Product Training Slip Ring Assemblies 5100

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2. Main Characteristics
3. Options / Accessories
4. Product Documentation
5. Key Figures
6. Competitors
7. Application examples

Rotary Joints – general overview

CoE Germany

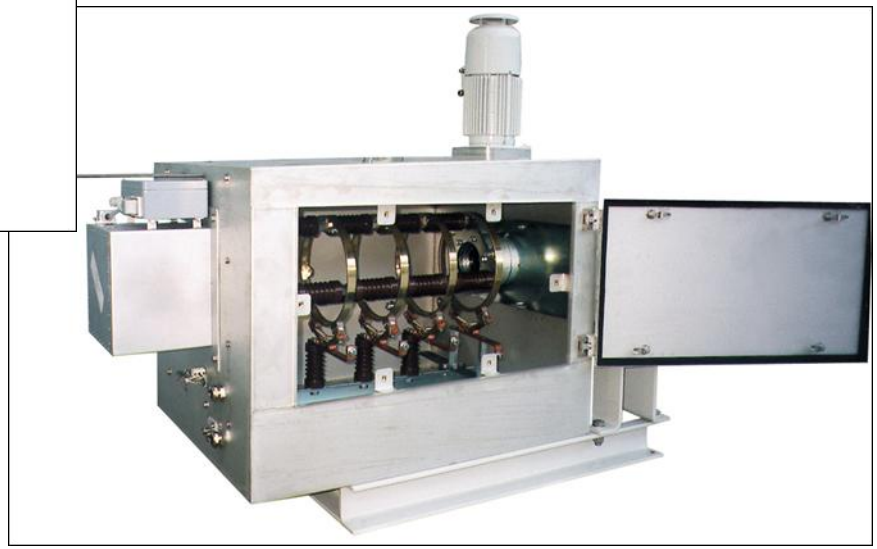
Slip Ring Assemblies

- Low voltage SRA
- Medium voltage/high voltage SRA for motorized cable reels

Rotary Joints

- Fiber optic rotary joints
- Rotary joints for fluids and gases
- Accessories

- This presentation is limited to the standard low voltage SRA program 5100



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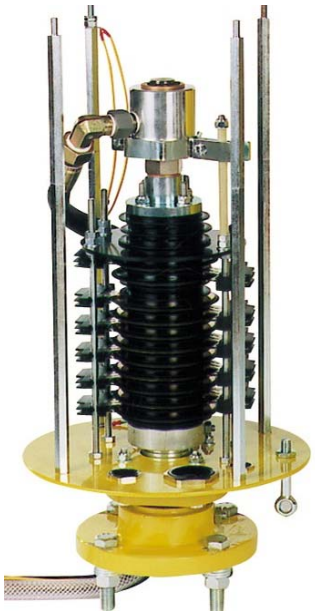
Main characteristics of SRA – program 5100

Standard program 5100

- Energy and data/signal transmission between a stator and a rotor
- Different environmental conditions like salt water, dust and dirt, standard temperature range -20°C … 60°C
- Amperage A= mA … 400A
- Voltage U= 1V … 1.000V
- Some types are useable for data transfer, max. data rate 500kBit (0 … 20mA, 1 … 10V)
- All rings are available as stand alone solution (with or without housing)
- Possibility to combine different sizes of rings (energy + signal/data transmission)
- Also a combination with a rotary joint for fluids is possible



Main characteristics of SRA – program 5100

Size overview

Standard-Program				
Typ	Amperage [A]	Voltage [V]	Ring-Ø [mm]	Remarks
ES/GS 30	**mA - 16**	**400 (415)**	**30**	**1)**
ES/GS 45/1	**mA - 25**	**400 (415)**	**45**	**1)**
ES/GS 45/2	**47**	**1000**	**45**	**-**
ES/GS 45/3	**25**	**1000**	**45**	**-**

1) = possibility to add multi-layered rings for data transmission

ES30

GS30

GS45

Size overview

Standard-Program				
Typ	Amperage [A]	Voltage [V]	Ring-Ø [mm]	Remarks
ES/GS 18	**mA - 25**	**630 (690)**	**85**	**1)**
ES/GS 13	**50**	**1000**	**85**	**-**
ES/GS 15	**90**	**1000**	**85**	**-**
ES/GS 16	**100**	**1000**	**110**	**-**
ES/GS 19	**150**	**1000**	**132**	**-**
ES/GS 21	**250**	**1000**	**210**	**-**
ES/GS 29	**400**	**1000**	**210**	**-**

[1)] = possibility to add multi-layered rings for data transmission

ES18

GS18

ES13 – ES15

GS13 - GS15

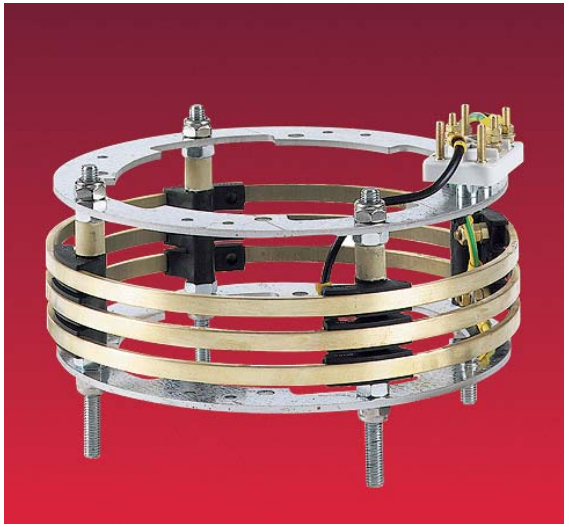
ES16 – ES19 – ES21 – ES29

GS16 – GS19 – GS21 – GS29

Size overview

Standard-Program				
Typ	Amperage [A]	Voltage [V]	Ring-Ø [mm]	Remarks
ES/GS 260	**mA - 47**	**1000**	**260**	**1) 2)**

1) = possibility to add multi-layered rings for data transmission
2) = special slip ring body for tube passage
ES = Ø max. 160mm
GS = Ø max. 145mm



Size overview

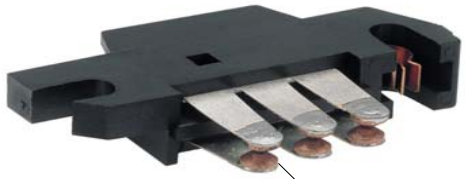
Standard-Program				
Typ	Amperage [A]	Voltage [V]	Ring-Ø [mm]	Remarks
GS 323	**400**	**1000**	**320**	**1)**

[1)] = used for big quantity of rings and several combinations of rings

Main characteristics of SRA – program 5100

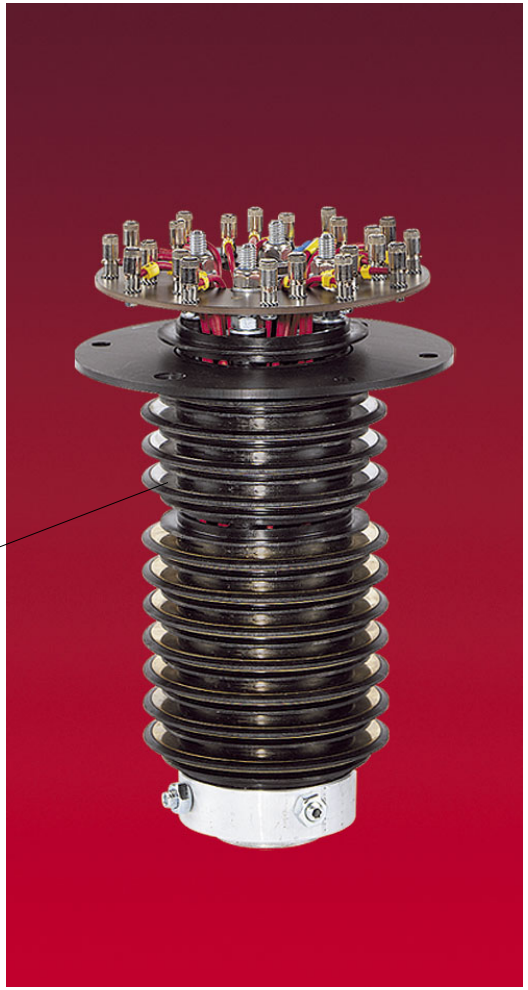
Slip rings for data transfer

- Type 30, 45/1, 18, 170-285 can be delivered with multilayer coated rings and special brushes for data transmission
- The SRA's are tested for a data rate up to 500kBit
- Field experience: Also higher data rates are possible, but we can't quantify it at the moment



For data transmission: special silver brushes

For data transmission: multilayer coated rings



Main characteristics of SRA – program 5100

Combinations of different sizes of SRA

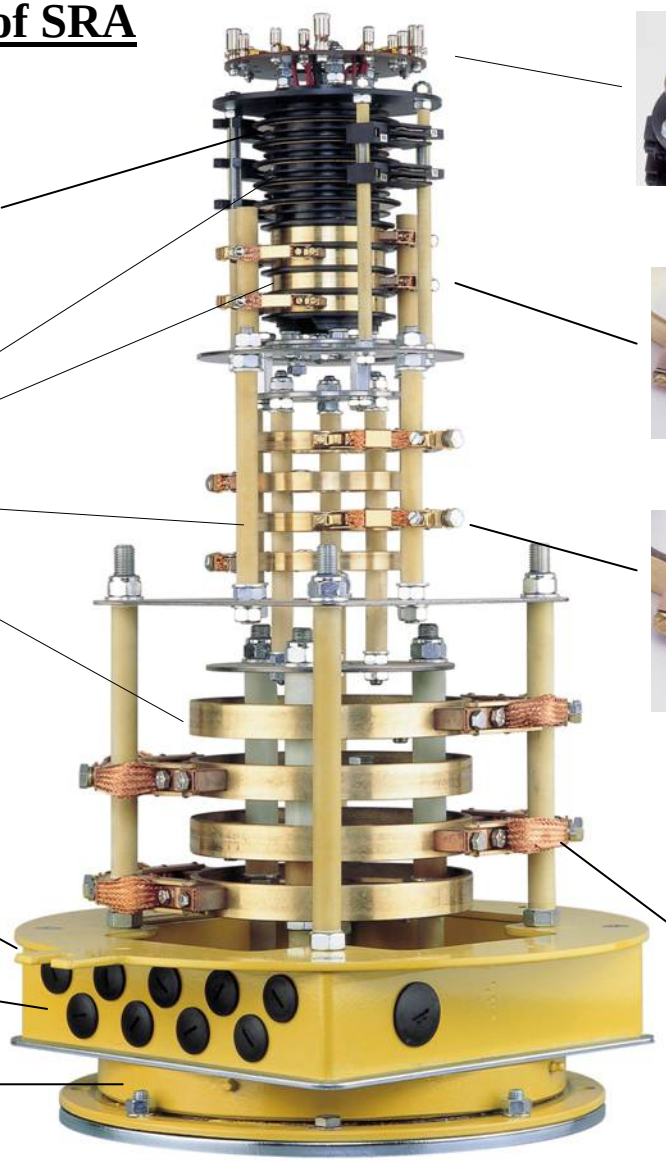
Wiring on a clamping board

Current collector (Type 18, 25A or data and signal transmission)

Current collector (Type 15, 90A)

Slip rings

Current collector (Type 19, 150A)



Drive arm for the slip ring assembly

Entries for wiring

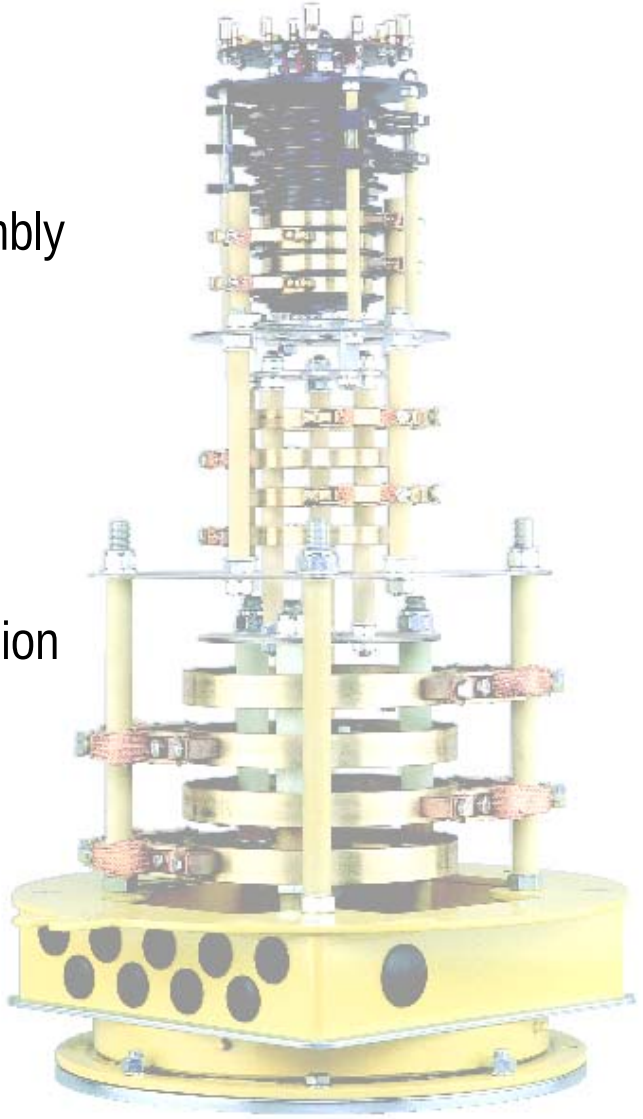
Ball steering rim

Current ollector (Type 21, 250A)

Main characteristics of SRA – program 5100

Which sizes of SRA‘s could be combined?

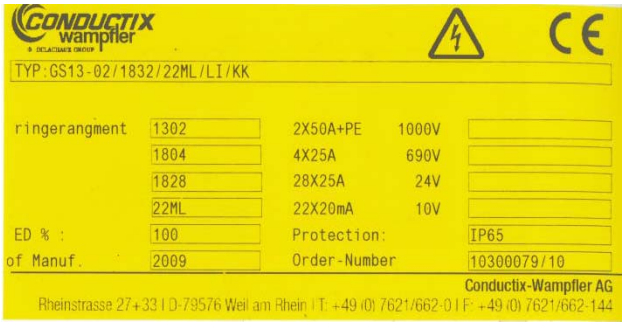
- 45/1 (ML and MS) 45/2 / 45/3
  - Max quantity of rings limited by the stability of the ring assembly
- 29 / 21 / 19 / 16 / 15 / 13 / 18
  - Each combination possible also with rings for data transmission



Slip Ring Assembly - classification

GS 13 - 02 / 18 32 / 22ML / LI/KK

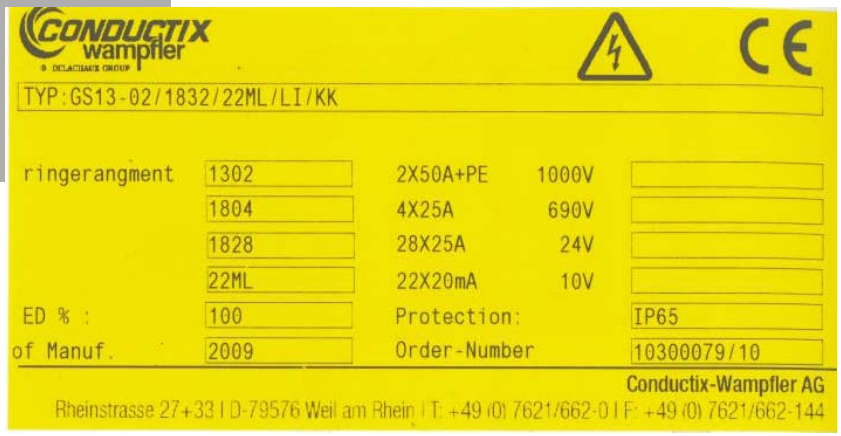
- With housing/without housing
- 1. Type of slip ring
- Number of rings
- 2. Type of slip ring
- Number of rings
- Number of multi layer coated rings
- Accessories



Slip Ring Assembly - classification

GS 13 - 02 / 18 32 / 22ML / LI/KK

- GS: Slip ring body with housing (ES: Slip ring body without housing)
- 13-02: Slip ring type 13 (I=50A), 2 rings
- 1832: Slip ring type 18 (I=25A), 32 rings
- 22ML: Slip ring type 18 with multi layer coating for data transmission, 22 rings
- Accessories: Li – strand wiring/pre-wiring
  KK – Clamping box
  HZ – heating
  DG – phase rotation indicator
  DD – Single channel/multi channel rotary joint



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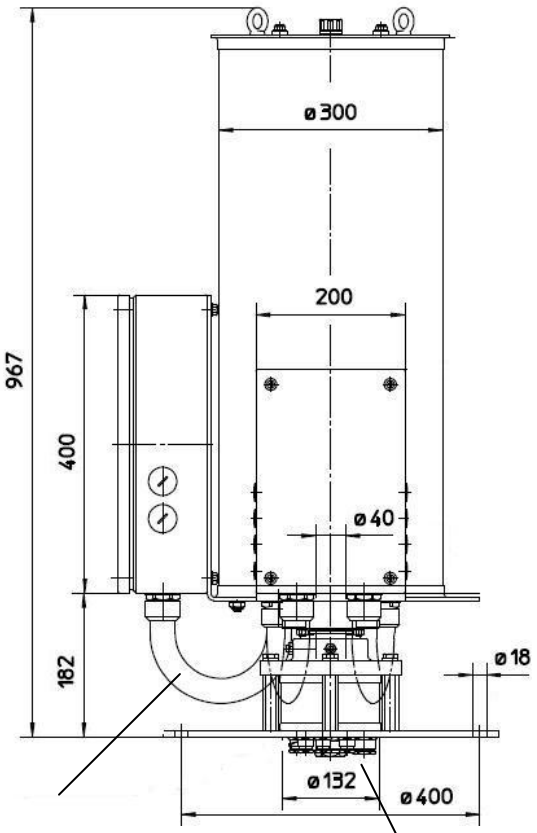
Options and accessories



Pre-wiring ring side to a terminal cabinet

Cable glands for connection cables

- Heating in the housing
- Air ventilation plug
- Pre wiring according to customers requirements on flange and ring side possible
- External terminal cabinets
- Special coating for aggressive environment, e.g. waste water treatment, salt water
- Door to open the slip ring housing sidewise
- Sight window

Air ventilation plug

Door to open the slip ring housing

Pre-wiring flange side

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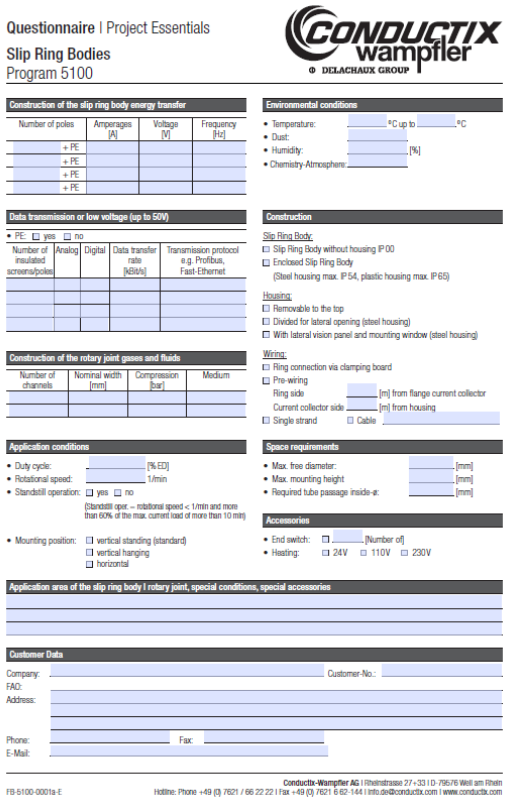
Slip Ring Assembly – documentation

- Product information: Available as printed version and download from the homepage
- Catalogue: Available as printed version and download from the homepage
- Questionnaire: Available as printed version (catalogue) and download from the homepage
- Operating and maintenance instructions, available in several languages
- Product presentations available on request


Questionnaire | Project Essentials

Slip Ring Bodies
Program 5100

CONDUCTIX wampfler
DELACHAUX GROUP

Construction of the slip ring body energy transfer

Number of poles	Amperages [A]	Voltage [V]	Frequency [Hz]
+ PE			
+ PE			
+ PE			
+ PE			

Environmental conditions

- Temperature: °C up to °C
- Dust:
- Humidity: [%]
- Chemistry-Atmosphere:

Data transmission or low voltage (up to 50V)

- PE: yes no

Number of insulated screens/poles	Analog	Digital	Data transfer rate [kBit/s]	Transmission protocol e.g. Profibus, Fast-Ethernet

Construction

Slip Ring Body:
- Slip Ring Body without housing IP 00
- Enclosed Slip Ring Body (Steel housing max. IP 54, plastic housing max. IP 65)

Housing:
- Removable to the top
- Divided for lateral opening (steel housing)
- With lateral vision panel and mounting window (steel housing)

Wiring:
- Ring connection via clamping board
- Pre-wiring
  - Ring side [m] from flange current collector
  - Current collector side [m] from housing
  - Single strand Cable

Construction of the rotary joint gases and fluids

Number of channels	Nominal width [mm]	Compression [bar]	Medium

Application conditions

- Duty cycle: [% ED]
- Rotational speed: 1/min
- Standstill operation: yes no

(Standstill oper. = rotational speed < 1/min and more than 60% of the max. current load of more than 10 min)

- Mounting position: vertical standing (standard), vertical hanging, horizontal

Space requirements

- Max. free diameter: [mm]
- Max. mounting height [mm]
- Required tube passage inside-ø: [mm]

Accessories

- End switch: [Number of]
- Heating: 24V 110V 230V

Application area of the slip ring body / rotary joint, special conditions, special accessories

Customer Data

Company: Customer-No.:
FAO:
Address:
Phone: Fax:
E-Mail:

FB-5100-0001a-E

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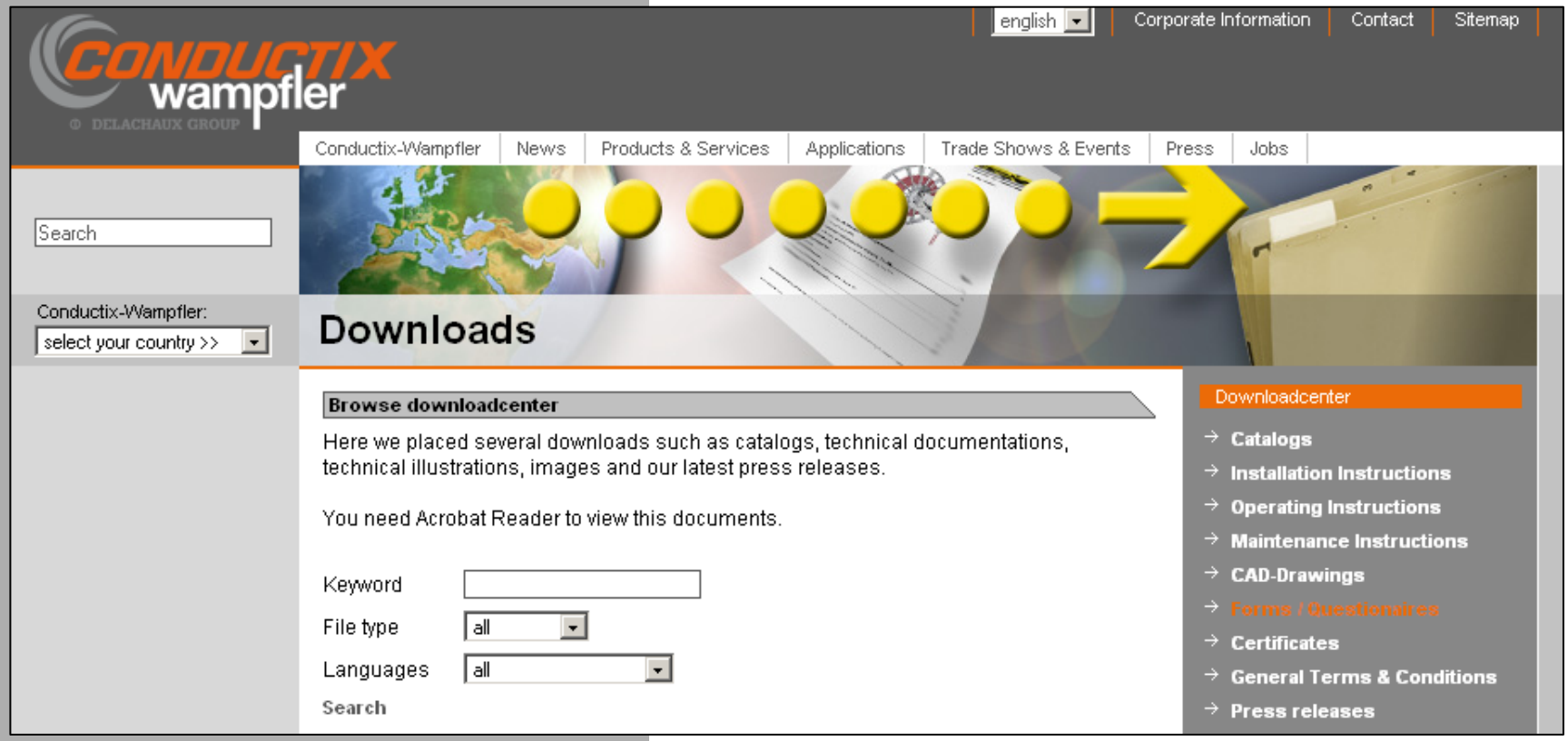
Slip Ring Assembly – documentation

- Slip ring assembly catalogue
- Questionnaire for SRA

You can download the current documents from the homepage



Configuration/set up: Questionnaire

Construction of the slip ring body energy transfer

Number of poles	Amperages [A]	Voltage [V]	Frequency [Hz]
+ PE			
+ PE			
+ PE			
+ PE			

Environmental conditions

- Temperature: _____ °C up to _____ °C
- Dust: _____
- Humidity: _____ [%]
- Chemistry-Atmosphere: _____

Data transmission or low voltage (up to 50V)

- PE: ☐ yes ☐ no

Number of insulated screens/poles	Analog	Digital	Data transfer rate [kBit/s]	Transmission protocol e.g. Profibus, Fast-Ethernet

Construction

Slip Ring Body:

☐ Slip Ring Body without housing IP 00

☐ Enclosed Slip Ring Body
(Steel housing max. IP 54, plastic housing max. IP 65)

Housing:

☐ Removable to the top

☐ Divided for lateral opening (steel housing)

☐ With lateral vision panel and mounting window (steel housing)

Wiring:

☐ Ring connection via clamping board

☐ Pre-wiring

Ring side _____ [m] from flange current collector

Current collector side _____ [m] from housing

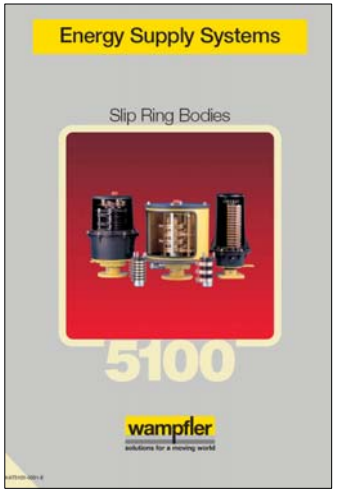
☐ Single strand ☐ Cable _____

Construction of the rotary joint gases and fluids

Number of channels	Nominal width [mm]	Compression [bar]	Medium

For more details:

Take site 24 of catalogue 5100 into consideration



Configuration/set up: Questionnaire

Application conditions

- Duty cycle: _____ [% ED]
- Rotational speed: _____ 1/min
- Standstill operation: ☐ yes ☐ no

(Standstill oper. = rotational speed < 1/min and more than 60% of the max. current load of more than 10 min)

- Mounting position: ☐ vertical standing (standard)
  ☐ vertical hanging
  ☐ horizontal

Space requirements

- Max. free diameter: _____ [mm]
- Max. mounting height _____ [mm]
- Required tube passage inside-ø: _____ [mm]

Accessories

- End switch: ☐ _____ [Number of]
- Heating: ☐ 24V ☐ 110V ☐ 230V

Application area of the slip ring body I rotary joint, special conditions, special accessories

Customer Data

Company: _____ Customer-No.: _____

FAO: _____

Address: _____

Phone: _____ Fax: _____

E-Mail: _____

For more details:

Take site 24 of catalogue 5100 into consideration

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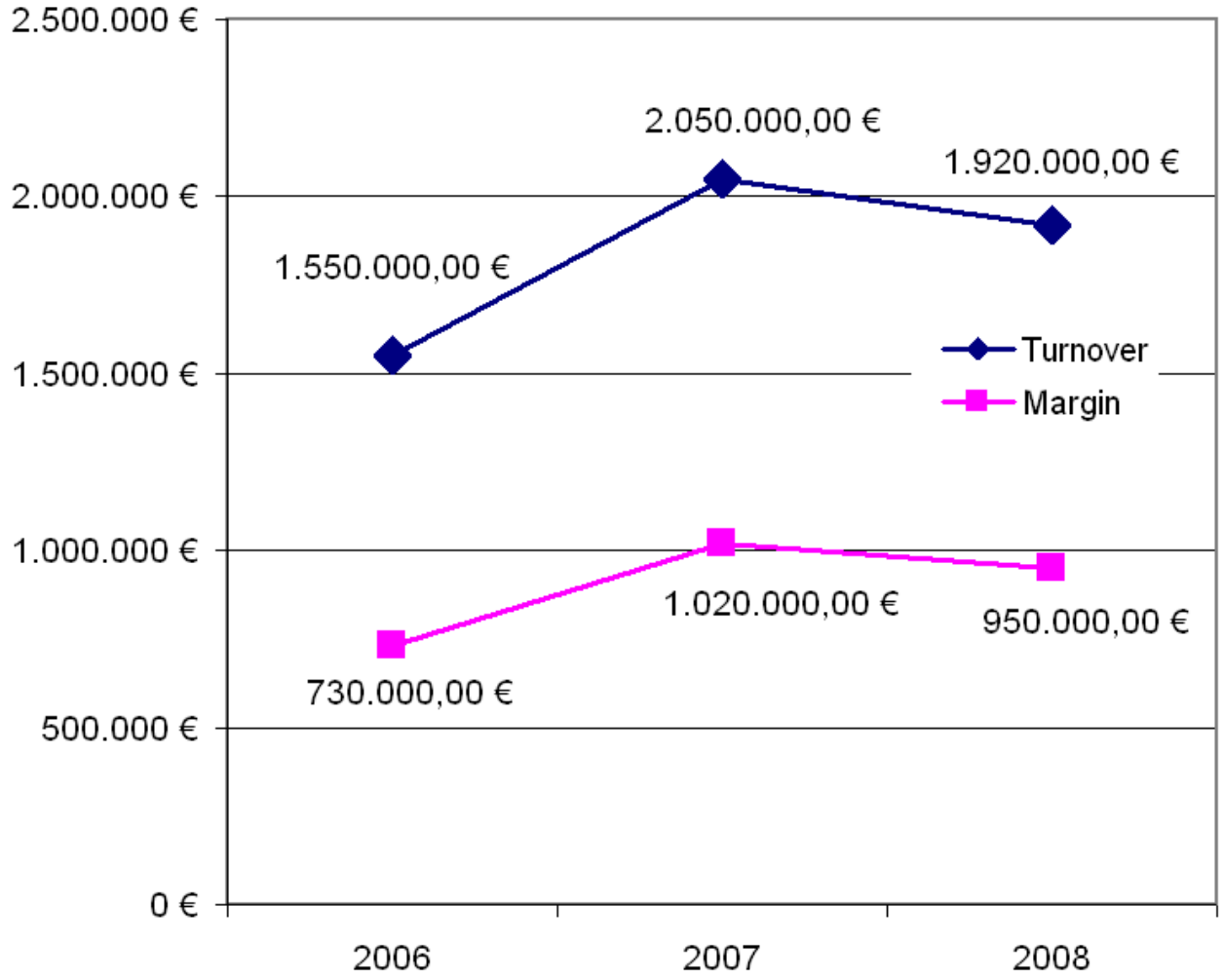
Key figures 2006 - 2008



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Competitors in the market

- MORGAN-REKOFA → www.morgan-rekofa.de
- STEMMANN → www.stemmann.de
- LABEL SAS → www.label.fr
- BGB Engineering ltd. → bgbengineering.com
- Schleifring&Apperatebau GmbH → www.schleifring.de
- Dietrich Bürstenhalter GmbH → www.carbonelorraine.com
- Deutsche Carbone AG → www.carbonelorraine.com
- Moog GmbH → www.moog.from
- Walter Kraus Elektrotechnik GmbH → www.kraus.de
- Gesellschaft für Antriebstechnik mbH

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Typical applications for SRA

Circular scraper bridges in waste water treatment plants

- Rotates without interruption
- No fast movements
- Transmission of energy and signals/data
- Very aggressive environment
- Enclosed standard SRB, housing made of stainless steel or painted with C5M

Typical applications for SRA

Revolving stages in theatres

- Only a few revolutions per day
- Transmission of energy and signals/data
- Stand still operations
- Customized SRB, combination of different types, housing made of steel, divided into 2 parts

Typical applications for SRA

Carousels – amusement rides

- Rotate all the day, deceleration and acceleration
- Transmission of energy and signals/data, sometimes also fluids and gases
- Very high safety regulations

Typical applications for SRA

Wrapping machines – process automation

- Rotate all the day, stop&go
- Transmission of energy and signals/data
- Standard SRB without housing

Typical applications for SRA

Rotating die-casting equipment – process automation

- Rotate all the day, stop&go
- Transmission of energy and signals/data
- Customized SRB with housing made of steel

Typical applications for SRA

Building machines, earth mover – industrial automation

- Rotate all the day, stop&go
- Stand still operations
- Transmission of energy and signals/data, also of fluids
- Customized SRB

thanks for your attention