

# RECHNER SENSORS

MADE FOR YOU  
MADE IN QUALITY

**the company**

# Agenda

- 1 Our Company**
- 2 Customer Focus**
- 3 Products**
  - 3.1 Capacitive Sensors  
→our special field
  - 3.2 Inductive Sensors
  - 3.3 Magneto Resistive Sensors
  - 3.4 Power Supplies
  - 3.5 Certification
- 4 Quality Assurance**
- 5 Tomorrows Highlights**

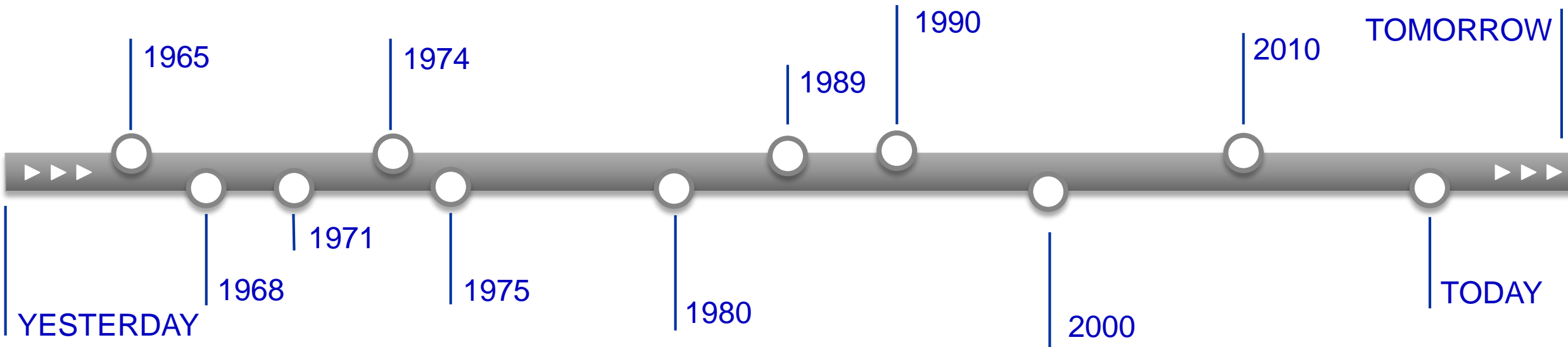


# 1 Our Company



Figure 1: Company building headquarter Germany RECHNER SENSORS Lampertheim (around 7,000 m<sup>2</sup>); company owned property which has grown in time over 6 phases of construction (total usable area of 4,500 m<sup>2</sup>)





**RECHNER  
SENSORS**

1965

Foundation of the **H+W Rechner GmbH** (Mannheim)

Manufacturing of transformers, relay- and vessel control systems



1974

1989

1990

2010

TOMORROW

1971

1968

1975

1980

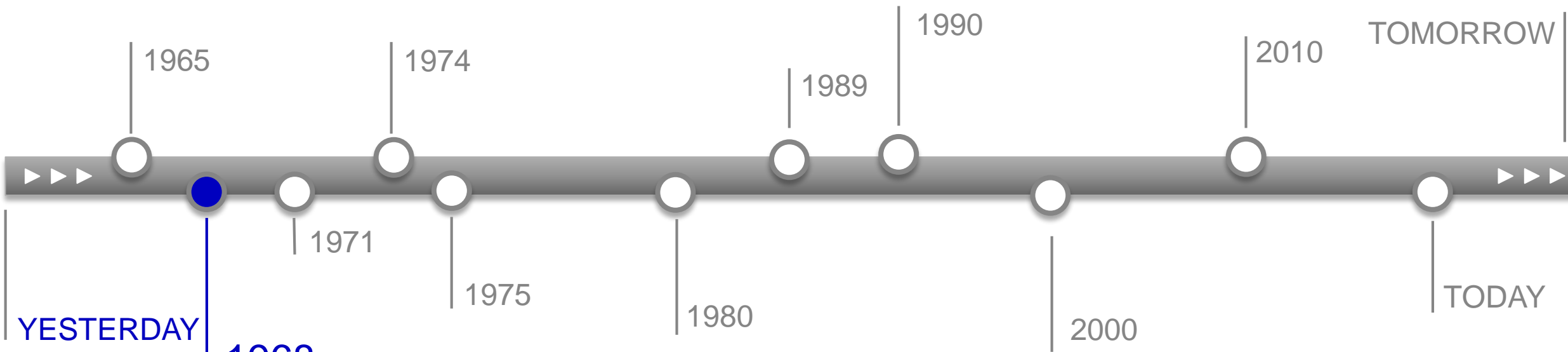
2000

TODAY

YESTERDAY



**RECHNER  
SENSORS**



YESTERDAY

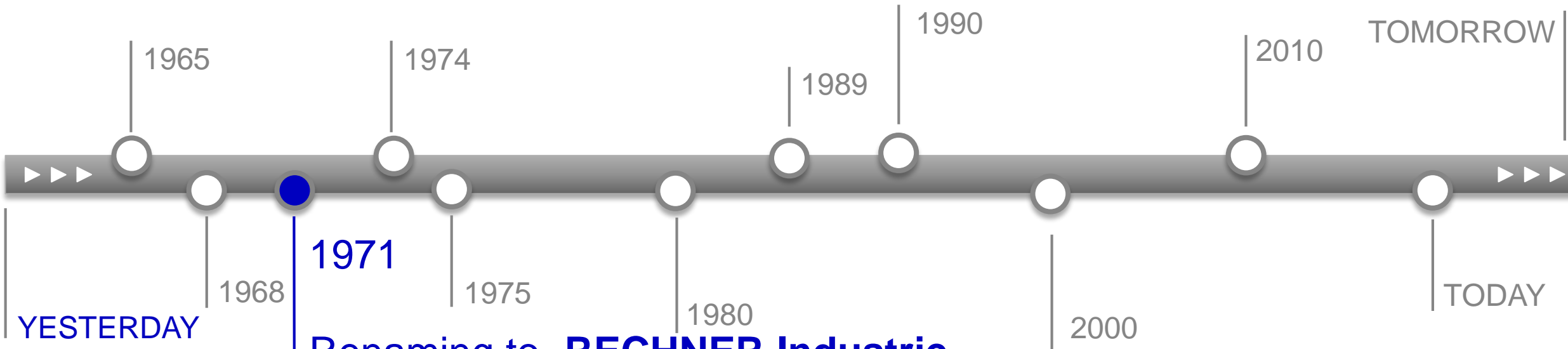
1968

Launch of the first capacitive proximity switch  
Start production of sensors – inductive proximity switch  
(1967)



RECHNER  
SENSORS





1971

Renaming to „**RECHNER Industrie-Elektronik GmbH**“

Moving to our current headquarters in  
**Lampertheim** (1972)



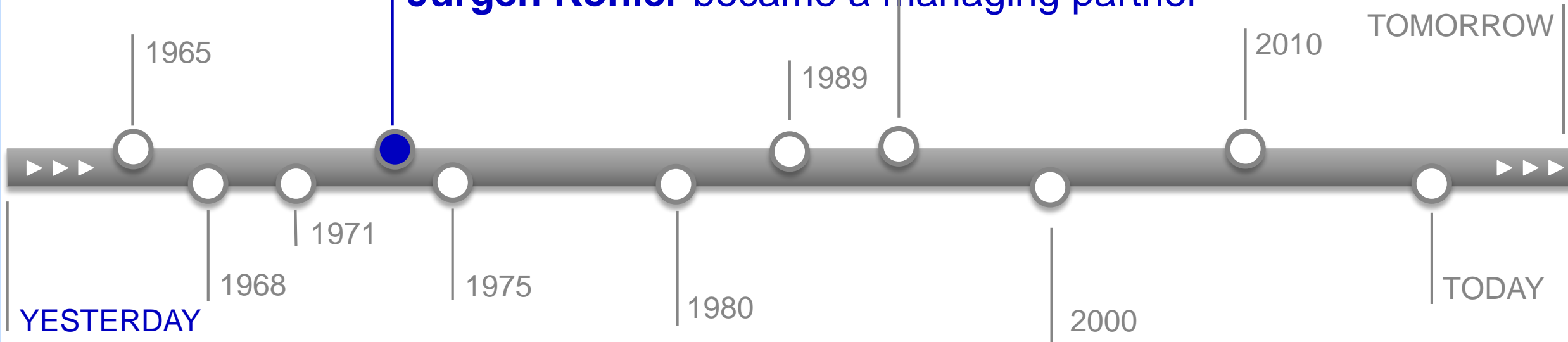
**RECHNER  
SENSORS**

1974

## Ex-area in special protection (1973)

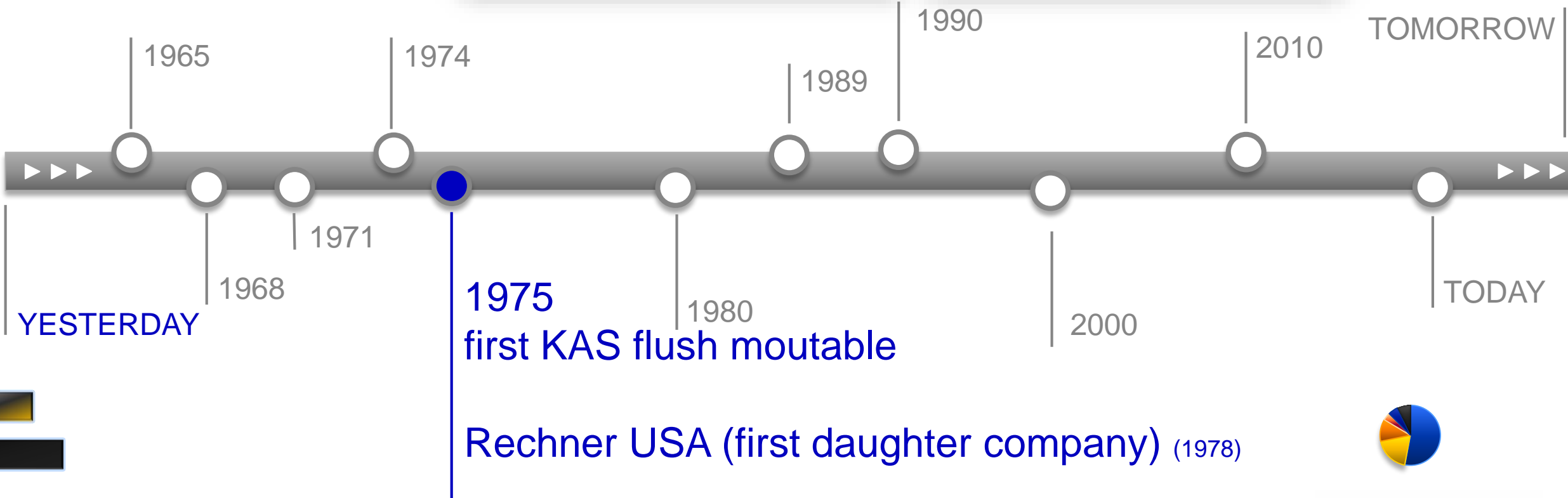
# Development dust explosion protection **StEx**

## Jürgen Kohler became a managing partner

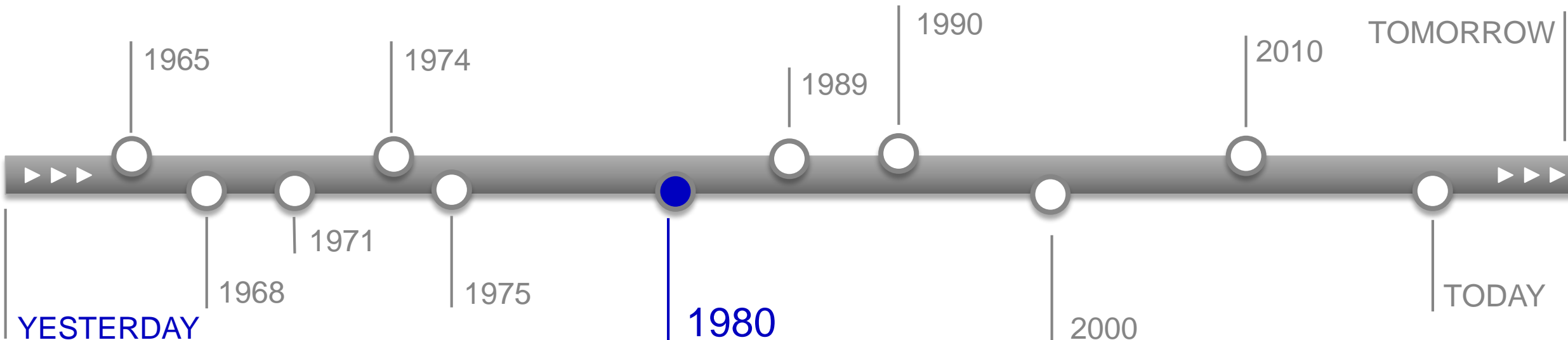


# RECHNER SENSORS





**RECHNER  
SENSORS**



1980

„SUPER SENSOR“ -200° to +250°C

Y-Series pluggable sensor-variation (1986)

Strong growth= new building for

management and development (1981)

KAS MINI (1987)

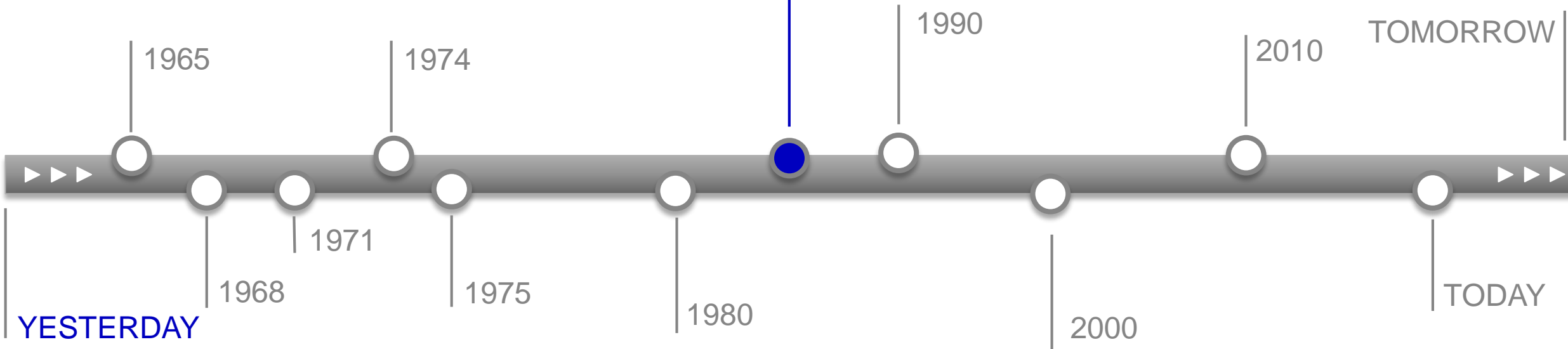


**RECHNER  
SENSORS**

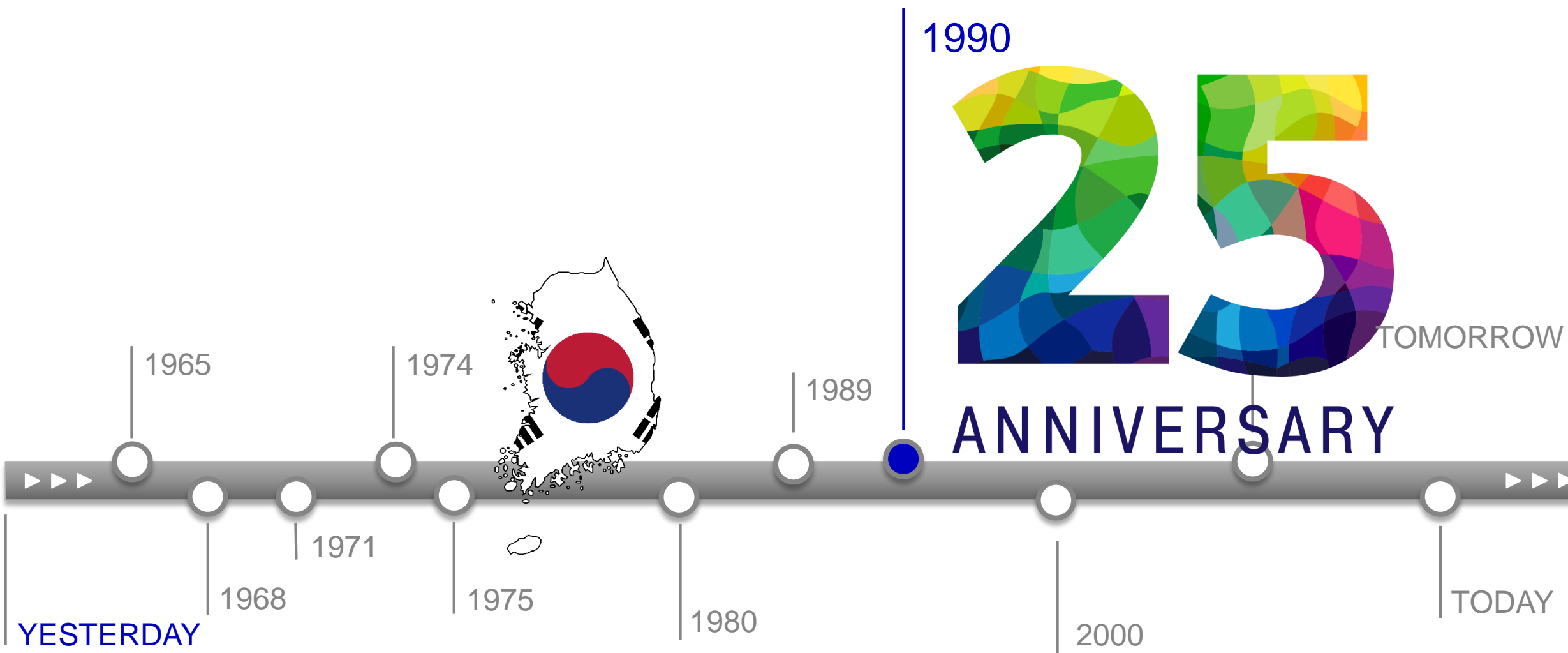
1989

Market launch KAS with  
analog output 4-20 mA

2nd generation of KAS-Mini



**RECHNER  
SENSORS**



**RECHNER  
SENSORS**

1990  
ID Code Traceable



Rechner Korea (founding  
daughter-company)



Certification DIN ISO 9001  
(1996)

Further extension  
(1997)

TrueLevel and PerLevel  
(1997)

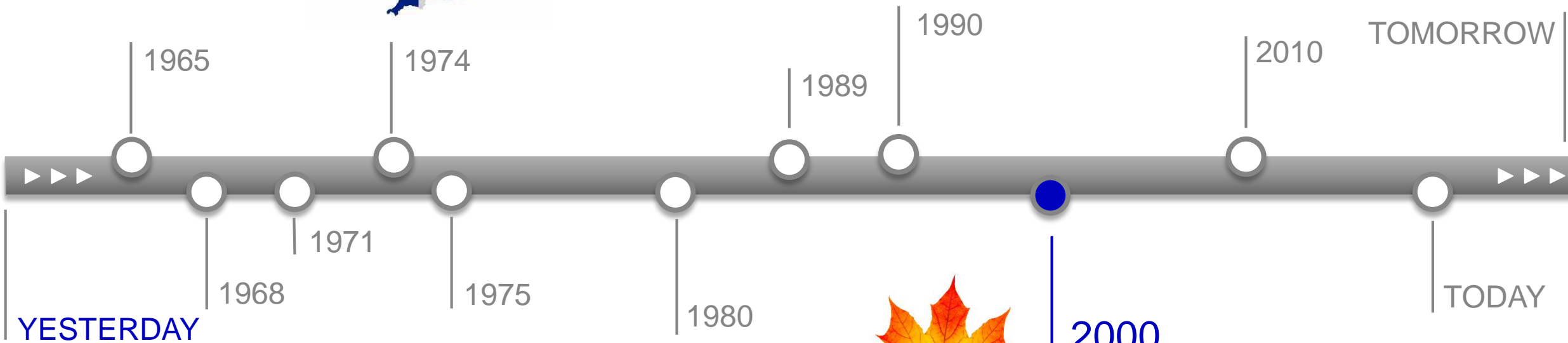


Ex barrier with analog output  
(1994)

Accreditation of the RECHNER-  
test laboratory from DaTech  
(1995)



**RECHNER  
SENSORS**





2000  
Laser ID

Rechner UK  
(Founding)



KXS extreme Range  
(2001)

Norm Line  
(2005)

ROHS  
(2006)

KAS-95  
(2008)

KFX and ATEX approval  
(2002)

Series 26  
(2003)

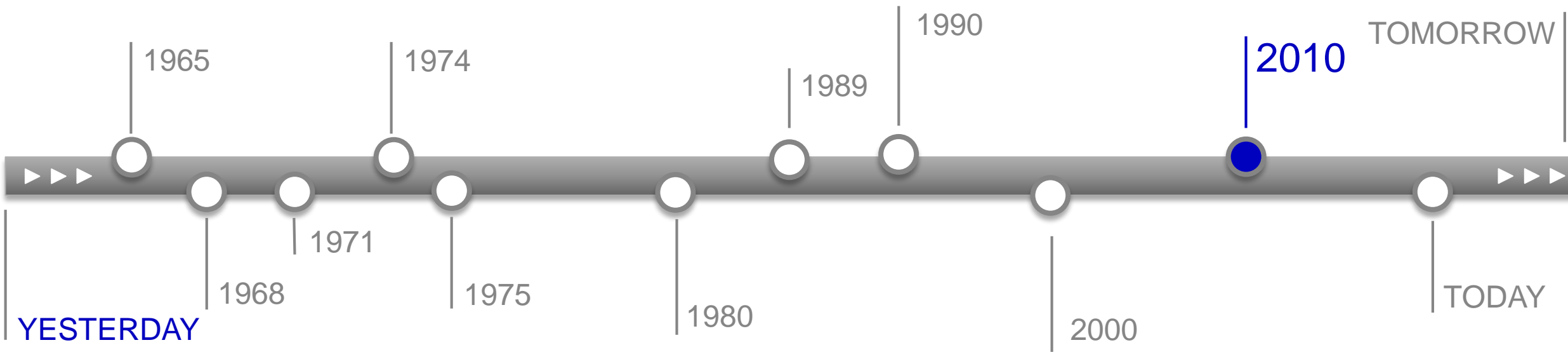
High Performance  
(2004)



Rechner  
Canada  
(fouding  
daughter-  
company)  
(2009)



**RECHNER  
SENSORS**



**RECHNER  
SENSORS**

2010

Rechner China (founding  
daughter-company)

EASY TEACH

Solar Power – green energy  
(2012)



i-Level KFI  
(2013)

KAS-90 AI  
(2014)

Smart Paddle  
and Serie 26  
EHEDG 1/2“  
(2014)

EasyMount, LevelMaster,  
NAMUR Zone 0  
(2012)

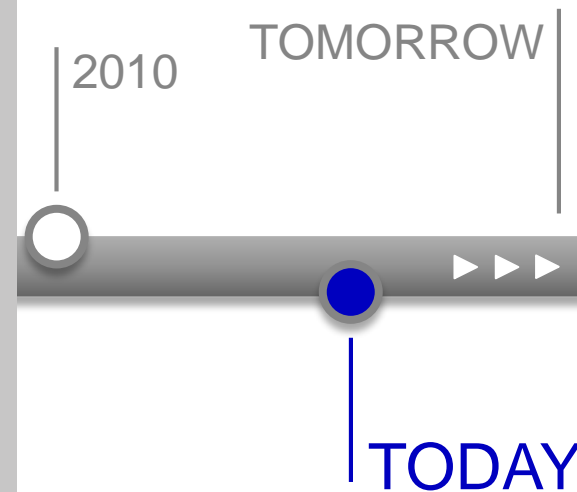
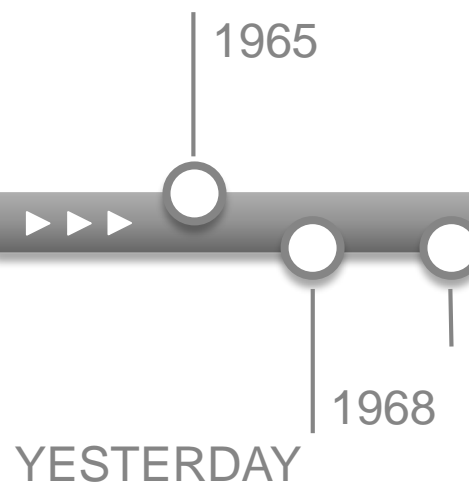
Rebuilding of production  
facilities, new cafeteria  
(2012)



**RECHNER  
SENSORS**

55  
Years  
Jahre  
*2020*

**RECHNER  
SENSORS**



**RECHNER  
SENSORS**

KAS-95 Zone 20  
(2015)

KFW  
(2015)

TRUE LEVEL®  
(2019)

TOMORROW



Blue Series 26  
(2016)

TODAY

LevelMaster XS  
(2017 - 2020)

Federal water act  
WHG  
(2017)



RECHNER  
SENSORS

YESTERDAY

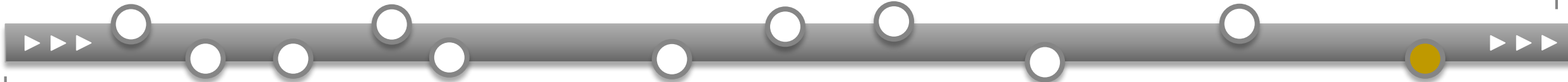


98 employees in Germany

Worldwide 166 employees

Market leader in capacitive  
sensor technology and quality

TOMORROW



YESTERDAY

Capital Investment  
Program: 8 %

TODAY

Program covers more  
than 1,500 sensor types





# 1 Our Company

## RECHNER SENSORS in numbers

### Germany turnover in millions (Euro €)

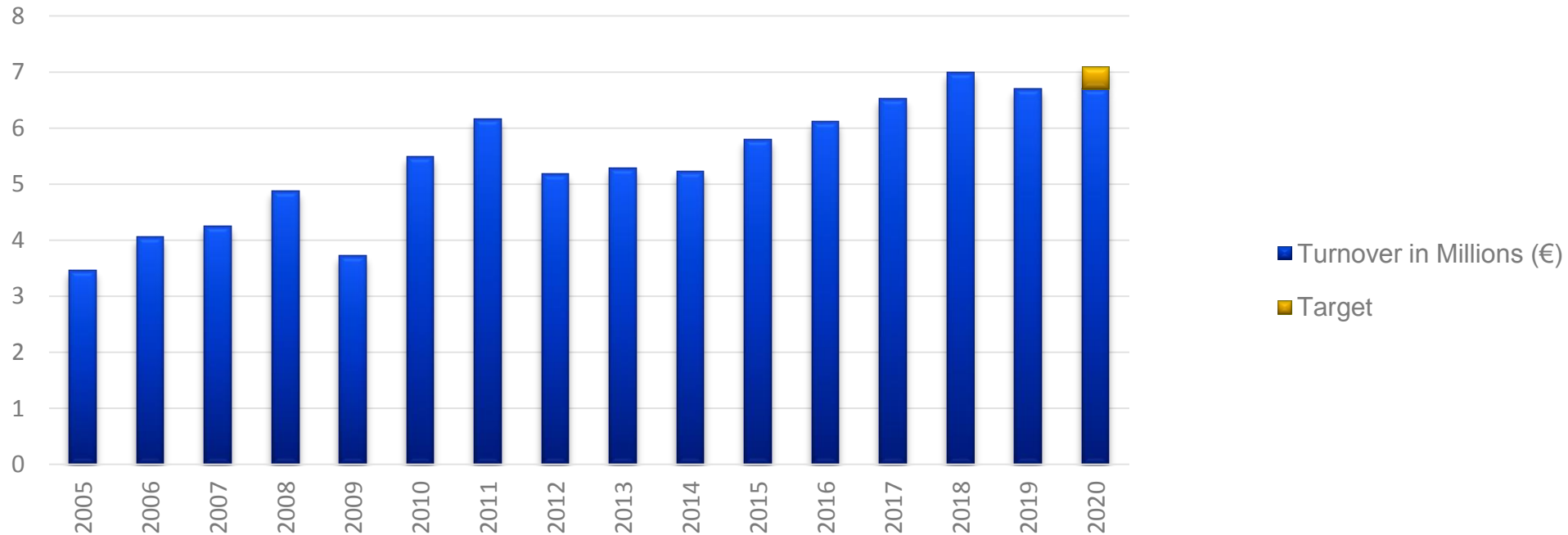
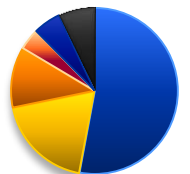


Figure 2: turnover development Rechner Sensors

- Number of produced products in Germany: ca. 250.000 units
- Tax No. VAT ID 111 656137



# 1 Our Company

## RECHNER SENSORS in numbers

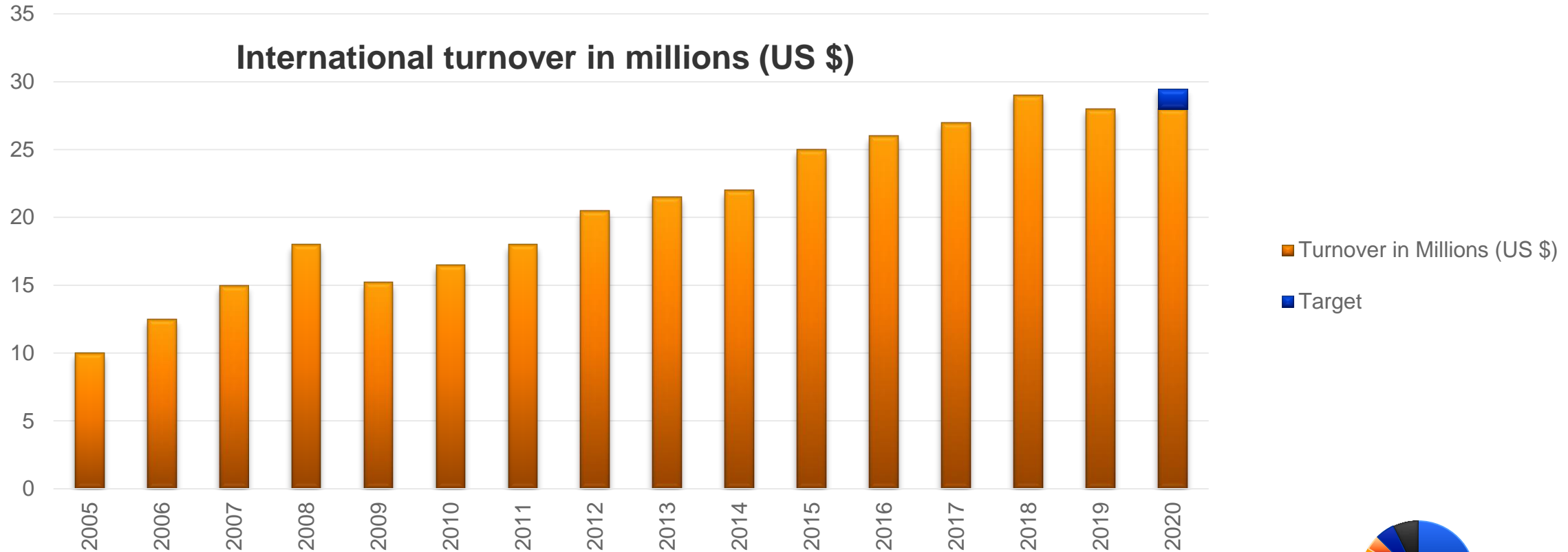
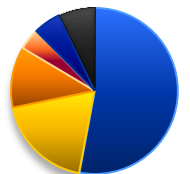


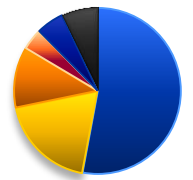
Figure 3: turnover development Rechner Sensors INTERNATIONAL, Target 2019 + 5%



# 1 Our Company

## Organigramm

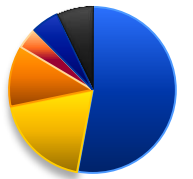
Geschäftsleitung			
Geschäftsführer Dr.-Ing. Armin Kohler		Geschäftsführer Dipl.-Kfm. Achim Rechner	Geschäftsführer Dipl.-Ing. (FH) Jochen Rechner
Qualitätsmanagement			
Dr. Ing. Armin Kohler / Dipl.-Ing.(FH) Jochen Rechner / Dieter Schweizer / Anja Krieger / Dipl.-Ing.(FH) I. Shaikh M.Sc.			
Vertrieb	Entwicklung Konstruktion	Kaufmännische Leitung	Produktion
Marketing Jutta Wodecki Désirée Freeburn	Standardsensoren Dipl.-Ing.(FH) I. Shaikh M.Sc.	Beschaffung Peter Wollbrecht	Arbeitsvorbereitung Sonja Ast Stefan Oberkirch
Auftragsabwicklung Jutta Wodecki Dieter Schweizer	3 Elektroden Prinzip Dip.-Ing. (FH) Eduard Bischler	FIBU Ute Brückmann Kristina Weber	Fertigung Sonja Ast Stefan Oberkirch
Vertrieb Inland Dieter Schweizer Stefan Steinbach	Platinenlayout Wolfgang Schiller	Personalwesen Ute Brückmann Kristina Weber	ATEX / IEC EX Dr.-Ing. Armin Kohler Dipl.-Ing. (FH) Jochen Rechner Dipl.-Ing.(FH) I. Shaikh M.Sc.
Vertrieb International Jutta Wodecki	Softwareentwicklung Dipl.-Ing. (FH) Martin Sünkeler	Lager und Versand Peter Wollbrecht	Prüflaboratorium Jens Held



# 1 Our Company

## Our Target: from market leader to world market leader

- We solve the detection tasks for which there are no standard solutions on the market
- Our know-how is the guarantee for our products with the latest technology
- Today we are developing tomorrow's sensors
- Together with international committees (ZVEI) we ensure that standards like functionality, quality and exchangeability are guaranteed
- Our Technology position > 2 dozen patents



## 2 Customer Focus

Customer proximity guaranteed

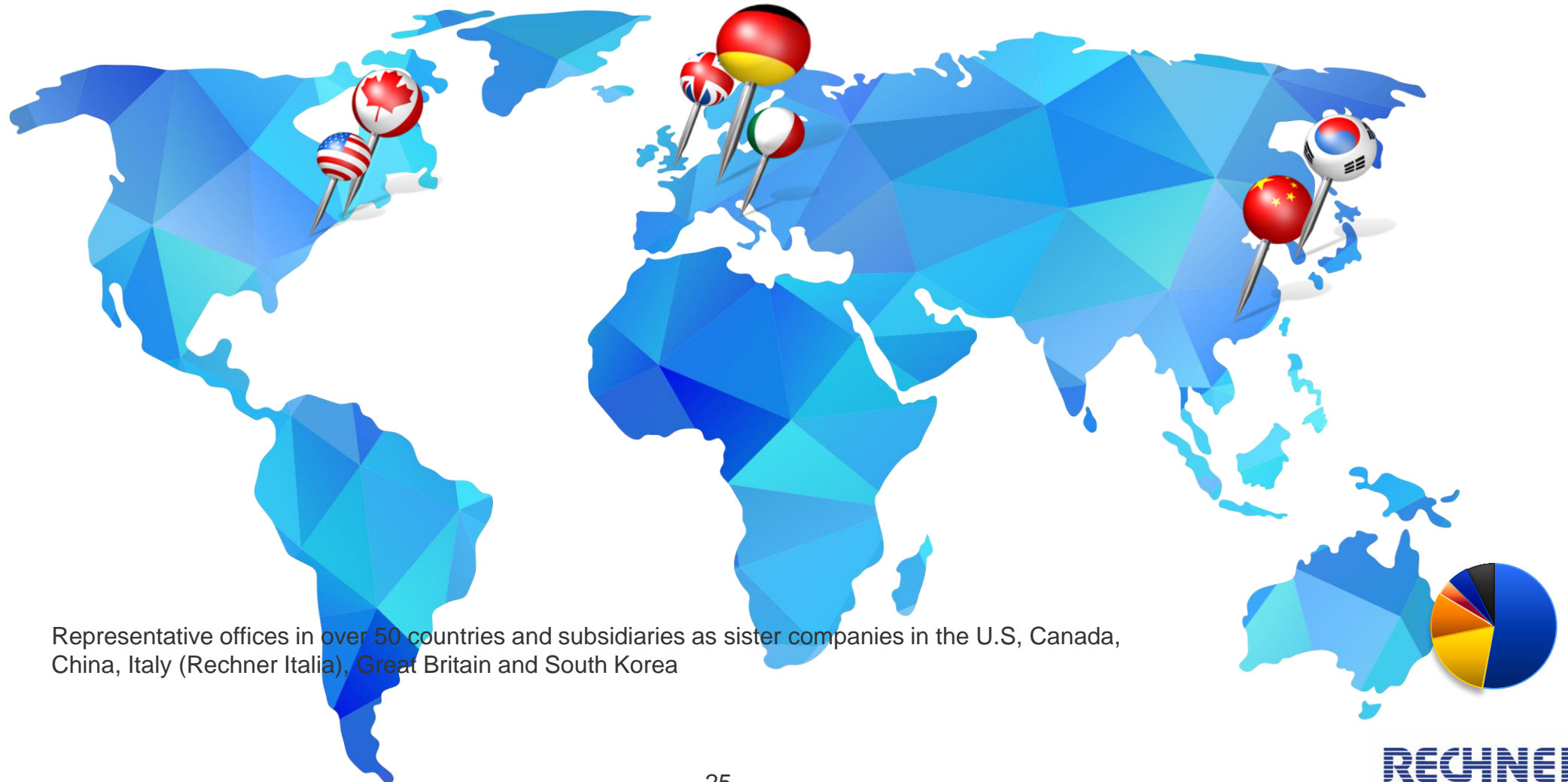


Figure 4: Representative offices in over 50 countries and subsidiaries as sister companies in the U.S, Canada, China, Italy (Rechner Italia), Great Britain and South Korea

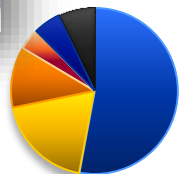
## 2 Customer Focus

### Customer orientation is our main priority

We place the highest demands on our application engineers and distributors. Dynamism, open-mindedness, competence and reliability are an absolute must. With training we ensure that all are up to date.

„We develop sensors according to the wishes of our customers – perfect fit for their application.“

CEO Dr. Ing. Armin Kohler



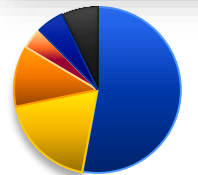


# 2 Customer Focus

**Together always one step ahead!**

Sensing tasks are always individualized and...

- ...demand adequate solutions
- ...that is why the dialogue with our user is a basic prerequisite
- ...finding optimal solutions for your individual needs
- ...meeting our customer's needs as quickly as possible
- ...customer satisfaction is our ultimate goal

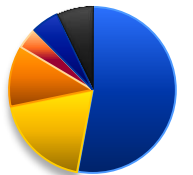


# 2 Customer Focus

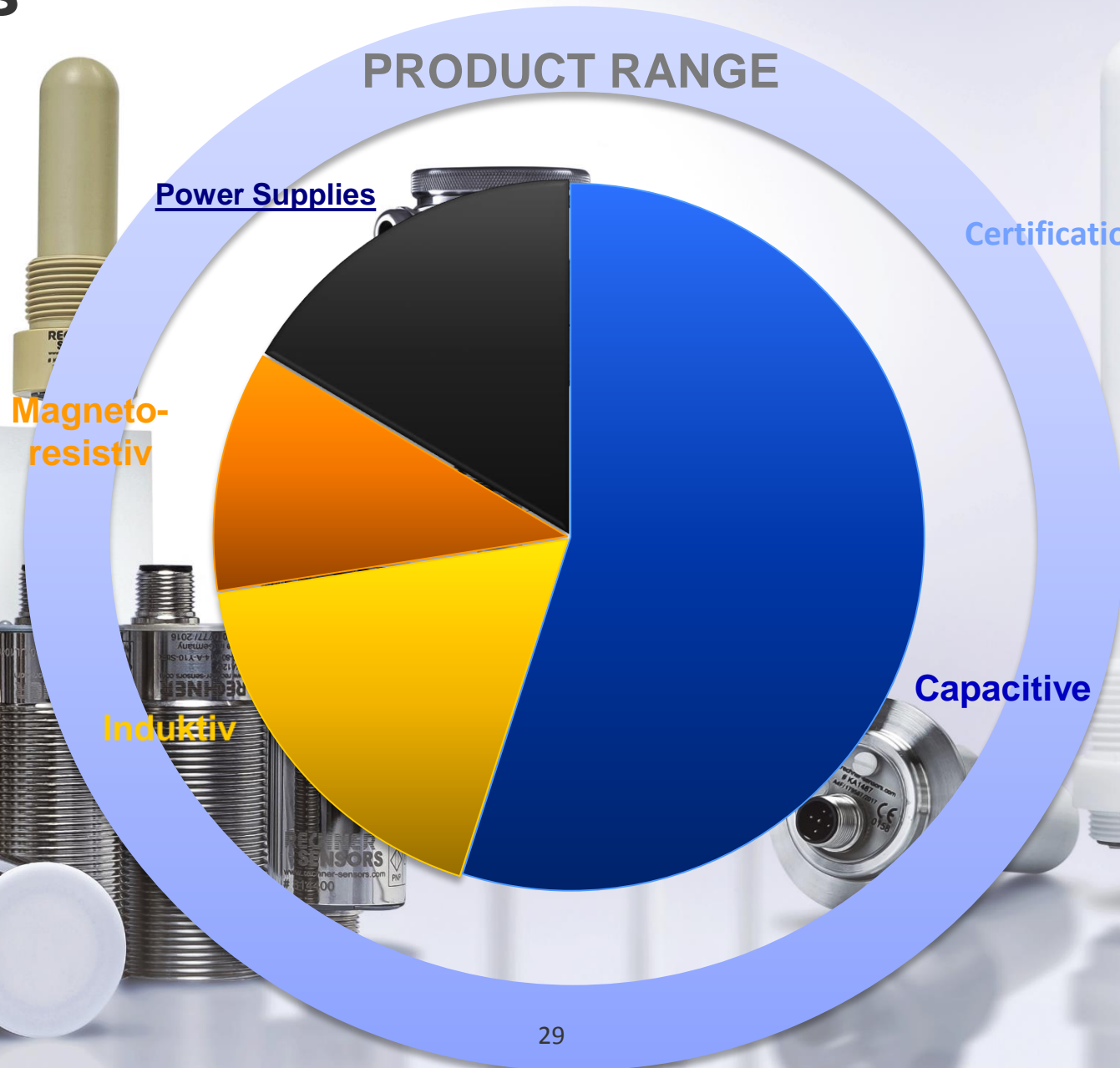
**Together always one step ahead!**

Client's approval for our tireless actions gives us

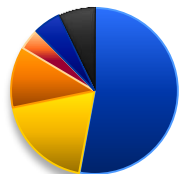
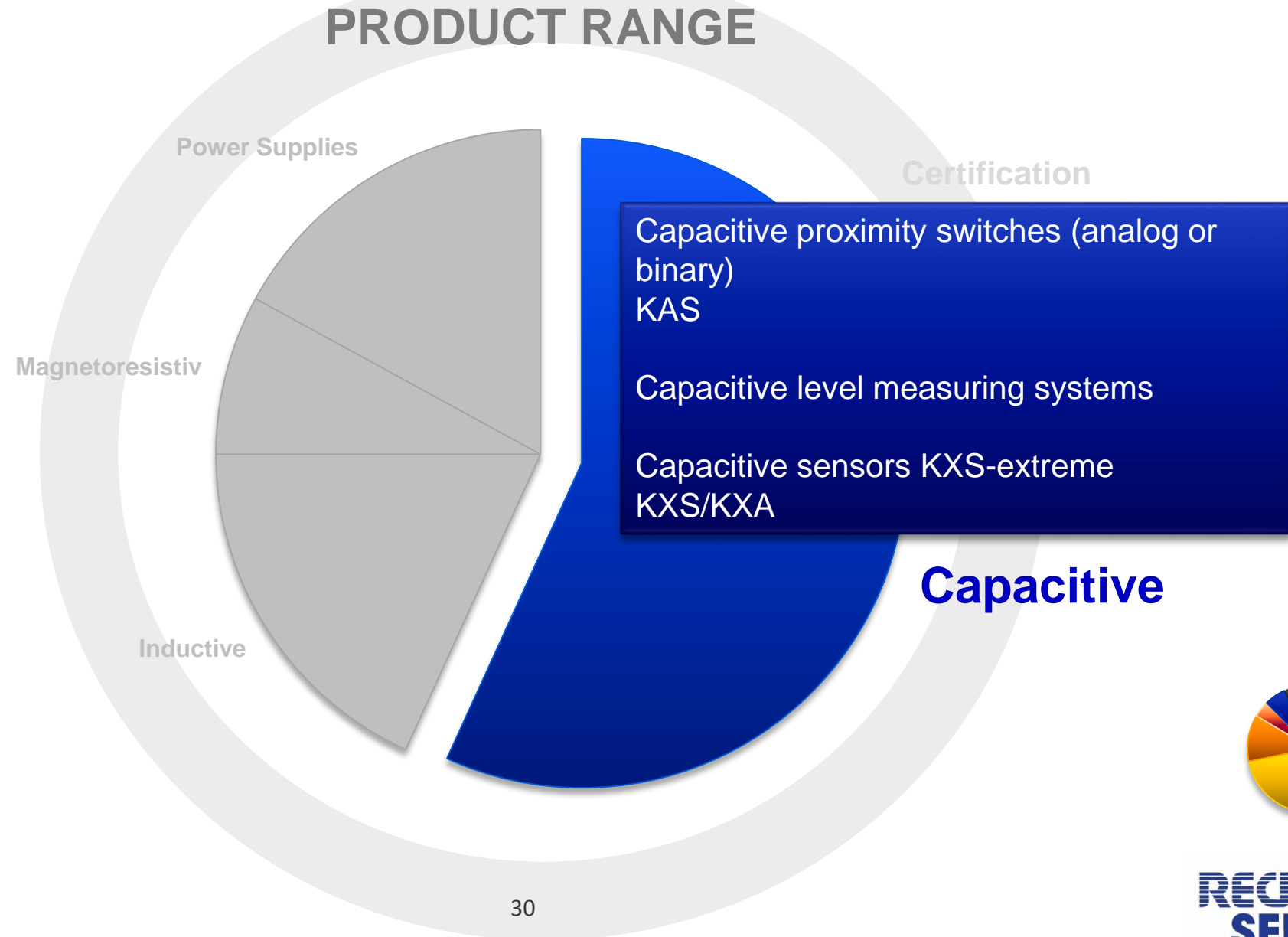
- ...fresh impetus
- ...the ability to solve and recognize detection problems
- ...the knowledge developing our sensors further



# 3 Products



# 3.1 Capacitive Sensors



# 3.1 Capacitive Sensors

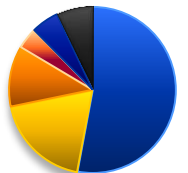
## Capacitive sensors our special field!

- Working with enthusiasm for more then 50 years we have achieved and kept our leading position in the market
- Research and development are essential tools for success
- The high target is to provide the solutions for the clients specific and individual detection tasks
- Level measuring systems – specific positons and continual monitoring in conjunction with the measuring level

**33 %  
market share**

Every 3rd capacitive proximity switch in the world  
is made by RECHNER SENSORS

Each manufactured plastic part came in contact  
with a Rechner Sensor during the development  
process (statistic ☺)





# 3.1 Capacitive Sensors

## Capacitive Sensors the all-rounder



Classic

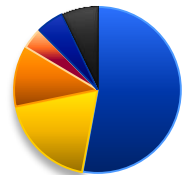


Level  
measurment  
- advanced



More than  
level

- They detect all products with  $\epsilon_r > 1$ , equally whether it is in liquid, granulate, powder, paste or solid form
- Great product variety – more than 1,000 different models of capacitive sensors are available
- ATEX





# 3.1 Capacitive Sensors

## Capacitive Sensors the all-rounder



Classic

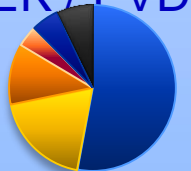
Standard level control  
(example: min / max regulation)

Housing:  
Ø 8 mm to Ø 64 mm

Operating voltage:  
10 VDC to 250 VAC

Operating distance:  
0 mm to 50 mm

Housing material:  
Stainless steel / Brass  
PPO / PA / PVC  
PTFE / PEEK / PVDF



# 3.1 Capacitive Sensors

## Capacitive Sensors

the all-rounder

**PER** **LEVEL®**

**TRUE** **LEVEL®**

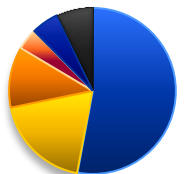


Level  
measurement  
- advanced

**LevelMaster**

**i-LEVEL**

- Level detection for increased requirements e.g. higher temperature range or adhesion (advanced – higher technical demand)  
→ ON / OFF
- Multiple KF / KI – available in ATEX



# 3.1 Capacitive Sensors

Capacitive Sensors  
the all-rounder

Level  
measurement  
- advanced

**PER** **LEVEL**®

- → binary (1 to 4 switching points)

**TRUE** **LEVEL**®

- → analog

Housing:  
Ø 10 mm, 16 mm

Probe length:  
Up to 2000 mm

Operating voltage:  
24 VDC

Housing material:  
Stainless steel (Head) / GFK  
PEEK / PVDF

Permitted ambient temperature:  
- 70°C bis + 250°C



# 3.1 Capacitive Sensors

## Capacitive Sensors the all-rounder

Level  
measurment  
- advanced

S26  
Extra Smart  
ATEX

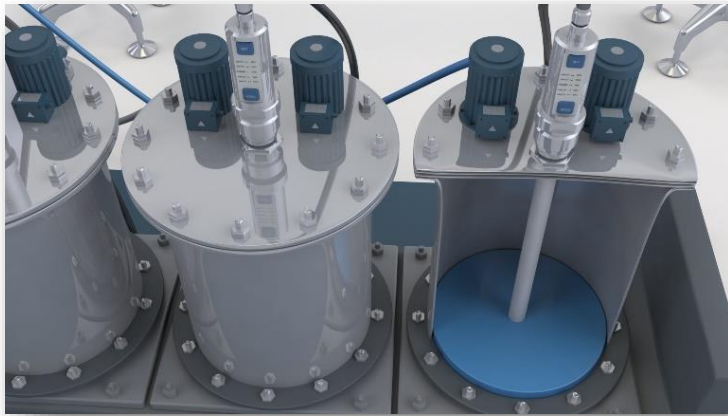
# LevelMaster



# 3.1 Capacitive Sensors

## Capacitive Sensors the all-rounder

Level  
measurment  
- advanced

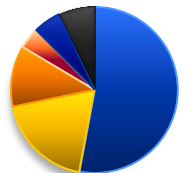


**i-LEVEL<sup>+</sup>**

### i-Level – Capacitive level measurements

- With 1,2,3 or 4 measuring points or analogue measuring area
- Probe length up to a maximum 2,000 mm
- KFI / KFW

**i-LEVEL**



**RECHNER  
SENSORS**

# 3.1 Capacitive Sensors

## Capacitive Sensors the all-rounder

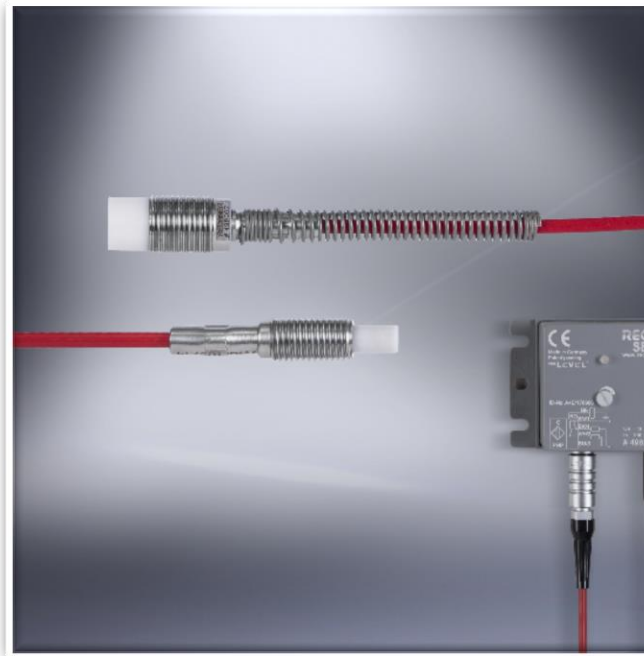
### KXS

#### capacitive sensors extreme

Capacitive sensors with extreme long sensing distances in spite of small dimensions

(X= extreme )

Level  
measurment  
- advanced



Increased requirement due to  
temperature and wide detection range

Housing:  
Ø 5 mm to Ø 32 mm

Operating voltage:  
10 VDC to 250 VAC

Operating Distance:  
0 mm to 120 mm

Housing material:  
Stainless Steel / PTFE  
PEEK / PVDF / PPO

Permitted ambient temperature:  
- 70°C to + 250°C

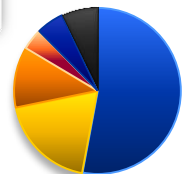
# 3.1 Capacitive Sensors

## Capacitive Sensors the all-rounder

- flush KAS
- switching and analog

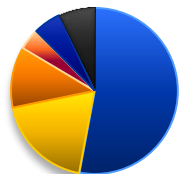
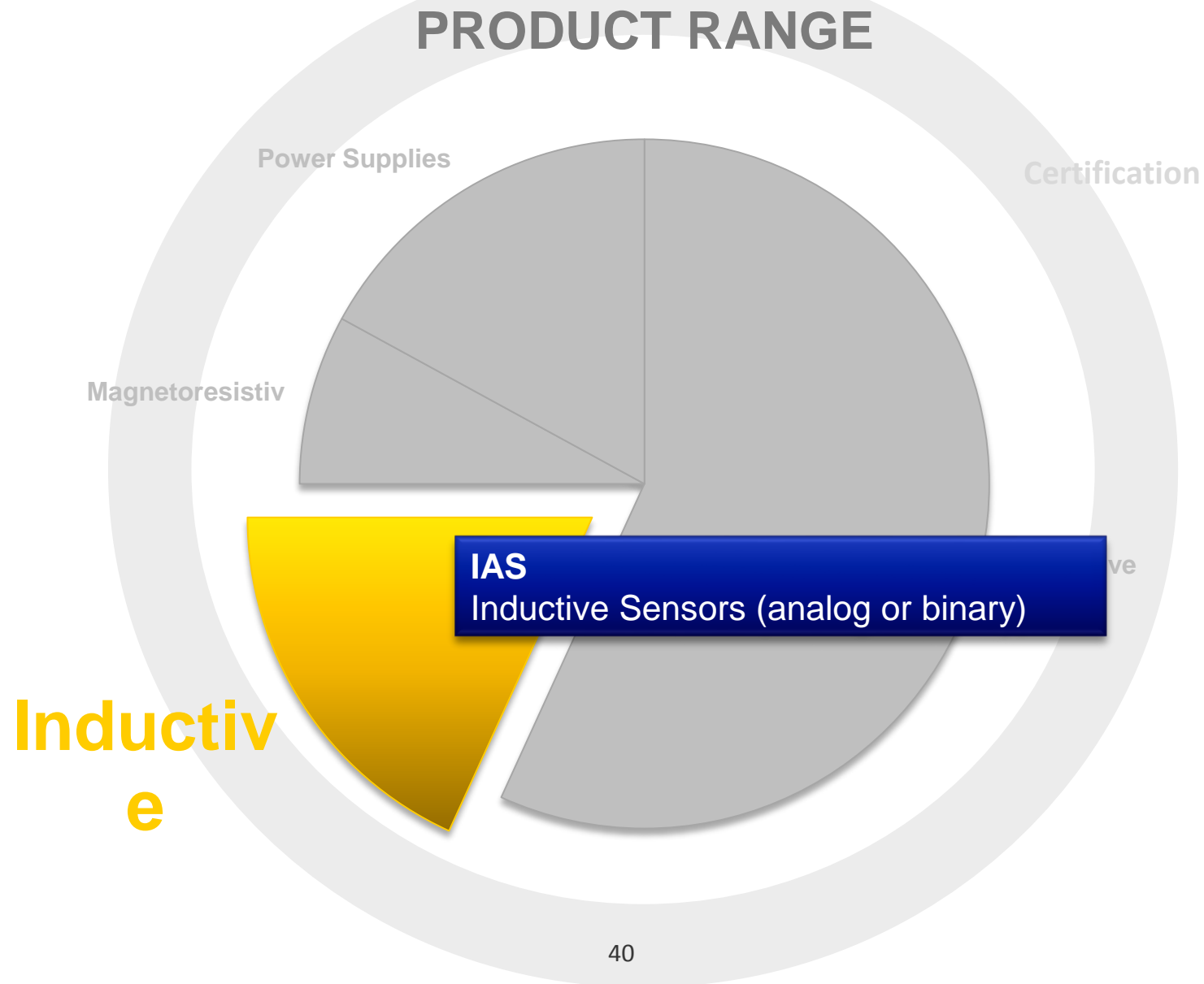


More than  
level



**RECHNER  
SENSORS**

## 3.2 IAS – Inductive Sensors





## 3.2 IAS – Inductive Sensors



### IAS Inductive Sensors

- For detection of metallic objects
- Binary and analog
- Also in ATEX

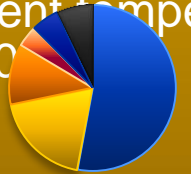
Housing:  
Ø 4 mm to Ø 64 mm

Operating voltage:  
10 VDC to 250 VAC

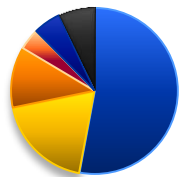
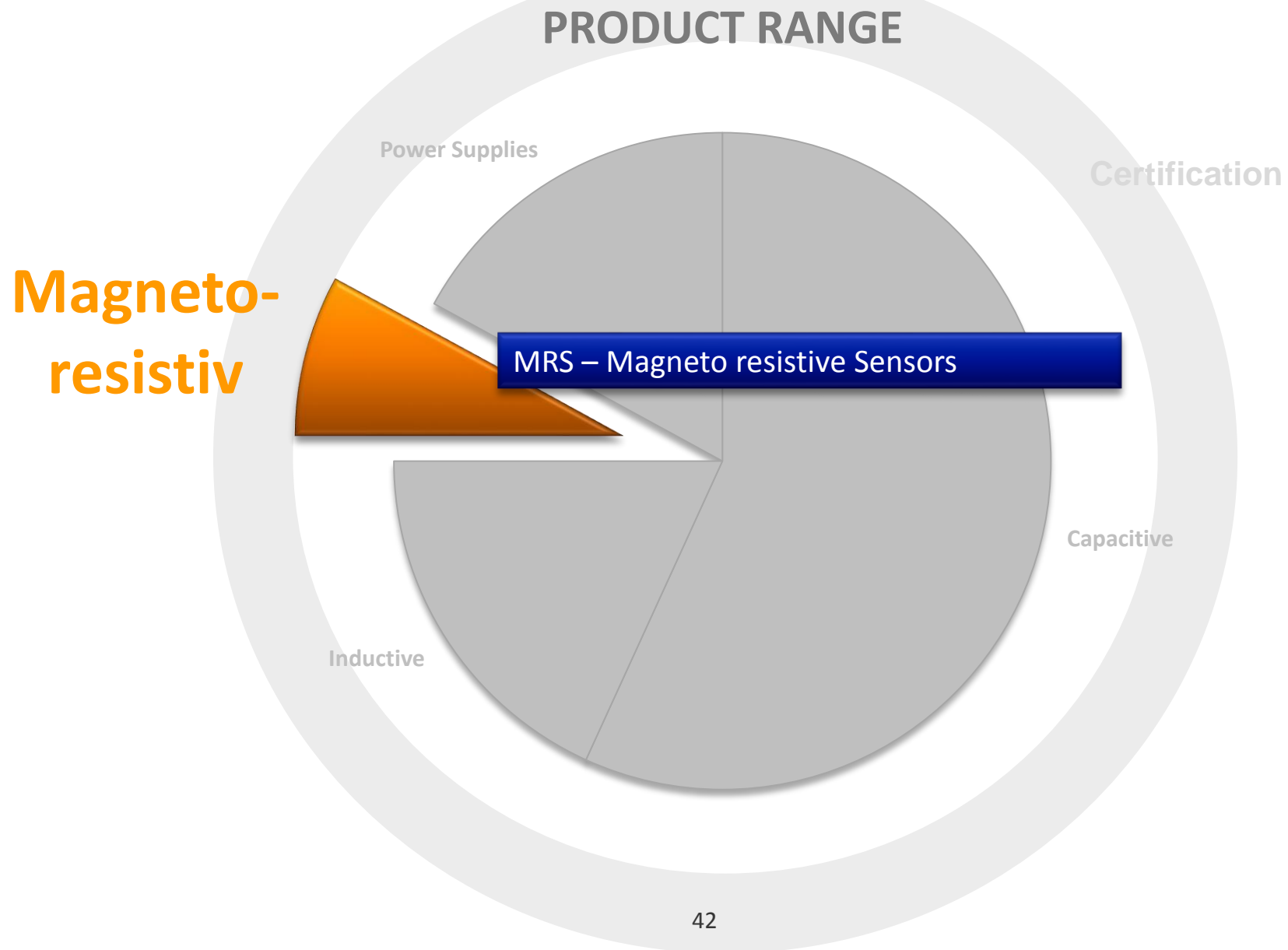
Operating distance:  
0 mm bis 60 mm

Housing material:  
Stainless steel / brass  
PPO / PA / PVC  
PTFE / PEEK / PVDF  
ATEX

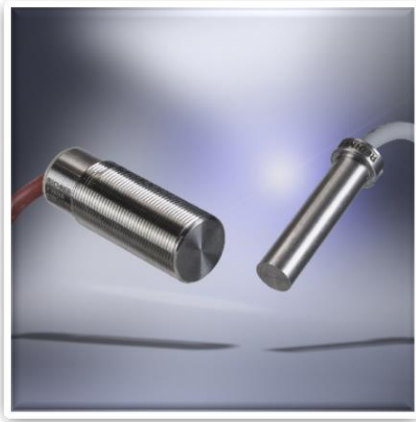
Permitted ambient temperature  
- 70°C bis + 250°C



## 3.5 MRS – Magneto Resistive Sensors



## 3.3 MRS – Magneto Resistive Sensors



### **MRS** **Magneto resistive Sensors**

- Detect the movement of ferromagnetic materials, by means of the change of the magnetic flow
- Available with (series 350) or without (series 300) detection of direction of rotation
- Suitable for rotary speed sensing, for detection of gearwheels and for standstill control
- Robust stainless steel body, max. switching frequency of 0,5 Hz to 25 kHz

Housing:  
M18 & M12

Operating voltage:  
10 VDC to 35 VDC

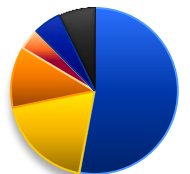
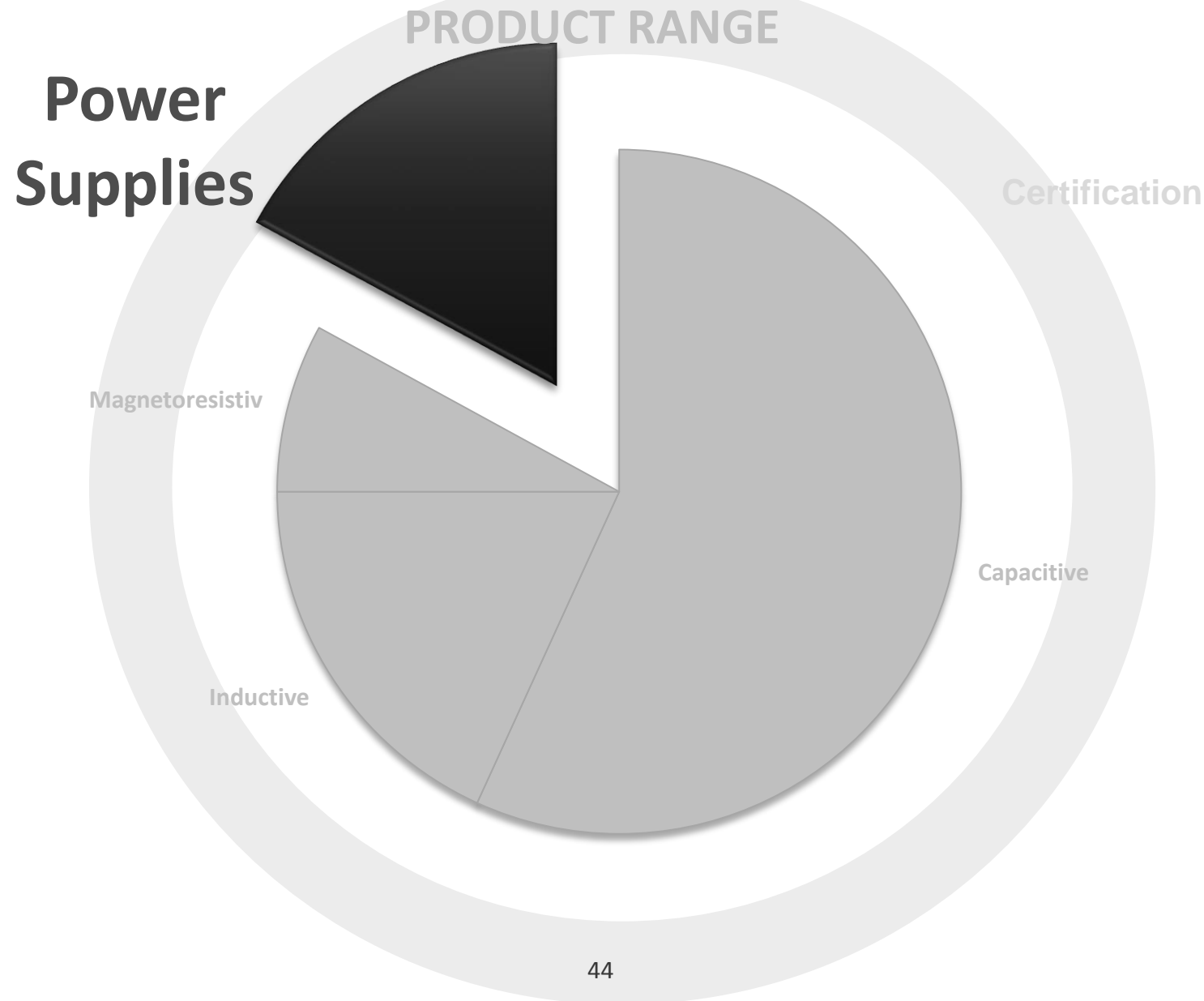
Switching frequency:  
Modul 1 to Modul 4

Housing material:  
Stainless steel / PPO  
PP/ PEEK

Permitted ambient temperature:  
- 40°C bis + 85°C / 100°C



## 3.4 Power Supplies



## 3.4 Power Supplies



### Power supplies

- min/max changeable
- Time delay

### Transistor amplifiers

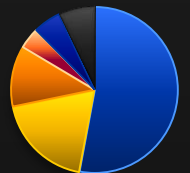
- Inductive and capacitive sensors, as MRS, for ATEX and IECEx zone 0, 1 or 2 or zone 20,21 and 22
- Applicable in zone 2



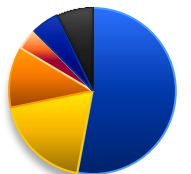
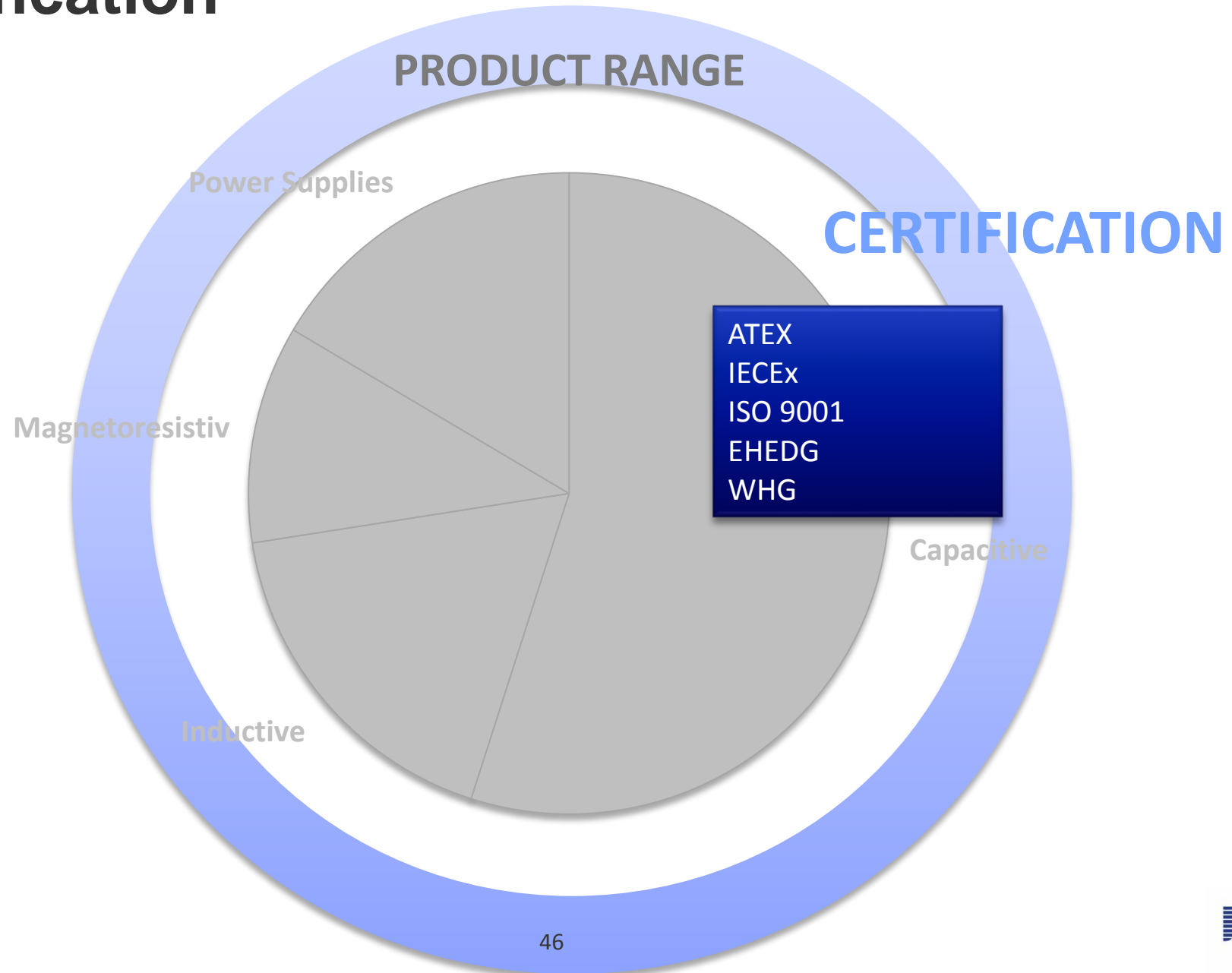
Operating voltage:  
24 V AC/DC to 110 VAC / 250

Output function :  
1 to 3 potential-free changeover

Permitted ambient temperature  
- 25°C to 80°C



## 3.5 Certification



## 3.5 Certification

### ATEX

- Units are available for areas with danger of gas explosion (Zone 0,1 and 2)
- areas with danger of dust explosion Zone 20, 21 and 22
- **atmosphere explosive**

### IECEX

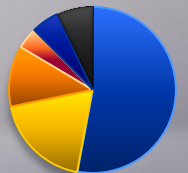
- **I**nternational **E**lectrotechnical **C**ommission for **explosive** atmosphere
- Norms and standards for the international electrical engineering



## 3.5 Certification

EHEDG

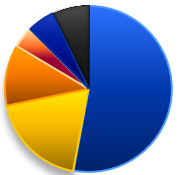
- **European Hygienic Engineering and Design Group**
- Food industry
- Microbiological safety and quality
- Warranty of cleanability
- Hygienic processadaption



# 4 Quality Assurance



MADE IN GERMANY



**RECHNER  
SENSORS**

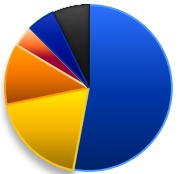
# 4 Quality Assurance

## Quality Assurance - a basic principal

- One of the basic principles of RECHNER's corporate philosophy → far reaching management
- QM System according to DIN 9001-2008 → our existing quality assurance



- Our testing laboratory works in accordance with DIN EN 17025



**RECHNER  
SENSORS**

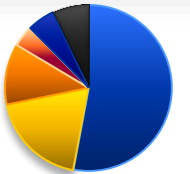
# 4 Quality Assurance

## Type testing

→ quality assurance

→ Final inspection

- At regular intervals - guarantees a high grade of reliability for our sensors
- Tests contain climate tests, the control of the degree of protection, the tensile load of the cables etc.
- Most modern equipment and systems
- **Every** sensor produced in Germany has to pass a function control



**RECHNER  
SENSORS**



# 4 Quality Assurance

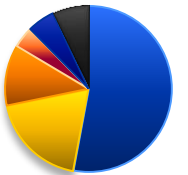
## Laser-marking

- Laser-marking with RECHNER ID-number for clear identification and traceability
- Non-detachable labels
- Meets regulations of explosive protection

**100 % tracability**

**100 % tested – every sensor**

*„Best regards to your risk management.  
Quality Made in Germany“* Rechner Sensors CEO

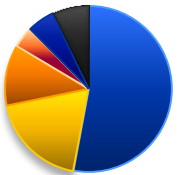


**RECHNER  
SENSORS**

## 4 Quality Assurance



- ROHS-conformity – environmental protection means both the implementation of environmentally-friendly production methods as well as the use of safe materials
- Recommendation of the “ZVEI” for voluntary self obligation
- Code of Conduct (Coc)
- Recommendation of the “ZVEI” for voluntary self obligation



# 5 Tomorrows Highlights

Capacitive Sensors with IO Link



**EasyMount**

2 in 1 sensor







*Your Rechner Team*