

LOCFIELD® Wireless Technology

Wireless communication and energy transfer without an antenna?





Outline

What is special about this new technology?

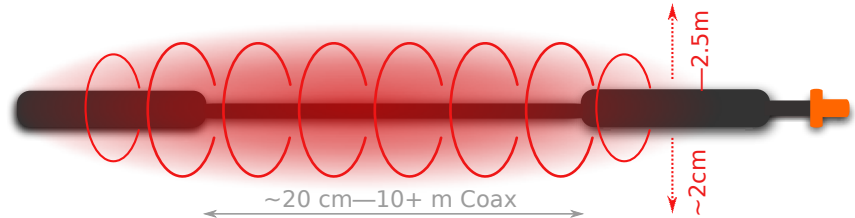
Challenging RFID solutions now made easy

Implementation Examples



How does it work?

LOCFIELD® — The cable generates a **localized electromagnetic field**.



Coupled Mode Operation — Communication and capacitive charging simultaneously

An electromagnetic field of radius from 2 cm up to 2.5 m follows the cable wherever its path may go. A wireless device can communicate through or draw energy from the EM field.



Characteristics of the EM field

An electromagnetic field coupled to the coaxial cable has significant advantages:

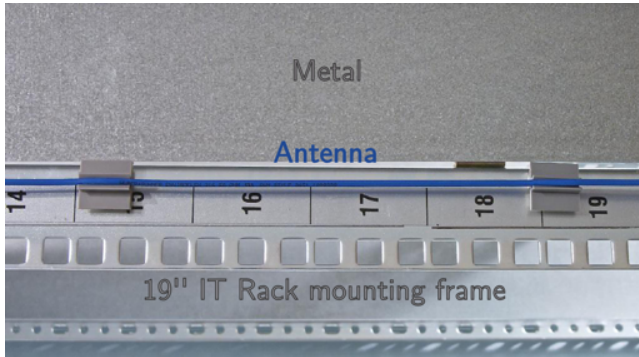
- A clearly defined communication and charging zone around the cable and along its path.
- Precisely adjustable field extension by variation of signal power.
- Seamless coverage of signal ranges from 1 cm to ≈ 2.5 m.
- Effective communication control due to almost reflection-free operation.
- Effective shielding \rightarrow no "talking around corner".
- Complex field paths with 2- and 3-dimensional structures are feasible.

This leads to a wide range of new wireless applications which can hardly be realized with conventional technology.



Ease of implementation

The LOCFIELD® cable can work like a near-field antenna, but installing it is like mounting a cable ...



... even close to or on metal.



Outline

What is special about this new technology?

Challenging RFID solutions now made easy

Implementation Examples



Design goals

Great results are possible with the simple LOCFIELD® technology

- Quick and easy to mount
- Installable in almost any environment
- Simple tuning and optimization
- Rapid and cheap deployment
- Robust and cheap to maintain and operate
- Requires the lowest number of reader ports
- Can run uninterruptedly, no need for additional sensors, switches, etc.

Identify everything, everywhere, permanently!



Where can the LOCFIELD[®] cable be used?

Long LOCFIELD[®] cables (→ 10 m) can follow complex, elongated geometries:

along mounting bars, rails and frames, (book-)shelves, support structures, assembly lines, door frames

Long LOCFIELD[®] cables can also fill various areas in two or three dimensions:

workbenches, desks, shelves, floor areas, containers, vehicles

Short LOCFIELD[®] cables (≈ 0.5 -2 m) cover mid-range UHF reading ranges:

door- or wall-mount RFID portals, EAS passages, RFID tracking points



Implementation breakthroughs

Several meters of smart shelves, e.g. libraries, retail stores, racks, can be covered with only one reader port.

Read ranges can be adjusted within a few centimeters of tolerance without unwanted reflections or interference.

Large metal cabinets (e.g. IT racks, electrical, medicine, tools) can be inventoried using only one reader port in most cases.

Mid-range RFID tracking points can be installed almost anywhere at very low costs.



Outline

What is special about this new technology?

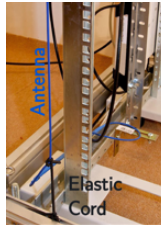
Challenging RFID solutions now made easy

Implementation Examples

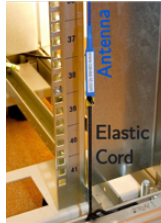


Metal cabinets

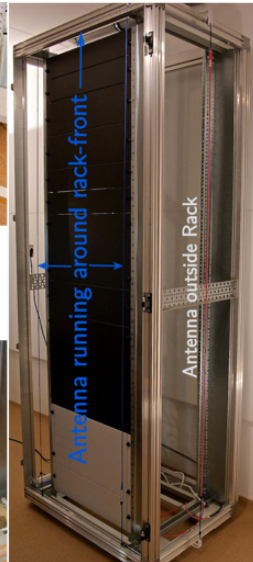
- UHF Read range $\approx 5\text{--}20$ cm around antenna
- Almost entire rack-front covered
- Items in front of rack are not read
- Flexible quick-mount ensures free way for service tasks
- Objects passing by are tracked with outside antenna
- Outside antenna $\approx 1\text{--}1.5$ m read range
- Only two reader ports required for inventory and track



Bottom left



Bottom right





Smart Shelves

Smart Shelves can be freely configured

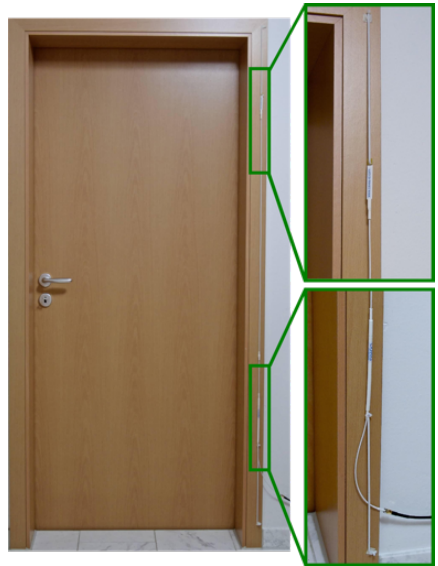


- Read range \approx 2-50 cm above and below shelf
- Field-free zones are possible
- One antenna can run along several meters of shelf \rightarrow very few antenna ports are required



Door- or EAS-Portal

- One antenna can cover entire door passage
- Installation within a few minutes
- Antenna can run permanently → no additional sensors necessary
- Small footprint, almost invisible, fits perfect in offices, stores, libraries, etc.
- Second antenna at the outer side can be used for direction detection





LOCFIELD® wireless energy cable

- Designed for challenging solutions in the *Internet of Things* with frequencies from 400 MHz to 6 GHz
- The electromagnetic field can be formed by hand with the cable → no rocket science, no radio communication experts required.
- Both wireless power for passive (without battery) IoT devices and communication simultaneously
- LOCFIELD® communication and energizing cables can be easily integrated in almost any objects for industrial or private applications.
- For more information please contact:

info@caved-id.com