

GLEICHMANN Newsletter

Empowered by Innovation



Europe-wide Distribution agreement with ELMOS Semiconductor signed

Effective from August 1st, 2008, Elmos Semiconductor AG, headquartered in Dortmund, Germany, has assigned Gleichmann & Co. Electronics GmbH - as the first Europe-wide components distributor - distribution rights for its complete semiconductor product portfolio.

As Georg Jedelhauser, Vice President Sales Industry at the signing of the agreement with Thomas Klein, Managing Director of Gleichmann Electronics emphasized, the middle-term aim of the sales cooperation with a design-in oriented, technically competent distribution partner is to appreciably strengthen the presence in all sectors of industry. "Elmos has a wide range of technologically outstanding products, possesses the most modern manufacturing technologies and - because of its own design and own production - is able to react extremely fast and flexibly to specific customer needs. So far, mostly only OEM customers have

taken part. To change this, together with Gleichmann Electronics, is our defined goal," says Georg Jedelhauser.



Thomas Klein (left) Managing Director of Gleichmann Electronics and Georg Jedelhauser, Vice President Sales Industry of Elmos Semiconductor AG aim to convince industrial customers with innovative products, promptness, reliability and high-quality at sensible prices.

Thomas Klein and Ralf Sommer, Line Manager of Elmos, already rate the understanding with Elmos as a win-win situation for Gleichmann Electronics and Elmos. For one thing, the

present product portfolio of Gleichmann Electronics will be optimally complemented with Elmos' high-quality devices in the fields of Analog and Power ICs, Sensor Products (MEMs) and Mixed Signal ASICs. According to Thomas Klein, indeed at least as important are the high professionalism and the uncompromising commitment to high-quality products, with which Elmos - in the past almost 25 years - has earned a first-class reputation, especially in the automotive sector. "Elmos' business philosophy and attitude toward the customer are identical to our own ideas. Innovative products, promptness, reliability, high quality at sensible prices are what the market expects from us. However, only with partners like Elmos, which unconditionally fulfill these conditions, can we guarantee to meet our customer's expectations," explains Thomas Klein.

(continued on page 2)

Lithium-ion batteries are becoming increasingly powerful

Karlstein (Germany) - To safely and efficiently utilize the continually increasing energy density and power density of lithium-ion

rechargeable batteries in electric vehicles - this is the goal set by our partner BMZ Batterien-Montage-Zentrum together with

the University of Applied Sciences Aschaffenburg and the lift truck manufacturer Linde.

(continued on page 3)

Spotlights

SPS/IPC/Drives

Gleichmann & Co. Electronics GmbH will participate at this year's SPS/IPC/Drives in Nuremberg. **Visit us in Hall 6, Booth 6 - 210**



We will present Microcontroller solutions for IO-Link communication and Profinet. If you have any question, simply give us a call or e-mail us: **+49 711 78336-149**
marketing-micros@msc-ge.com

Field of Vision

Are you looking for the optimal display for your application? You will certainly find what you are looking for in our current "Field of Vision" brochure. 36 pages of touch screens, TFTs, LCDs, controller boards, accessories and projectors from leading manufacturers - none of your wishes will remain unfulfilled. Request your copy today by contacting:



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Highlights

- 25 years Clover Display, 15 years partnership with Gleichmann Electronics
- Harvatek's chip-on-board technology enables low-cost and extremely space-saving LED lightings

Europe-wide Distribution agreement with ELMOS Semiconductor signed

(continued from page 1)



Ralf Sommer, Elmos Line Manager at Gleichmann Electronics: "By using the VirtuHall® process for the control of BLDC motors, Hall sensors, which are normally required in large quantities, could - in the future - become completely unnecessary."

Founded in 1984 and since 1999 a publicly traded company, Elmos has evolved to become one of the technologically leading semiconductor companies with worldwide more than 1,100 employees and most recently annual sales of more than 176 million Euros. Thanks to a loyal customer base and its excellent reputation, the company - which has production sites in Dortmund and Duisburg, Germany - thereby finds itself still on a path of continuous growth.

One of the strengths of Elmos is the tight interaction of chip design, research and development, and production, which guarantees a fast implementation of individual customer requirements as well as optimized process operations. For example, for control of the production; a complete, automatic registration of all products during the different stages of production takes place. These, and a variety of other quality measures, have led to Elmos being one

of the first suppliers to the automotive industry to be certified according to the internationally recognized ISO/TS16949:2002 - this confirms compliance to the highest quality standards.

Elmos' current production takes up approximately 5,000 square meters space at two locations in Germany - over 150 million chips on 6-inch and 8-inch wafers are produced a year. In addition to standard products - such as transceiver devices for FlexRay™ and LIN, step down converters, LED drivers, DC/DC converters, motor control / ripple counter ICs, optical sensor devices, pressure sensors or sun angle sensors - the product portfolio also includes customer specific solutions - such as mixed signal ASICs and complete microsystems, the latter as a symbiosis of sensor, read-out electronics and special package.



Elmos' High Ambient Light Independent Optical System (Halios®) opens up completely new possibilities for users; not only in applications in which highly sensitive proximity and movement sensors are used.

Georg Jedelhauser is particularly proud of two new types of processes / product lines, named High Ambient Light Independent Optical System (Halios®) and VirtuHall®. Halios is an innovative and of its kind unique proximity detec-

tion system. Among other things, the system allows optical initiation of switching operations at a distance of up to 3 meters. Additionally, by means of its detection of gestures, Halios allows completely new concepts for the contact-free control of equipment. Whereas, VirtuHall is a new type of process for sensorless position detection of brushless DC motors. "Both Halios and VirtuHall once again convincingly prove that groundbreaking innovations in the semiconductor industry must not necessarily originate from the largest competitors," says Georg Jedelhauser.

Rüdiger Senghaas also knows the immense potential of the new processes. "Halios from Elmos

only in applications in which highly sensitive proximity and movement sensors are used. Furthermore, mounted behind translucent surfaces, Halios products are ideal for use in harsh, explosion-proof or antiseptic environments."

On the other hand, according to the assessment of Ralf Sommer, Line Manager of Elmos, the VirtuHall process will probably, in many applications, soon replace today's popular process for the control of BLDC motors.

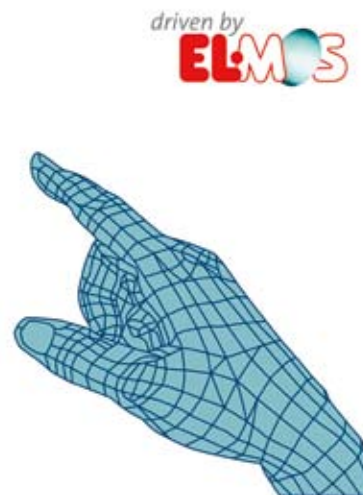
"By using the VirtuHall process, Hall sensors, which are normally required in large quantities, could - in the future - become completely unnecessary. This will obviously lead to significant cost savings for the customers," Ralph Sommer is pleased to say.

Both the Halios and the VirtuHall processes will be presented in more detail in the next issue of the Gleichmann Electronics Newsletter. We'll be happy to provide additional

information or answer any questions about the products and services from Elmos. Please feel free to contact us.

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Response number 177



driven by
ELMOS

Lithium-ion batteries are becoming increasingly powerful

(continued from page 1)

Within the scope of a 3-year research project, funded with 480,000 Euros by the Federal Ministry of Education and Research, an innovative storage system with extremely high peak performance and high energy density, based on the combination of lithium-ion rechargeable batteries and dual-layer capacitors, will be developed. Special focus of the researchers will be the optimization of energy management, protection of the energy storage system against overload and the development of new methods to safely isolate the batteries from the user in dangerous situations. "In the meantime, lithium-ion rechargeable batteries have achieved an energy density and a power

density that not too long ago was considered unthinkable and also nowadays, the energy management can be controlled much more accurately. Therefore, we are highly confident that our joint project will finally lead to tangible, commercially usable results," says Sven Bauer, Managing Director of BMZ.

The findings gained from the research project will obviously indirectly be of benefit to other lithium-ion rechargeable battery applications. Lithium cobalt dioxide, lithium nickel cobalt

manganese, lithium nickel cobalt aluminium, lithium manganese oxide spinel, lithium iron phosphate, lithium iron nanophosphate, lithium titanate or lithium polymer - in the meantime, there are a number of different lithium-ion cells that sometimes vary greatly in terms of cost, performance and safety features.



The advantages and disadvantages of each of the lithium-ion technologies will be presented to you by Gleichmann Electronics' team during electronica 2008 from November 11 to

14 at BMZ Batterien-Montage-Zentrum' Booth 475 and 479 in Area B2.

The product portfolio presented at the world's largest electronics exhibition consists of all popular form factors with capacities from 1.1 Ah to 200 Ah. In parallel or in series, there are hundreds of customer-specific configurations with which, in the meantime, applications in almost every field imaginable can be covered.

We will be happy to reserve an appointment for you. Your direct contact to our exhibition team:



Batterien-Montage-Zentrum will make up for production losses - caused by the fire - before November

After the fire during the night of August 20, 2008, which caused tens of millions of Euros of damage, the management of Batterien-Montage-Zentrum GmbH in Karlstein (Germany) - our supplier of rechargeable batteries - in the meantime, assumes that the destruction of a production area and a warehouse will definitely not mean any long-term losses for its customers. "As matters currently stand, by November we will have processed all production backlogs and subsequently return to normal business," says Sven Bauer, Managing Director of BMZ after completion of the preliminary damage analysis.

In order to keep the effects of the fire for the customers as low as possible, the BMZ management, in consultation with the management of Gleichmann Electronics, already initiated a whole series of measures immediately after the fire. These included changing short-term from a single-shift to a multi-shift operation in order to optimally utilize the capacity of the ESD protected production area in BMZ Works 3, in which above all especially high value rechargeable batteries are assembled, as well as Works 4.

In parallel, 5,000 m² of office, production and warehouse space in Roedermark (30 km from BMZ's main premises) have, in the

meantime, been rented. This space will serve as an alternative until the new buildings are completed in Karlstein. "The new manufacturing site, which will be operational before our relocation at mid of October, and the close proximity to our main plant guarantees a fast and uncomplicated recovery of the regular production flow," reassures Sven Bauer in a conversation with Gleichmann Electronics just prior to the publication of the current Gleichmann Electronics Newsletter. According to Sven Bauer, the move should be mostly completed in the next few weeks.

According to the current assessment of Sven Bauer, also the destruction of a

large part of the inventory will not have any long-term effects on the business operation. For one thing there is inventory in external warehouses, which one can fall back on, and for another thing, most of the suppliers are being very cooperative in this exceptional situation.

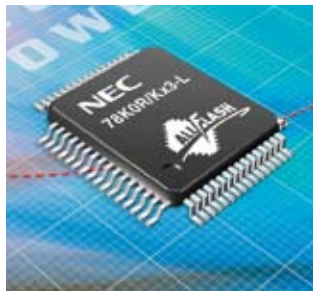
Gleichmann Electronics will obviously keep you informed of further developments at Batterien-Montage-Zentrum. Separately from that, our personnel are also available at all times to answer your personal questions either by phone or email.



78K0R/Kx3-L series offers the industry's leading power/performance ratio

The new 16-bit All Flash™ microcontrollers of the 78K0R/Kx3-L series from NEC Electronics feature ultra-low power and high performance. Recent measurements resulted in a current consumption of just 0.52 mA/MIPS at 20 MHz clock frequency.

The dedicated real-time clock function requires only 1.0 µA in standby operation.



At the same time, a performance of 0.65 DMIPS/MHz (Dhrystone 1.1) was determined. According to NEC Electronics, with a power consumption of 1.5 mW/MIPS the 78K0R/Kx3-L series thereby offers the industry's leading power/performance ratio.

Regarding peripherals, the 16-bit microcontrollers

of the 78K0R/Kx3-L series with - depending on the version - 16 to 60 Kbytes of Flash memory feature: high-speed A/D converters that work across the entire supply voltage range of 1.8 V to 5.5 V, programmable operational amplifiers, two comparator channels, flexible 16-bit timer serial interface arrays, standard units such as real-time clock, DMA controller, window watchdog timer and other safety functions. Furthermore, three integrated oscillator circuits generating

1 MHz, 8 MHz or 20 MHz clock at +/-1% accuracy are available to the user.

In common with all NEC Electronics' microcontrollers, the 78K0R/Kx3-L series is specified across the whole temperature and supply voltage ranges. First samples of the 78K0R/Kx3-L series will start shipping immediately



Say-it!-Kit simplifies voice synthesis

All of the essential hardware and software components to demonstrate voice synthesis functions are included in the Say it! - Demonstration Kit, which is available immediately from Gleichmann Electronics.

The development tool from NEC Electronics is hardware-based on a low power 78K0R/KG3 16-bit microcontroller (MCU) with 20 MHz operating frequency. In addition to 256 Kbytes of Flash memory and 12 Kbytes of RAM, the device also includes a 16 x 16-bit hardware multiplier, a buzzer output controller, a BCD adjustment as well as a wide selection

of serial interfaces. Thereby, voice signals are outputted via one of the channels of the internal 8-bit D/A converters or one of the seven 16-bit PWM timers.

Another important feature of the demonstration kit is an Audio Data Conversion Tool (CvADPCM) for conversion and downloading of voice data via the USB port. CvADPCM runs as a Windows™ application on a PC and converts WAVE files (PCM) into frequency



data, which can then be loaded to the IAR Embedded Workbench. Thereby, the compression and expansion of data is implemented by Adaptive Differential PCM (ADPCM) library. The library is extremely compact middleware and is available free of charge from NEC Electronics.

The kit is provided together with sample programs and sample voices. A code-limited version of IAR Workbench,

which serves as compiler, is also included in the kit.

The 78K0R/KG3 MCU is designed for a wide supply voltage range of 1.8 V to 5.5 V and furthermore, has an on-chip debug interface for direct debugging via a USB connection.

Moreover, components installed on the board such as 4-way mini-joystick, an illuminance sensor, a loudspeaker, a tone filter and a headphone connection simplify the visualization of application examples.



New products and a new catalogue from GE Vision

It is just half a year since we presented the first edition of our GE Vision catalog. The response to it was overwhelming, not least because of the unique wide range of products and modification possibilities. Because of this overwhelming response, we decided to once again

expand the product portfolio in the best interest of our customers.

The GE-Oxxxx series of chip-on-glass LCD modules are a new addition to the product portfolio. They are available in different sizes and technologies. An innovative

integrated backlight system with a luminance of 350 cd/m² enables a brilliant image rendition, even in difficult ambient conditions. Furthermore, GE Vision's own brand displays are equipped with a ST7565P-G controller from Sitronix and feature a low height of from 3.9 mm, de-

pending on the type. Despite the compact construction, almost all modules offer molded fixing points for simple attachment to the application.

Also brand-new are the touch screen solutions for 17 different modules with resolutions from 128 x 64

to 320 x 240 dots. These are analog resistive touch screens in 4-wire technology. The advantage for you: touch screens already mounted by the manufacturer in clean-room conditions guarantee a reliable complete solution at attractive prices.

Furthermore, our second edition of the GE Vision catalog provides you with updated data of more than 130 standard LCD modules from 1 x 8 characters to graphic modules with a resolution of 320 x 240 pixels. Almost all

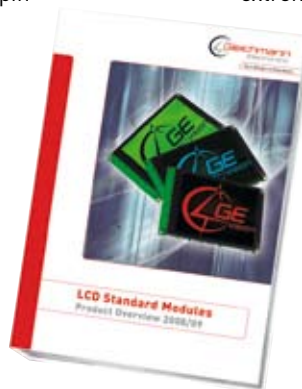
of these are available in all popular LCD technologies and more than 30 module types with RGB backlight.

By the way, we offer a variety of customer specific modifications for many module types starting with volumes of 500 pieces. These customer specific modifications include diverse assembly options such as an additional DC/DC converter, mounting of connectors on the module or on-board temperature compensation. Also complete PCB redesigns with extra switches

or small additional circuits, mounting of pin rows according to the customer's specification or special cable solutions have proven their value in many projects. Even full custom solutions or one-to-one copies of obsolete modules of other manufacturers can often be

provided by GE Vision at extremely attractive prices.

Detailed information about the new chip-on-glass LCD modules and touch screen solutions as well as the new GE Vision catalog can be obtained by contacting us.



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 Response number 182

25 years Clover Display, 15 years partnership with Gleichmann Electronics

In the display sector, if it's a matter of progress, innovative energy and top service it is not only size and level

mer service in the design and production of Standard LCD Panels as well as Custom Designed LCD Panels and

No fuss, fast, reliable and precise. "As with all display manufacturers, we obviously also have a comprehensive

Head Office, R&D Centre and prototyping production located in Hong Kong, Clover Display has two other locations – Longoal Display in Shunde, Guangdong Province and Clover China Display in Shenzhen – with a total of roughly 12,000 m² production area and approximately 1,000 employees.



of awareness of a company that counts, to the contrary: the better choice here is often smaller middle-sized, owner-managed companies. This is because, as a rule due to their company structure, they are able to react much quicker and far more flexibly to specific customer needs. An excellent example of this is Clover Display Limited. The company was founded in 1983 by C.L.Chou and is currently celebrating its 25th birthday.

In the past 25 years, Clover Display has developed into a renowned LCD manufacturer, which convinces with its experience, quality and custo-

Modules. Clover Display is always at the cutting-edge of technology and offers, according to requirements, different display technologies such as: Twisted Nematic (TN), High Twisted Nematic (HTN), Super Twisted Nematic (STN) and Film Super Twisted Nematic (FSTN).

Also, with regard to assembly techniques there are almost no limitations. Whether Chip on Board (COB), Tape Automatic Bonding (TAB), Chip on Glass (COG) or Chip on Foil (COF) – the technology which is required by the customer is what is actually used in manufacturing.

range of standard LCDs in our product portfolio. However, our major strengths are our competence and flexibility in project business. This is what distinguishes us from our competitors. This is our greatest asset," says company head, C.L.Chou.



The continual company growth is proof of this concept. In addition to the

In the meantime, Clover Display generates more than 85% of its sales with display solutions, which are optimized to the wishes of the customers and their applications. There are many reasons for this. First of all, the short reaction times, the tight communication with customers during the entire project and by comparison favorable prices. However, what is more important is the trust in the reliability of Clover Display. Gleichmann Electronics, as a design-in oriented distributor, obviously aims to optimize as many areas of the customer's supply-chain as possible. Our level of success is obviously dependent on the reliability of our suppliers. "In

the past 15 years of working together, Clover Display has never let us down. Neither in solving technical problems nor with regard to promised delivery dates. For a distributor as well as customer, this type of partner is what is wanted, but unfortunately rarely found," knows Rafael Boehm, Marketing Manager Custom LC-Displays, from

many years of personal experience.

Up to now, Gleichmann Electronics has delivered in excess of 4 million displays from Clover Display for machine controls for e.g.: lathes and industrial sew-



ing machines, metering and measurement systems, timer switches and programming devices, cash systems, etc., but also for small kitchen appliances and medical applications. We will happily work together with you to

define a special Clover Display solution that is optimized to meet your technical as well as price requirements. If you have any queries, please do not hesitate to contact our competent display team.

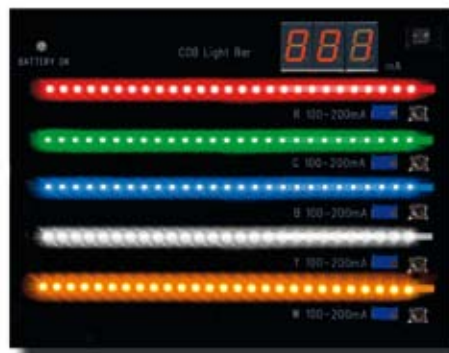
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Response number 183

Harvatek's chip-on-board technology enables low-cost and extremely space-saving LED lightings

LED manufacturers like Harvatek rely more and more on chip-on-board technology in order to save the user additional space, power and cost. However, what is so special about this technology?

The assembly of classic LEDs with two to six leads, also referred to as through-hole LEDs, requires that first of all holes are drilled; the LEDs are then set in the holes and finally, soldered on the reverse-side. This process obviously requires far too much space on the printed circuit board (PCB) and furthermore, is too expensive in respect of assembly costs. Because of that, for a long time now, LEDs are also offered as surface mount devices (SMDs). Surface mount soldering processes do not require any extra holes; the devices can be directly mounted on the PCB and soldered. However, also here, the space-saving is limited by physical boundaries. Even

extremely thin LEDs with 0603 footprint - whose height, in the meantime, could be reduced to 0.25 mm - only offer limited help to resolve the space problem. Unfortunately,



ly, flatter does not necessarily also automatically mean smaller footprint.

However, chip-on-board (COB) technology offers the possibility of real space-saving. With the COB manufacturing process not LEDs with leads are soldered to the PCB, but the LED chip is mounted direct on FR4 or

aluminum PCB as substrate and then bonded according to the circuit. Following the function test, the individual chips (dies) are molded; a separate package is therefore not required. The only disadvantage: many assembly companies and all the more, processing companies still do not have the possibility to handle LED chips.

Harvatek has designed a standard COB module HT-070Gxx, specifically for such customers. The modules not only help to save space, but also do not generate any great amount of heat, which would have to be dissipated through additional costly processes. The 27 LED dies are mounted on the PCB so

that each chip can operate with its nominal current of 20 mA. The LED modules are available in the five standard colors of red, green, yellow, blue and standard white, whereby the white version combines a luminous intensity of up to 30,000 millicandela (mcd) with the smallest space. With a length of only 161.5 mm, the HT-070Gxx module, in combination with different controls in the signal, architecture or ambient illumination, can be used for display backlighting and for a lot more.

Do you want to know more about Harvatek's standard COB module HT-070Gxx or on the topic of chip-on-board LEDs? Either send us an email with your specific query or give us a call and we'll be happy to assist you.

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Response number 184

CMOS competes with GaAs in HF switches

NEC Electronics recently introduced three CMOS 4 x 2 matrix HF switches; comparable in performance to GaAs switches, but lower in cost and - especially

in multi-switch circuits - more space-saving. All devices can be used in a frequency range from 250 to 2,150 MHz. The isolation parameters range from 35

dBm (0.25 to 0.95 GHz) for the devices μ PD5715GR and μ PD5716GR to 42 dBm (0.25 to 2.15 GHz) for the device μ PD5720K. Insertion loss - depending on device

type - is specified at 6.7 dBm or 6.9 dBm.

An additional 4-bit decoder was integrated in the μ PD5720K HF switch.

By means of this decoder, four SPDT switches can be saved with 8 x 2 multi-switch circuits. The possibility to construct multi-switches on only two levels provides the user with a significant space advantage compared to a traditional design with pin diodes.

The CMOS 4 x 2 matrix HF switches μ PD5716GR

and μ PD5720K, designed for an operating ambient temperature range from -40 to +85°C, require 5 V supply voltage; the μ PD5715GR requires



3.3 V. The μ PD5715GR and μ PD5716GR devices are each offered in a Pb-free 16-pin Thermal Enhanced Thin Shrink Small Outline Package (HTSSOP); the μ PD5720K

HF switch in a 20-pin Quad Flat No-Lead (QFN) package. Additional information regarding these CMOS 4 x 2 matrix HF switches from NEC Electronics can be obtained at:

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radio-frequency@msc-ge.com
Response number 185

10 years Gleichmann Electronics in Turkey

How time flies! It seems like only yesterday that the office was opened. Thereby, Gleichmann Electronics in Turkey is celebrating the ten-year anniversary of the opening of its office.

Gleichmann Electronics' liaison office in Turkey is lead by its Country Manager, Ilker Balci. The office, which Ilker built-up with great personal dedication, can look back on an extremely successful decade. This is not least thanks to the tireless efforts of Osman Bozkurt, a member of the team from the beginning, Mustafa Oruc, Melih Alyanak and Derya Haznedar, who joined the Gleichmann sales team as an application engineer in 2001.

In 1998, NEC Electronics assigned the sole distribution rights for NEC Electronics' products in Turkey to Gleichmann Electronics. The reason for this was



In the past 10 years, Turkish customers have learned to appreciate the reliability and competence of this team (from left): Osman Bozkurt, Mustafa Oruc, Ayca Algün, Ilker Balci, Ceren Caner, Derya Haznedar and Melih Alyanak.

based on NEC Electronics' exceedingly positive experience with Gleichmann Electronics in Germany and the

UK. Over the years, together with NEC Electronics, the highly motivated team – which in the meantime has grown to seven employees – has succeeded in creating

technically competent and reliable distributor partner.

The liaison office in Turkey currently serves as office for both Gleichmann Electronics and MSC. Due to the comprehensive product portfolio of the two sister companies, our two long-standing inside sales assistants – Ceren Caner and Ayca Algün – thereby look after the different segments of the Turkish electronics industry.

We wish our Turkish colleagues, all of whom can look back on 15 to 20 years of sales experience, continued success within the MSC-Gleichmann family.

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Response number 186



Personal Profile of Rafael Böhm – Gleichmann & Co. Electronics GmbH

Rafael Böhm joined Gleichmann

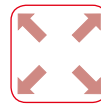
Electronics in 1998 and recently celebrated his tenth year working for the company. Raphael has dedicated himself to the topic of displays.

As an Industrial Engineer, Rafael recognized at an early stage the increasing need for visualization in industrial applications. He assisted in the systematic establishment and expansion of the Custom LC-Displays business division. Our customers and suppliers not only value his technical

competence, but above all also his reliable intuition for the small and large concerns of the users. In the first years, he was a "lone wolf" in respect of displays. Today, as Marketing Manager Custom LC-Displays, he leads a team of six persons.

In his leisure time, Rafael – the proud father of a one

year old son – gladly spends free time devoted to his hobbies, which include photography and cooking. That is of course, assuming he doesn't just happen to once again be underway on one of his beloved canoe tours high up in Canada's North.



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