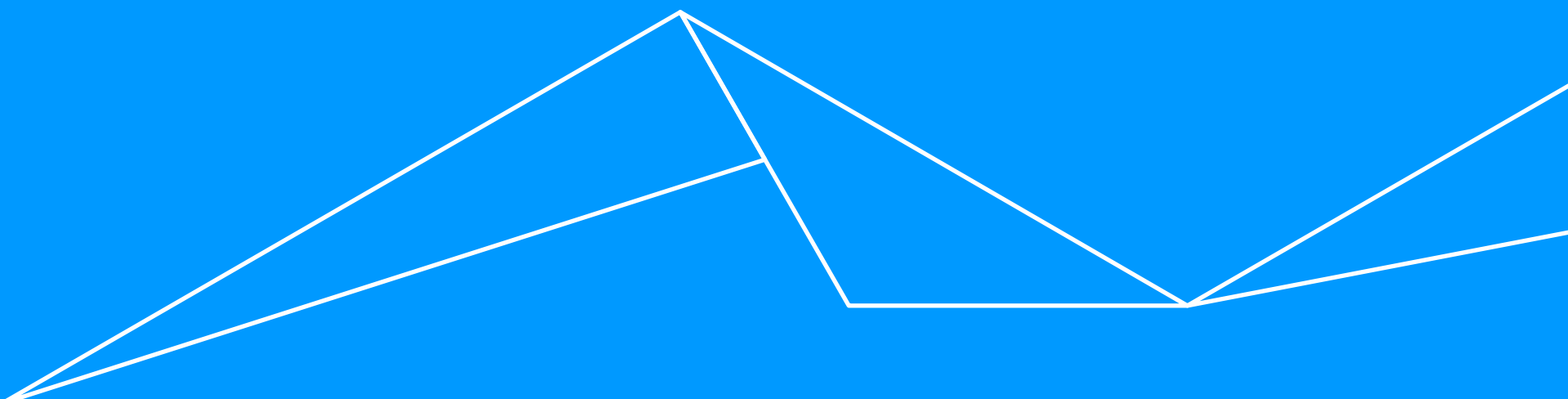
INNOVATION



FAIR PLAY



PASSION TO WIN



# SANDVIK MATERIALS TECHNOLOGY



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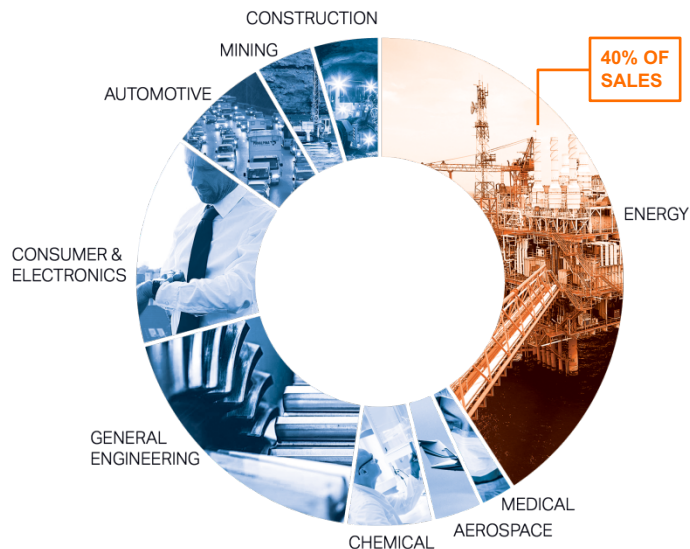
## ADVANCED MATERIALS FOR THE MOST DEMANDING INDUSTRIES

### CAPABILITIES



- World-leading developer and manufacturer of high-value added products in advanced stainless steels and special alloys.
- Setting the industry standard in the most demanding industries, such as energy, chemical and aerospace.

### CUSTOMERS



### KEY FIGURES 2016



- Revenues: 13 BSEK
- EBIT margin\*: 8.1%
- Cash-Flow\*\*: 427 MSEK
- NWC: 28.5%
- 6,500 employees



\*) Excluding effects from changed metal prices and nonrecurring charges

\*\*) After investments



# KEY APPLICATION AREAS

## SUPPLYING PRODUCTS FOR MOST DEMANDING INDUSTRIES

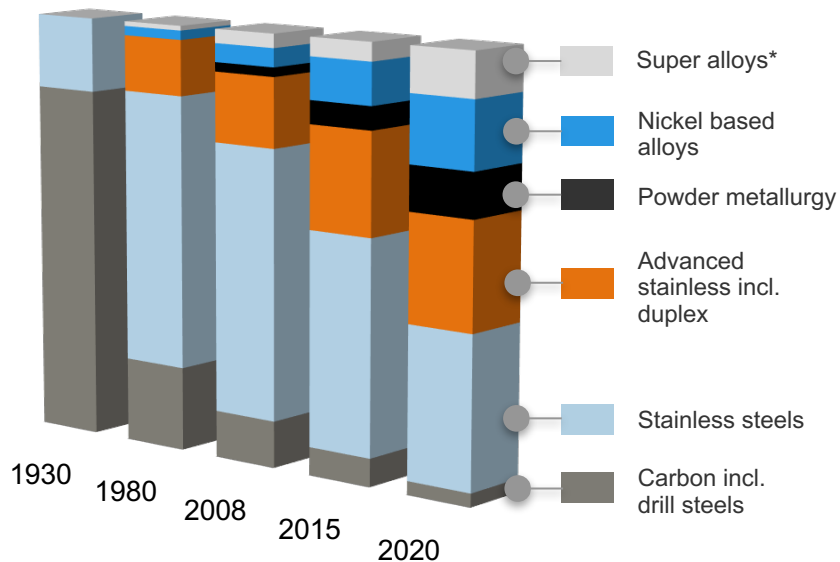
- Nuclear power generation
- Renewable energy
- Oil & Gas
- Chemical
- Industrial heating
- Aerospace
- Automotive





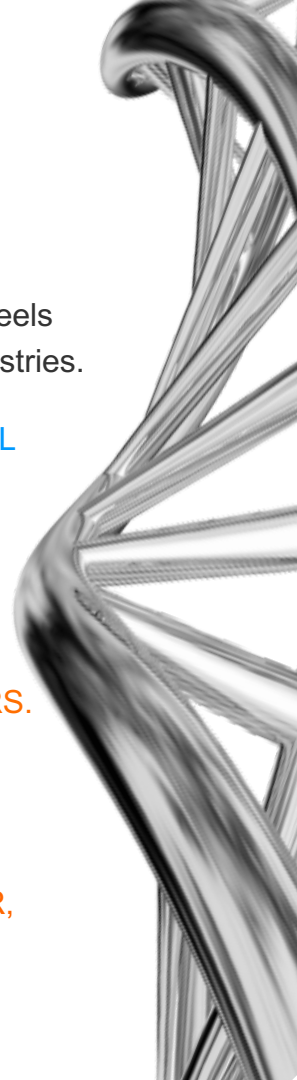
# THE MATERIALS EVOLUTION

## OUR CORE CAPABILITIES AND DNA



\*Alloys that require primary vacuum melting.

- **UNIQUE EXPERTISE** in advanced stainless steels and special alloys for the most demanding industries.
- **WORLD-LEADING R&D** and **METALLURGICAL KNOW-HOW**.
- Extensive **KNOWLEDGE** about **CUSTOMER APPLICATIONS**.  
Next generation of material developed in **CLOSE COOPERATION WITH CUSTOMERS**.
- **SERVICE OFFERING** in materials technology.
- **DRIVING THE MATERIALS EVOLUTION**, contributing to making industrial activity **SAFER**, **MORE EFFICIENT** and **SUSTAINABLE**.

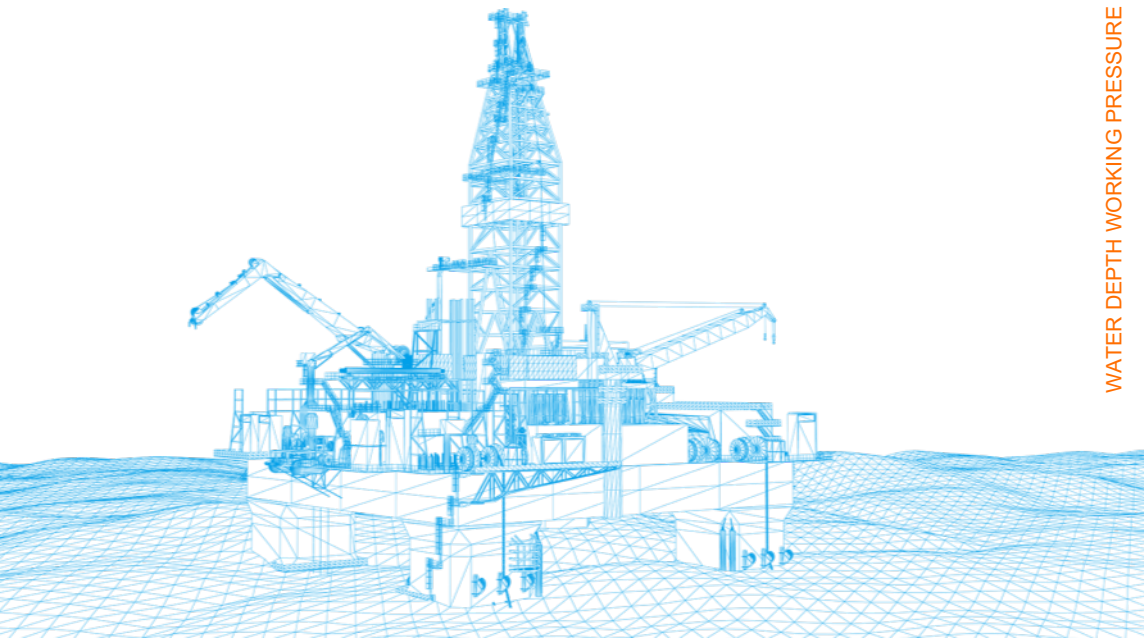


# PRODUCT OFFERING IN ADVANCED MATERIALS



# SANDVIK MATERIALS EVOLUTION

## EXAMPLE: OIL AND GAS INDUSTRY



WATER DEPTH WORKING PRESSURE



### **Sandvik SAF 2205™**

Duplex material

### **Sandvik SAF 2507™**

Super-duplex material

### **Sandvik SAF 3207 HD™**

Hyper-duplex material

SERVICE TEMPERATURE



# ENVIRONMENT, HEALTH AND SAFETY

Supported by our core values, we always consider the impact of our actions on individuals and the environment.

At Sandvik, we help each other to maintain safety as a priority. EHS is fully integrated into our daily activities and implemented by effective management systems and processes.







# RESEARCH AND DEVELOPMENT

## WORLD-LEADING IN MATERIALS TECHNOLOGY

- Number one in metallurgy for our type of products.
- R&D facilities focusing on the development of advanced stainless steels, special alloys and ceramics.
- Products developed in close co-operation with customers.
- ~900 materials for further processing into different niche applications.

# QUALITY MANAGEMENT

At Sandvik we safeguard product and material properties throughout the manufacturing processes by using the optimum starting material, advanced production technologies and rigorous quality control.

This is made possible by our fully integrated production technologies and in-depth experience in the development and manufacture of materials for demanding environments.





# HIGHLY INTEGRATED PRODUCTION AND WORLD LEADING METALLURGY



# HIGHLY INTEGRATED PRODUCTION

UP TO 30 VALUE ADDING PROCESS STEPS

RAW  
MATERIALS



MELTING AND  
HOT ROLLING



COMMON  
FINISHING



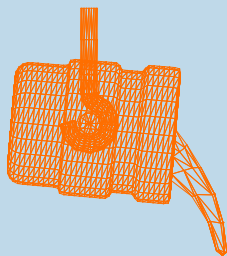
SPECIFIC  
FINISHING



CUSTOMER  
SEGMENTS



Recycled steel  
Alloying elements



TUBE

Steam  
generator tubes  
Coiled tubes

Finned tubes  
Umbilical tubes  
Composite tubes

STRIP

Coated strip steel  
Compressor valve steel  
Razor blade steel

WIRE

Wire  
Welding products

Heating elements  
and systems

Bar, billets,  
rock drill steel

ENERGY

CHEMICAL

AEROSPACE

AUTOMOTIVE

MINING

CONSTRUCTION

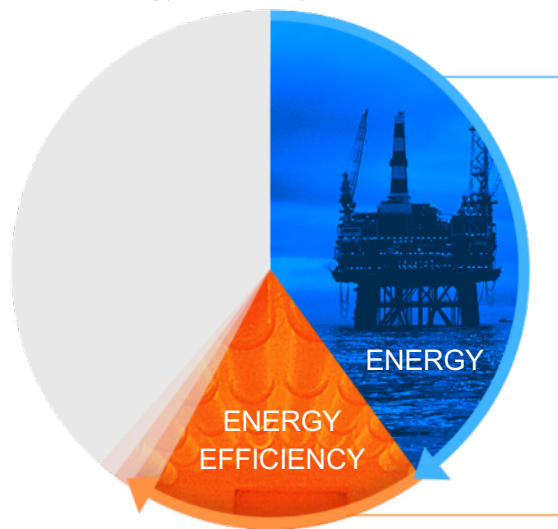
MEDICAL

“The biggest challenge of the 21st century: provide sufficient food, water and energy to allow everyone on the planet to live decent lives, in the face of rising population, the threat of climate change, and declining fossil fuels. Energy is a necessary means to meet this challenge.”

*Chris Llewellyn Smith, Director of Energy Research, Oxford University*

# SANDVIK WELL POSITIONED TO TAKE ON THE ENERGY CHALLENGE

60% of Sandvik Materials Technology sales is directly related to Energy or Energy Efficiency



## ENERGY

*Reliable and safe energy production,  
with reduced environmental impact.*

### Oil and gas

- Topside
- Control tubing
- Subsea
- Downhole
- Downstream

### Nuclear

- Steam generator tubes
- Fuel tubes

### Coal

- Coal fired power plants
- Coal gasification

### Renewables

- Solar power

### Services

- Materials technology
- Testing

## ENERGY EFFICIENCY

*Decrease environmental impact,  
fuel consumption and CO<sub>2</sub> emission.*

### Industry

- Furnace systems
- Electrical heating

### Automotive

- Compressor valves
- GDI tubing

### Aerospace

- Hydraulic tubing
- CE alloys (powder)

### New technologies

- Fuel cell material
- Powder products
- 3D-printing

### Services

- Kanthal services



# GAME-CHANGING MATERIALS

## MEETING THE ENERGY CHALLENGE

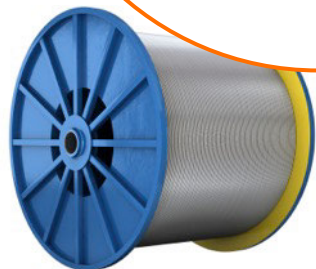


### CUSTOMER REALITY:

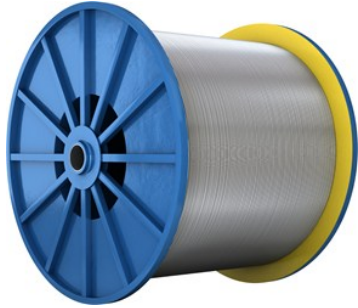
Find smarter ways to use energy resources and new ways to become more energy efficient.

### OUR SOLUTION:

Materials expertise to make industrial processes safer and more energy efficient, yielding greater output while consuming fewer resources.



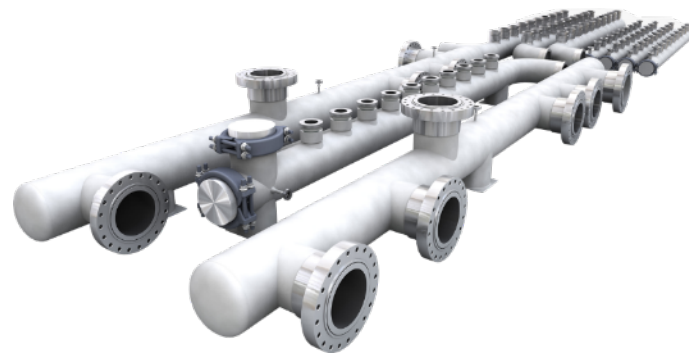
# RELIABLE OFFSHORE OIL AND GAS EXPLORATION AND PRODUCTION



Umbilical tubing in super duplex  
and hyper duplex stainless steels



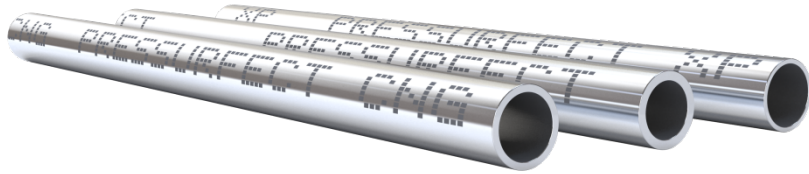
# MATERIAL EVOLUTION FOR DESIGN FLEXIBILITY



Hot Isostatic Pressing (HIP) of metal powders



# SAVING FUEL AND LOWERING EMISSIONS ON THE ROAD TODAY



Pressurfect™ seamless stainless steel tubes  
for gasoline direct injection (GDI) engines



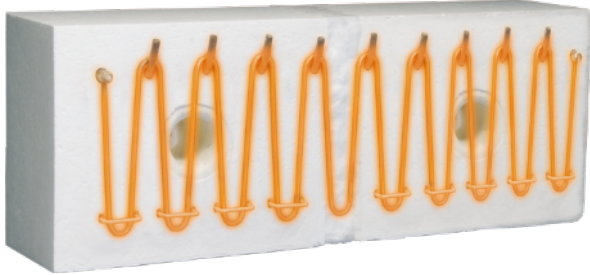
# ENERGY-SAVING REFRIGERATION



Sandvik Hiflex™ compressor valve steel



# ENERGY REDUCTION IN INDUSTRIAL HEATING



Fibrothal™ heating modules







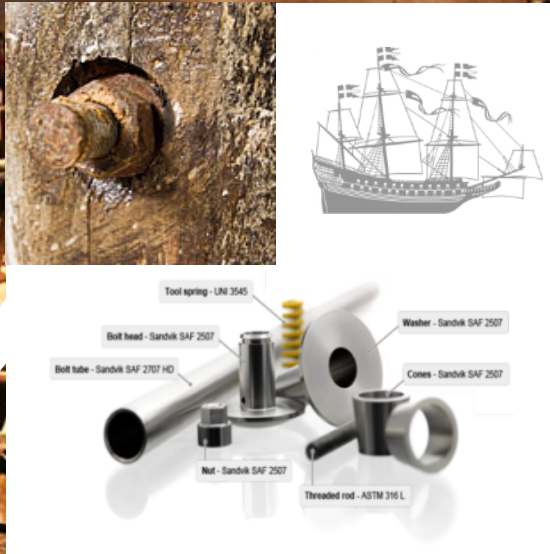
# ZERO-EMISSION, SUSTAINABLE POWER



Sandvik Sanergy™ pre-coated strip steel for fuel cells



# SANDVIK SAVING NATIONAL TREASURE VASA



- Joint R&D-project to preserve history for future generations
- The oak hull of the royal warship Vasa is threatened by iron leakage from its wrought iron bolts.
- Under a joint R&D-project, Sandvik and the Vasa Museum are collaborating in replacing 5,500 old bolts with new bolts made of Sandvik duplex stainless steel.

An abstract graphic consisting of several blue lines. One line starts at the top left, slopes down to a central point, then slopes up to the top right. Another line starts at the middle left, slopes down to the same central point, then slopes up to a point on the right, and finally slopes down to the middle right. A third line starts at the middle left, slopes down slightly, then slopes up to the middle right.

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