

# Miniaturised cables and cable systems

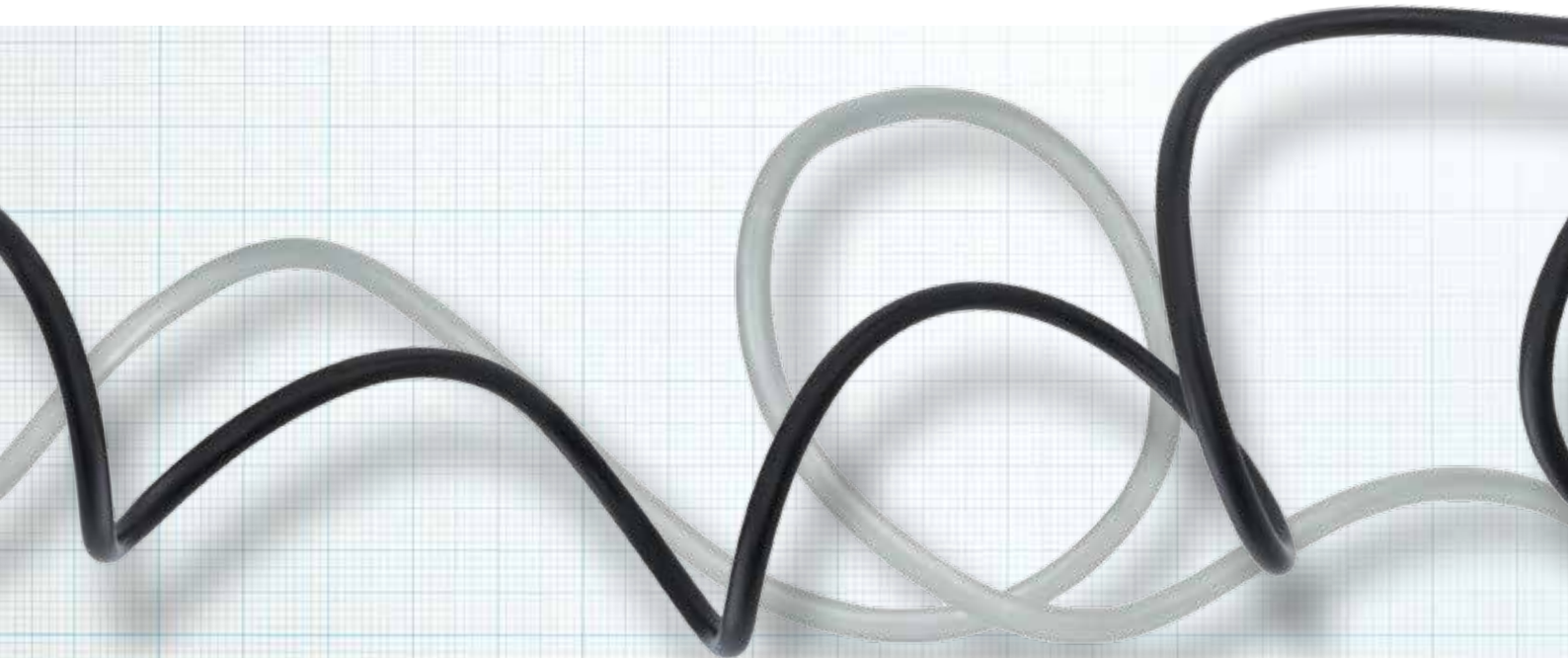


**The Quality Connection**

**LEONI**

## The LEONI Group

Cables expertise for a very wide variety of industrial markets



**LEONI is a leading supplier of cable systems and related services for the automotive industry and various other industrial sectors.**

Our group of companies employs more than 61,000 people in 31 countries. Corporate vision, highest quality and innovative power have made us one of the leading cable manufacturers in Europe.

LEONI develops and produces technically sophisticated products and systems ranging from wire and optical fibers to cables through to complete cable systems and also offers the related services.

Moreover, the product portfolio comprises of strands, standardised cables, hybrid cables, glass fiber as well as special cables, cable harnesses, wiring systems components and fully assembled systems for applications in various industrial markets.

### **Your markets – our strength.**

As diverse as our product and service range is, so are the markets and sectors LEONI is supplying. We focus our activities on customers in the fields of Automotive & Commercial Vehicles, Industry & Healthcare, Communication & Infrastructure, Electrical Appliances and Conductors & Copper Solutions.

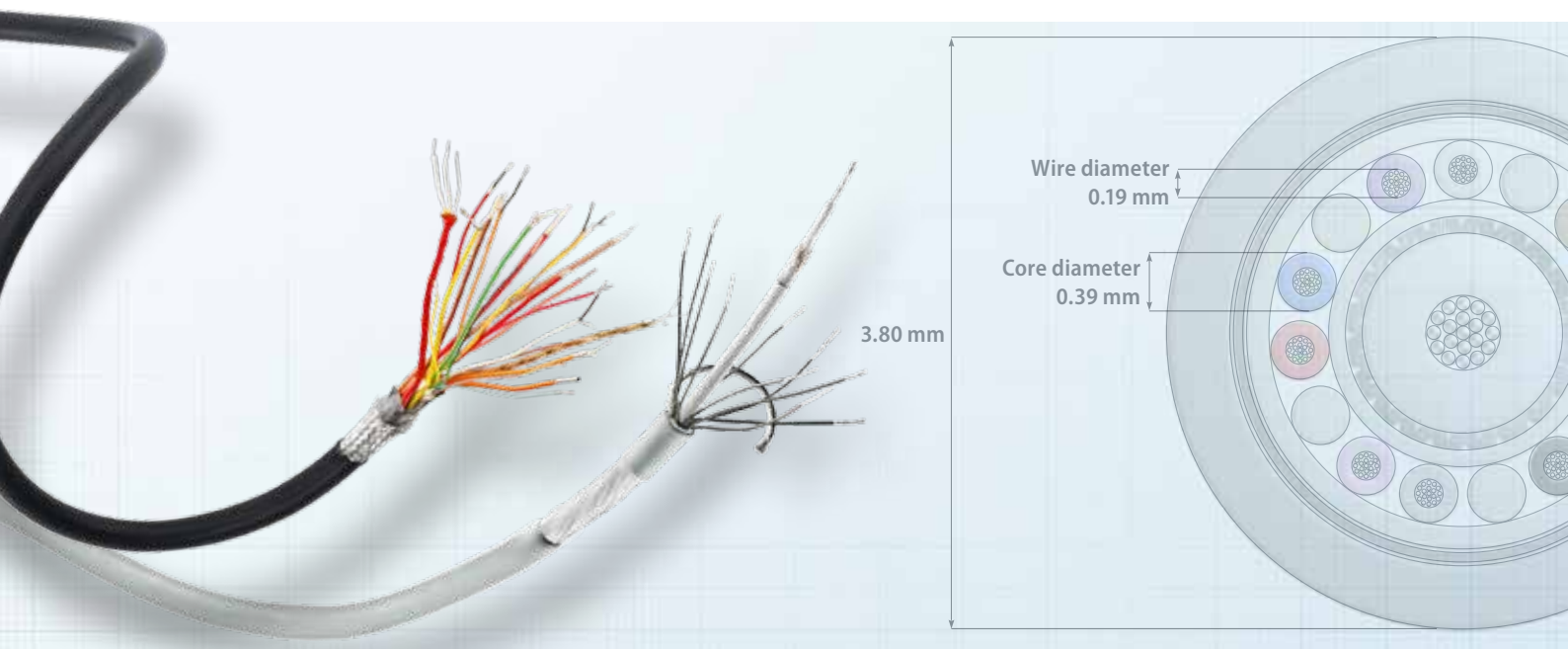
We are among the leading European suppliers in the Industry & Healthcare market to which LEONI as a cable manufacturer also belongs to activities in the fields of telecommunication systems, fiber optics, industrial solutions and healthcare. Our customers benefit worldwide from innovative, reliable and long-lasting high quality products.

Our Business Unit Industrial Solutions has established itself in industrial engineering with its tailor-made products. Miniaturisation of cables is one of our specialties.

LEONI – we make the best connection for your future.

# Miniature cables and miniature cable systems for technical demanding requirements

LEONI develops and produces highly flexible miniature cables  
for high-tech applications with extreme demands.



## Areas of application

- Measurement and control technology
- Medical and x-ray technology
- Automation engineering
- Testing technology
- Communications and high-frequency technology
- Aerospace
- Defence technology

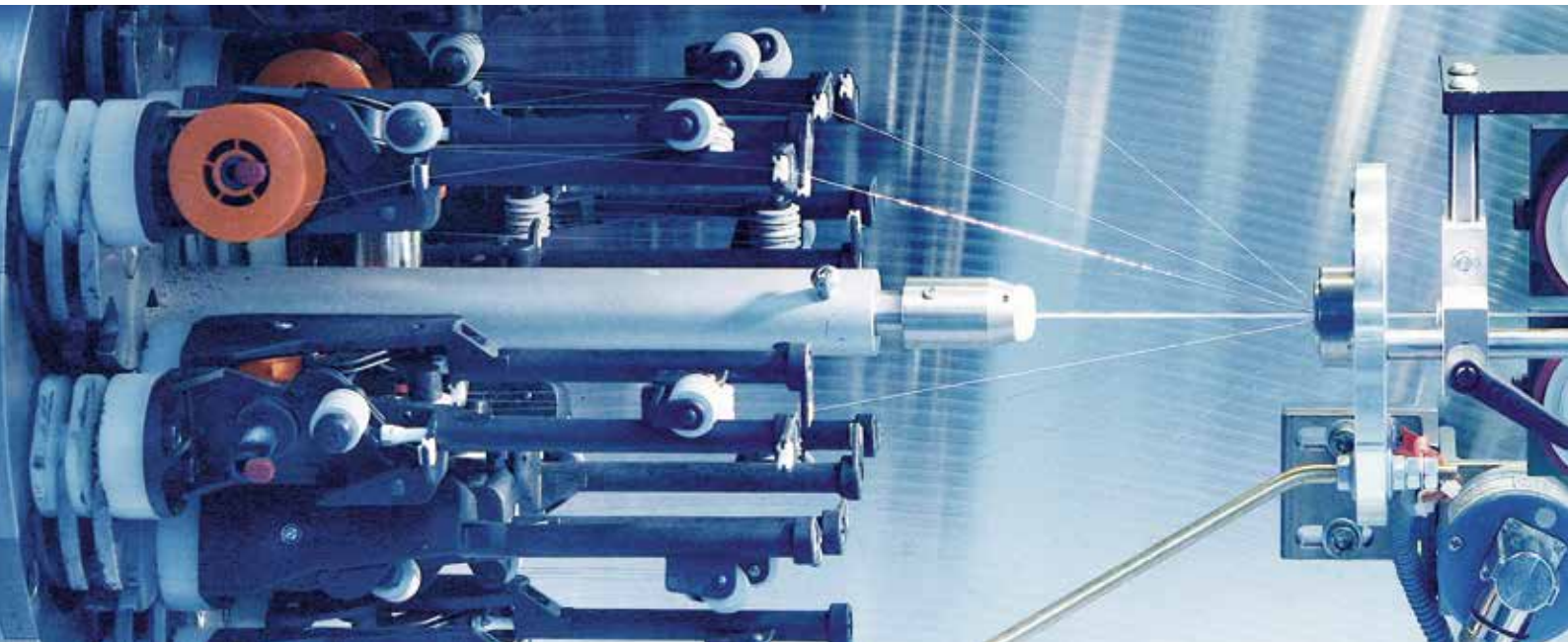
## Advantages

- **maximum degree of miniaturisation**
- **maximum flexibility**
- **optimum electrical properties**
- **optimum EMC/I properties**
- **integrated system solutions**



# The latest production technology

## Expertise in detail



The manufacture of miniaturised cables and cable systems requires extreme care and an especially clean environment. That is why much of this complex production is located in a cleanroom in which particle pollution temperature & humidity are controlled by means of cleaning and air-conditioning equipment.

### Range of products and services

- Single and multi coaxial cables
- Low noise coaxial conductors
- Miniature round cables
- High-flex ribbon cables
- Data and bus cables
- Cable system solutions
- Fiber optic components
- Cable protection systems
- Plug and soldered connections
- Component extrusion and casting
- Integration of electronics
- Prototype making

**LEONI miniature cables are designed to customer specifications and can, if required, also be supplied as ready-to-connect system solutions.**



Cable system for  
ultrasonic application

Cable diameter: 11.0 mm  
Co-axial cable diameter: 0.57 mm

Cable system for  
a manual control consol  
in the medical sector

Cable diameter: 3.0 mm  
Core diameter: 0.7 mm

#### Approvals

- UL Style
- CSA Style
- Medical grade materials
- Biocompatibility pursuant to ISO 10993 and USP Class V
- RoHS-compliant

## Measurement and control technology

Precise measurement results with the smallest cross sections

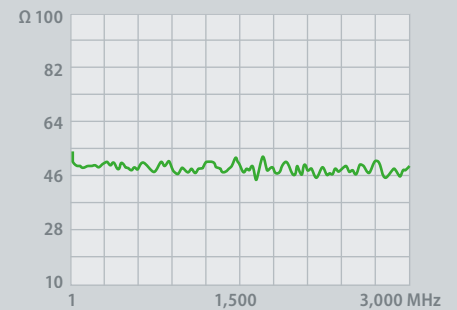
### High frequency measurement technology



#### Features

- Maximum flexibility
- Minimal diameter
- Consistent signal transmission properties
- Consistently low attenuation across the entire lifecycle at 3 GHz
- Long lifespan

#### Wave impedance



Hybrid round cable for oscilloscopes

Components for high-frequency measuring equipment have to meet the highest requirements in terms of signal integrity in order to ensure optimum performance in electronic systems. Our specialists work with high-precision production methods and command comprehensive know-how in the area of measurement technology.

High performance oscilloscope



Pictures: Rhode & Schwarz





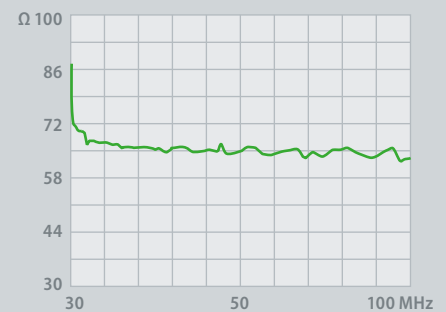
## Four channel measurement system



### Features

- Highly flexible
- Very small diameter in the coaxial conductors
- Low capacities
- Consistent signal transmission properties
- Consistently low attenuation across the entire lifecycle
- Long service life
- Resistant to chemicals
- Resistant to mechanical strain

### Wave impedance



Round cable for portable  
four-channel measurement systems



Portable four-channel  
measurement system  
for sound and  
vibration analysis

## Medical technology

Maximum safety due to highest precision

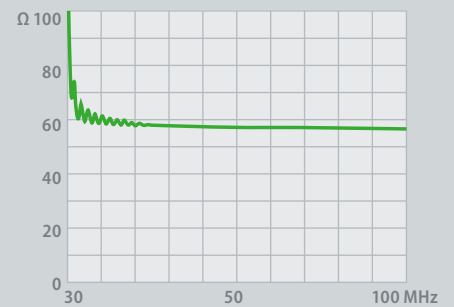
### Ultrasound



#### Features

- Very good EMC properties
- Highly flexible
- Small diameter
- Highly complex hybrid cable with up to 512 miniature coaxes and control conductors
- Can be sterilised and autoclaved
- Approvals for medical application
- Long service life
- Complete ready-to-install systems

#### Wave impedance



Ultrasonic hybrid round cable for portable ultrasound devices

Components for medical equipment must meet the highest requirements in terms of reliability and patient acceptability. Thanks to our Healthcare Business Unit and many years of experience in the field of medical technology, all our cables and cable systems receive the relevant medical approvals.





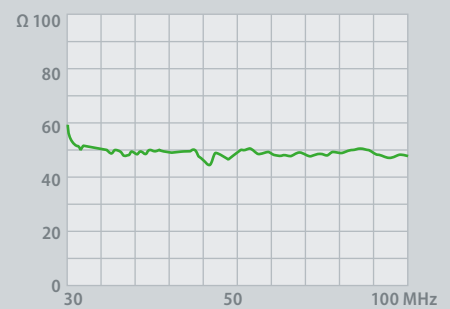
## Endoscopy



### Features

- Consistent and very good EMC properties
- Highly flexible
- Very small diameter
- Space-saving hybrid cable with several camera cables
- Can be sterilised and autoclaved
- Approvals for medical application
- Long service life

### Wave impedance



Hybrid round cable for endoscope cameras with small image sensors.



You will find more solutions for medical equipment at:  
[www.leoni-healthcare.com](http://www.leoni-healthcare.com)



Hybrid round cable for an endoscope camera with the world's smallest image sensor.

## Tested quality

You can rely on LEONI



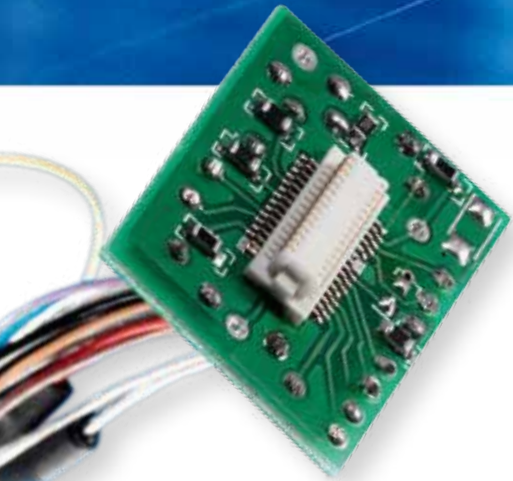
All cables and cable systems that leave our production lines have been 100 percent tested. We thereby ensure that our products conform to both the required electrical and optical properties and the relevant international standards, and that they fulfil your requirements. We can also offer customer-specific testing and measurement methods (both mechanical and thermal).





**Development partner for system solutions.**

**LEONI is your expert partner in the development and production of components and sophisticated cable systems.**



We also offer Total Solutions Management to produce our cables and cable systems as a service to our customers.

**Service right from the start**

- Consulting
- Project management
- Engineering
- Sample production
- Fatigue testing
- Assembly and technical documentation
- Change management
- Spare parts management

**Customised miniature cables and system solutions (assemblies) can be planned and produced within a very short timeframe.**

- **Batch size: 100 metres**
- **Lead time: from 4 weeks**



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