



Industrieelektronik - Nachrichtentechnik - Systemtechnik

Introducing a Systemhouse



Center of Competence
for radiotechnology
and telecommunication



We have the solutions

After working in leading industrial positions for several years Wolfgang Schnoor in 1990 founded the Systemhouse Schnoor. With him as the manager about 25 employees develop, design, plan and produce systems for communication, radio technology, telecommunication and common electronic.

Systemhouse Schnoor will find solutions, which are especially designed for your demand!

Systemhouse Schnoor: Certification to **DIN ISO 9001 : 2000.**



We spend our time for you



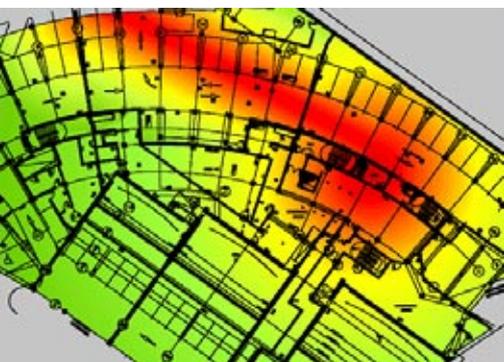
Systems are designed for customer demand

Our areas of competence

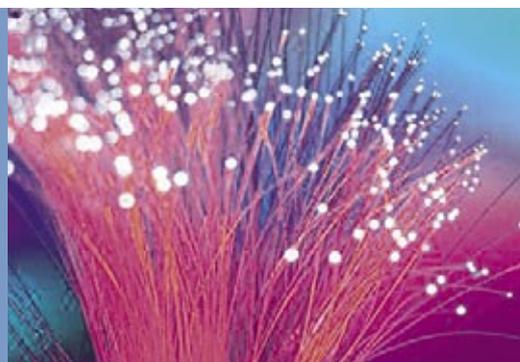
- Radio systems (digital and analogue)
- Inhouse radio according to BOS-guidelines
- Inhouse-supply, tunnel radio systems
- Planning of radio nets
- Radio field measurements and building pattern measurements
- Operation centers for police, fire brigades, ADAC etc.
- Telematic systems (digital and analogue)
- Telecommunications- and Long Range Radio
- Observation- and Control-systems
- Transmission of data and measurement-data
- PC screen-configuration and -control
- Memory programmable controls

Our performance spectrum

- Planning, projecting
- Product design (Hardware and software)
- Prototype design, production, production line
- System setting to work, maintenance
- Technical support
- Instruction training



Building pattern for radio net planning



Projecting of LWL-nets



System solutions for radio nets



All in one hand

We offer design and development of complete systems as well as maintenance from A to Z.

Service is our motto: Our team of experts is

- WELL TRAINED**
- SKILLED**
- WELL MOTIVATED**
- VERY CUSTOMER ORIENTED**



Our service-hotline



Individual system design

Schnoor performance spectrum

Planning, projecting

- Detailed consulting
- Support for planning and projecting
- Support in design of compulsory books
- Site supervision
- Projectmanagement
- Project support and supply

Product design

- Design of specific hardware components according to customer demand
- Design of software applications for customer specific controls and programs
- Product applications
- Production of technical system documentation

Prototype design, production, production line

- Production of prototypes and small series of modules, systems and system cabinets

Setting to work of systems

- Final installations of systems
- Installation, erection, assembling
- System supervision and service

- System maintenance
- Maintenance and repair of components, units and modules

Technical support

- Hotline for maintenance support
- Contracts for maintenance and service
- Component tests and repair
- Procurement of spare parts

Instructions

- Instruction and training of your service and maintenance personal

We have the suitable solution for you



Successful conclusion of projects



Maintenance and repair



Instructions and training for your staff

Your innovative partner for competent design

Schnoor – your competence center for design in the complete area of electrical engineering.

Our design centre offers solutions for the complete area of analogue and digital radio techniques, for voice as well as data transmission.

The appointment of Schnoor Industrieelektronik as application partner for Motorola in Germany and the combined authorization for the design and sale of hardware and software-applications for handheld- and mobile radios is a clear evidence for the quality of our products and workmanship.

Our design department is also certified to DIN ISO 9001 : 2000.

Schnoor – strong in design

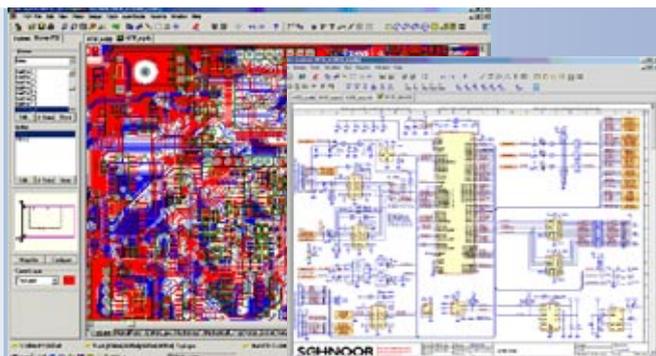
Hardware design, system integration

In the hardware area we take over the design of analogue and digital components including Logic Design, Product Design and System Verification.

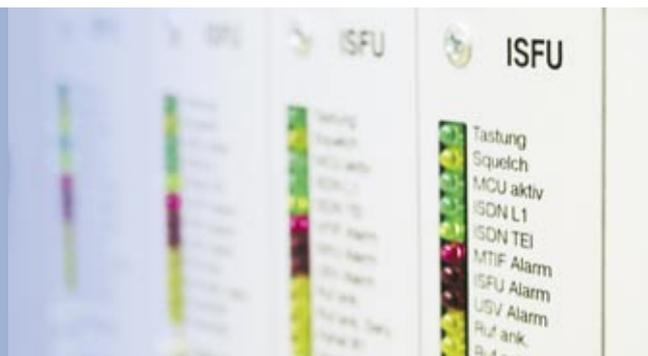
Our systems are built up from modular functional units. These units can be control units, transmit- and receive-units, special line interfaces as well as control interfaces. Normally the dimensions of these units are

160 x 100 mm (Euro format) and can be integrated to standard 19" rack units.

No matter if these system components are designed for private radio network, inhouse radio systems, seaborne radio or informationsystems, Schnoor Industrieelektronik handles the adaption for a complete solution regarding the special requirements for security, ergonomics and effectiveness individually.



Design and layout of circuit board



Final units for modular systems

Software design close to the hardware

Tuning – Controlling – Measuring is the heart of software design close to the hardware.

We will design solutions for all of your individual requirements. Our spectrum spreads from simple applications, e.g. data loggers to complex applications with realtime requirements.

On the basis of microcontrollers (MCU) and digital signal processors (DSP) we design **Embedded Systems**. Programming of these MCU's and DSP's is made with ANSI-C/C++ and Assembler. The programmable logic units (FPGA, CPLD) are programmed with hardware description languages (VHDL, Verilog).

For the design of complex applications and system circuit boards we have the know how for:

- Design and translation of data protocols
- Data transmission via interfaces of various kind (RS232/485, ISDN, LWL, I²C, CAN, LAN ...)
- Visualization of data on LED, LCD, display or large sized BILED elements

Software design for grafic displays

For the design of graphic displays we use Visual C++ and Visual Basic. We support Windows as well as Linux.

The design of individually adapted network software for Intranet/Internet with or without database integration is done in accordance with the customers needs.

For the solution we offer remote control and remote maintenance of technical units (sensors, switches ...) via public data nets like telephone or Internet.

The operation of these systems in the operation centers needs quick and correct reaction. Therefore the design of graphic displays is oriented to clear and easy understanding and congenial for the operators.

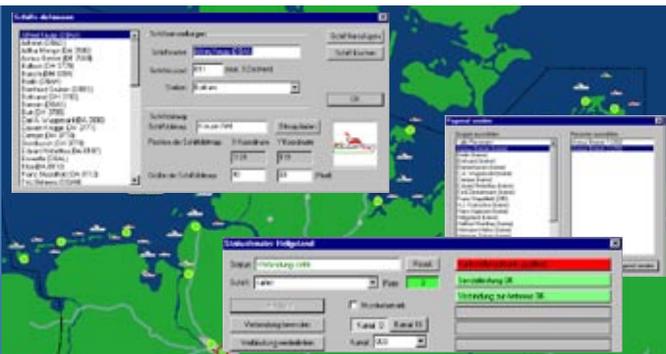
High frequency (VHF) design

Our VHF – design department offers following performance areas:

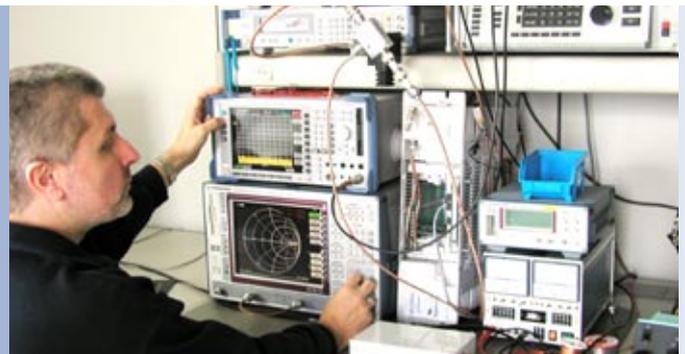
- **New – respectively adapting design** of units for transmission and receive in the radio technology
- **Design of components** for example amplifiers, filters, transformation networks ...
- **Improvement** of existing circuits
- **Adjustment and test** of e.g. antenna splitters
- **Design support** by simulation with software for Windows

For the measurement of high frequency system components we use state of the art units, i.e. net- and spectrum analyzer, low noise signal generator, digital oszilloscope as well as isolators, low passes, couplers etc.

Measurements can be taken in the frequency range from 9 kHz up to 4 GHz, measuring quadruple pole S-parameters, high intermodulation distance and spectral purity of different circuits.



User friendly graphic displays



Test bench with state of the art digital units

Production

Our inhouse production department is specialized in the production of special- and small series on high level.

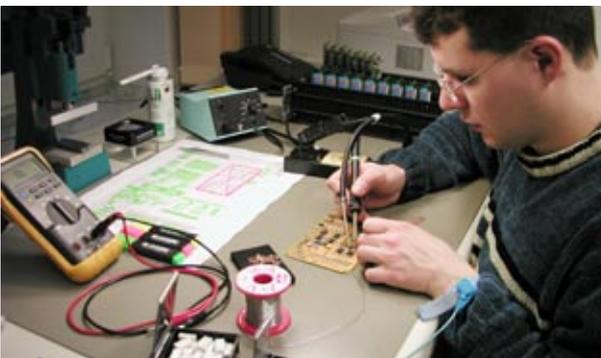
Highest precision, state of the art components and know how in workmanship ensure our high technical quality.

Experience made in the departments design and service are fed to the production lines.

The production covers following areas:

- **Production of mechanical special parts**
- **Equipping of circuit boards including SMD techniques**
- **Mounting of switch- and control cabinets**
- **Final system installation**

Our production department is certified to DIN ISO 9001: 2000.



SMD-Mounting of PCBs



Structured warehouse

Complete systems on high quality level

Mechanical production of special parts

Our inhouse mechanical workshop produces special parts with our own machines, what makes our production really flexible.

Equipping of circuit boards

According to the production documents of the layout tools circuit boards are equipped either conventionally or in SMD technique on one side or multi-layer.

We offer:

- Equipping of prototype or zero option up to lots of middle size.
- Procurement of all components according to item list

We have on disposal a large, well equipped stock of electronic parts, so we can act flexibly and quickly. So our repair times are really short.

Mounting of switch- and control cabinets

Schnoor Industrieelektronik offers flexible and in time production of switch- and control cabinets. The cabinets and unit combinations are mounted in accordance to current rules (DIN EN 60950, ISO).

Final system installation

Upon delivery all control systems are tested in accordance with CE rules. This will guarantee a perfect combination of all components as well as longterm functionality on site.

This will give quick and successful setting to work on site.



Cabinet with modular functional units



High voltage test of cabinets



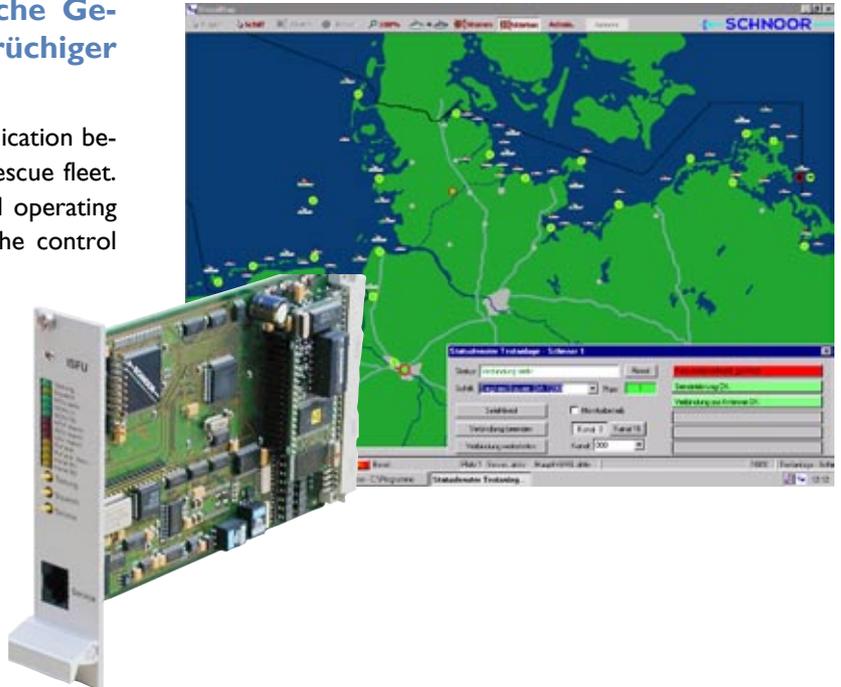
Design of applications, references

Seaborne radio system for Deutsche Gesellschaft zur Rettung Schiffbrüchiger (DGzRS)

Schnoor Seacom radio net ensures the communication between the control center and all ships of the rescue fleet. The Visual Map program with its user oriented operating surface ensures safe handling and reacting at the control center.

ISDN circuit board „ISFU“

One highlight from our design department is the terminal ISDN unit, which establishes simultaneous transmission of voice and data on only one B channel. This unit is a registered pattern. The operation of this unit in the radio net of DGzRS gives – along with several special functions – a high decrease in variable cost.



Safety radio system for E•ON Kernenergie GmbH

With designing a safety radio system for NPP Isar 1 and 2 special safety was requested for the communication between the operating units inside the buildings. This problem was solved by using redundant radio systems and special switch down possibilities for singular operating units.

The communication with the responsible police department was established with a point-to-point connection via directed radio or wire.

Seaborne radio systems for Wasser- und Schifffahrtsverwaltung of the Federal Republic of Germany (WSV)

For the WSV Schnoor designed radio systems with connection to the control of existing central traffic control stations by using respective transmission installations on analogue and digital basis.

These stationary systems are set to work by Schnoor at Stralsund, Karlshagen, Warnemünde, Timmendorf (Poel), Hörnum (Sylt), Wittdün (Amrum), Helgoland, Wilhelmshaven, Emden, Borkum, Wangerooge etc. For control of the dislocated radio stations continuously data are transmitted to the central control station.



Project design for a high speed data transmission net LWL (SDH/WDM) for energis Deutschland GmbH

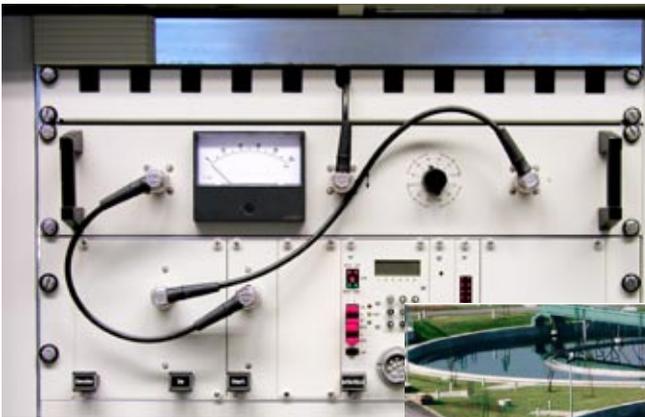
Schnoor will be the head for project management and control, management on site, final inspection of civil engineering, fotos on site and documentation for site.

Schnoor will do the final measurements and release for LWL routes, mounting- and setting to work for SDH/WDM, switching of customer connections and final measurements respectively.



Installation of BOS radio system for fire brigade building at the purification plant Gut Großlappen (München)

Schnoor will deliver the radio system for the fire brigade building of purification plant Gut Großlappen, consisting of 4 Transmitter/Receiver including diversity functions. Up to setting to work Schnoor will supervise the installation



Installation of radio system for water level for the Freie u. Hansestadt Hamburg

Schnoor is contractor for the delivery, installation and setting to work of the water level radio system for the transmission of the water levels at the port.

In addition Schnoor will design interface units for the transmission of measured data of the port water level and transmission of wind data from Scharhörn.

For the level system and the level data radio system PEGASUS Schnoor will be contractor for service and maintenance.



Schnoor – the certified systemhouse for customer oriented applications in hardware and software

