FUSION!
Electromechanics meet electronics

MEDISCHE ELEKTRONICA
Ontwikkelingen, normen en toepassingen

6 februari 2024 | Van der Valk Vianen

BINDER

- binder, headquartered in Neckarsulm, Germany, is a **family-owned company** shaped by traditional values and one of the leading specialists for circular connectors. Since 1960, binder has been synonymous with the highest quality.

- The **binder group** includes the binder headquarters, nine sales offices, seven production sites, two system service providers as well as an innovation and technology center.

- We work with further distribution partners on six continents and employ around **2,000 people worldwide**.

- In addition to Germany, **our sites** are located in Austria, China, France, Hungary, the Netherlands, Singapore, Sweden, Switzerland, the UK, and the USA.

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CORE COMPETENCIES binder group

binder cable assemblies	Cable assembly, installation and production engineering
binder electronic manufacturing services	Assemblies, electronic components and systems
binder electronic solutions	Electronics development and production of electronic assemblies
binder galvanic surfaces	Surface finishing
binder ITZ Innovations- & Technologie Zentrum	Research and printed electronics
binder introbest	Assemblies, electronic components and systems
binder precision parts ag	Turned parts
binder solutions	Customer-specific system solutions
macrocast	Die-cast components
mpe GARRY	Stamped and bent components

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AGENDA

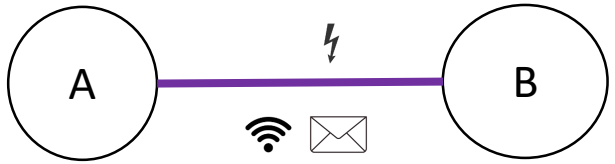
1. Introduction
2. Concept study
3. NFC Technology
4. Application examples

HISTORY

STATE OF THE ART

FUTURE

IDEA



- Power is transmitted via cable
  - More power can be transmitted because every contact can be used for transmission
  - The start of the power transmission is controlled

- Early data transfer before the connector is connected
  - Control of valid connections
  - Improvement of security – error prevention
  - Flexible choice of data

CONCEPT STUDY - PURPOSE

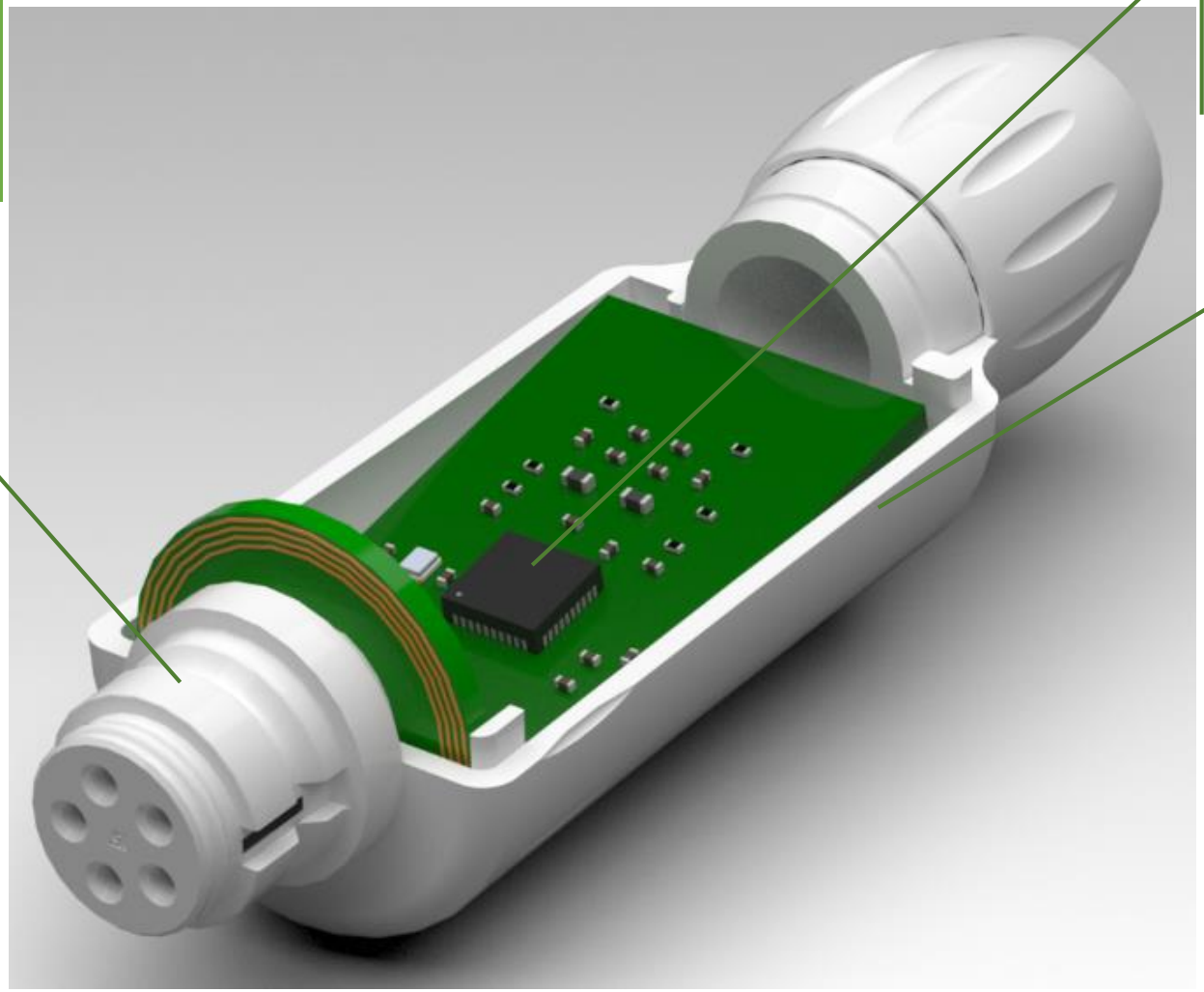
- Evolution of passive connectors
- Integration in a communication infrastructure
- Add-on features based on electronics
- Different applications /function should be realized
- No final product → Adaption for customers

CONCEPT STUDY – SET UP

Head

electronic

body



CONCEPT STUDY - FUNCTION

- Demonstrator of technology
- Power and data transmission are independant
- Wireless communication via NFC
- The communication partner can be active or passive
- Different actions can be set as parameter
- Data can be stored
- Additional features enable a wide use of data

CONCEPT STUDY - RESULT

NeaCo²

NEAR FIELD COMMUNICATION

- Snap-in Power
- Wireless communication via NFC

NEAR FIELD COMMUNICATION

- Definition: short-range wireless technology
- Advantage:
  - Send data is immediately read → reduction of human error
- How does it work
  - A NFC microchip within a device, which acts as an antenna and receiver; a reader/writer that scans and allows NFC devices to access data; an NFC software application on the device that can use data received by the NFC chip; and an information or communications service provider (ISP) that manages all device communications that occur through the ISP.
- Security
  - NFC uses 128-bit or higher encryption to guarantee security and privacy of transactions.

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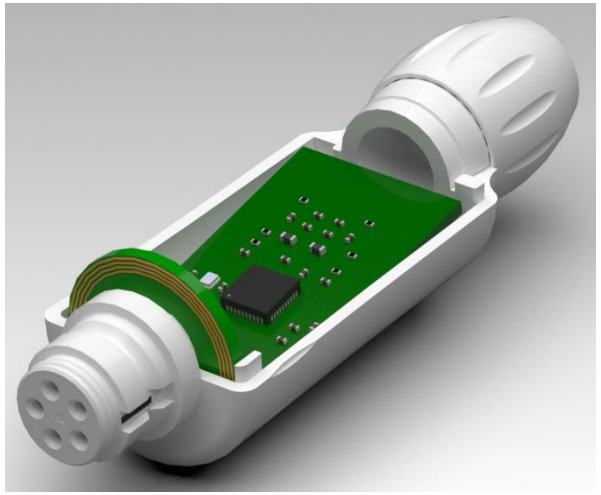
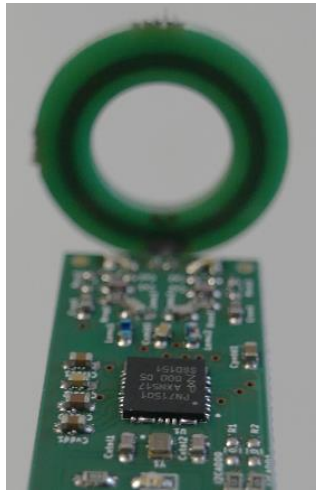
CONCEPT STUDY – TECHNICAL KEY FACTS

- Wireless NFC-communcation Add-On solution for integration in round connectors. Read passive NFC-Tags or establish Peer-to-peer communication at 13,56MHz. Detection range <10mm.
- Compact form factor:
  - NFC-board: 36 mm x 17 mm
  - antenna: outer diameter 22 mm, inner diameter 11 mm
- Chipset: PN7150, bus protocol I²C, supply 3 – 5 VDC, Onboard LED





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APPLICATION EXAMPLES

Lifetime montitoring

Product safety

Product reliability

APPLICATION EXAMPLES

Counting of mating cycles → Predictive maintenance

- Technical Staff: plan maintenance and replacement accordingly
- medical staff: concentration on care for patients

They are able to call a technician for maintenance and are able to conectrate on the care for their loved ones

APPLICATION EXAMPLES

Safety Layer for wrong connections → Failure Prevention

Additional security check via NFC. No power transmitted when the wrong connector is connected.

Additional security check. No power transmitted when the wrong connector is connected.

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APPLICATION EXAMPLES

Wireless data transfer minimize failures due to contamination → Failure prevention

Correct data transfer → security for the patient as well as the medical staff

Correct data transfer →security for the patient as well as the nursing relatives

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APPLICATION EXAMPLES

Software enabled/disabled white- and blacklist connections

Software-based coding:

- Disabling the usage of poor peripherals

- Deciding of which devices can be connected

APPLICATION EXAMPLES

Checking state of device/peripherals → functional condition

Increased level of trust → are able to concentrate on the patient

Increased level of trust → are able to concentrate on their care tasks

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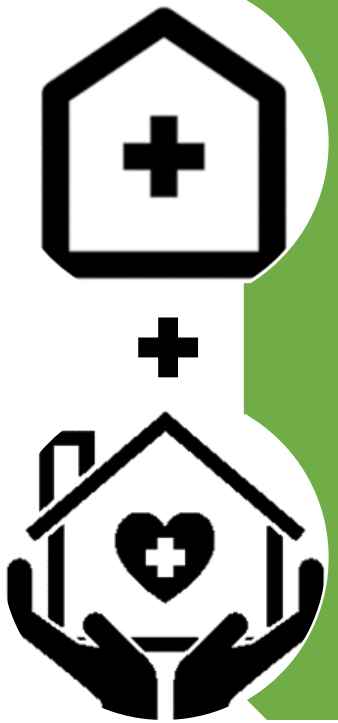
APPLICATION EXAMPLES

- Efficient power delivery → adapting power source



Receiving the exact power for the device→ staff can concentrate on patient

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Contact data

Booth 15

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