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FOR THE SOUTH-EAST EUROPEAN COUNTRIES

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Optional processes: legend print, carbon print, Ni/Au plating, electrical test, stencils, SMT assembly.



Materials: base materials - FR4, Rogers, dry films - Du Pont, Morton, solder masks/legend inks - Lackwerke Peters.

MICRON-20

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PICDEM HPC Explorer Board

This low-cost demo board is the ideal complement to the MPLAB[®] ICD 2 In Circuit Debugger to evaluate the performance of Microchip high-end 8-bit microcontrollers of the PIC18F series. The board features a PIC18F8722 microcontroller, which is the superset of the entire 64- and 80-pin PIC18FXXXX family. A daughter board is also part of the kit and allows different processors sharing the same pin out to be mounted and tested on the Explorer board. The same connector allows MPLAB ICE 4000 (and via extension MPLAB ICE 2000) real-time in-circuit emulators to be attached to the board.

PIC18F8722, 128K Flash, 80-pin TQFP microcontroller; Full pin break-out for easy wire wrap/prototyping; Daughter board and MPLAB ICE2000/4000 connector; 10 MHz crystal oscillator (to be used with internal PLL to provide 40 MHz operation); Convenient connection for MPLAB ICD 2 (In-Circuit Debugger) for in-circuit programming and debugging; Power



supply connector and programmable voltage regulator, capable of operation from 2.0 to 5.5V; Potentiometer; Temperature sensor demo included; 8 LEDs. RS-232 port. Reset and Bootloader button; PICtail[™] daughter board connector; Serial bootloader ready; 32 kHz crystal.



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high-quality printed circuit boards



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WAGO: Relays for all applications

WAGO have added new items to the Series 788 and 789 range of relays.

The relay modules, Series 789, are designed for use in distribution boards as well as meter cupboards. They are also ideally suited as an interface between 24V control systems and high voltage consumers. This product range has been expanded to include the two following components: a 24VDC 4-way relay module and a 24VDC 2-way relay module; the break contacts are capable of carrying 16A each.

The relay sockets, Series 788, are particularly well suited for switching applications in industry and process automation. They can also be mounted close to the machines as the CAGE CLAMP® S technology allows the connection of all types of conductors and the robust le-



ver protects the relay against vibrations. The lever eases relay replacement even when the relay sockets are placed close to each other. The new components consist of a relay module with positively driven contacts and a relay module with manually operated contacts.

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U-BLOX: TIM-LH SuperSense™ GPS Module for Weak Signal Tracking

The TIM-LH combines unprecedented high sensitivity for weak signal tracking with excellent navigation performance and very low power consumption. SuperSense™ provides tracking sensitivity of -158 dBm. It enables GPS coverage in places where no GPS reception was possible before. These excellent performance characteristics make the TIM-LH suitable for a wide range of consumer and professional products. SuperSense™ creates new application benefits like:

- Unprecedented sensitivity for weak signal tracking (indoor GPS)
- Urban canyons and dense foliage
- Short tunnels
- Covert antenna applications
- One-box in-car navigation devices
- Use of small antennas

with lower performance

Benefits

- Unprecedented sensitivity for weak signal tracking (indoor GPS)
 - 158 dBm tracking
 - 142 dBm acquisition
- Ultra-low power consumption - 170 mW with 3.0 V supply voltage
- Fast Time-To-First-Fix (TTFF)
 - 34 s cold start
 - <3.5 s hot start
- Excellent navigation performance
 - 2.5 m CEP
 - 2.0 m CEP with DGPS / SBAS (depending on accuracy of correction data)
 - No accuracy compromises at low signal levels
 - Active multipath detection and removal
- Highly integrated GPS module
 - Automatic pick-and-place-

assembly

- Reflow solderable
- Maximum flexibility
- Extensively configurable
- Fully EMI shielded
- Passive and active antenna support

Features

- 16 channel GPS receiver
- 8192 simultaneous time-frequency search bins
- 1Hz position update rate
- ANTARIS Positioning Engine
 - ATR0600 RF front-end IC
 - ATR0620 Baseband IC with integrated ARM7TDMI
 - ATR0610 Low Noise Amplifier IC
 - FLASH memory
 - TCXO (Temperature Controlled Crystal Oscillator)
 - DGPS and SBAS (WAAS, EGNOS) support



- FixNOW™ power saving mode
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- Battery supply pin for internal backup memory and real time clock
- Industrial operating temperature range -40...85°C
- Small size: 25.4 x 25.4 x 3 mm

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CMX910: AIS Baseband Processor IC from CML

CML introduce CMX910 – A highly integrated Baseband Signalling Processor IC, for class A and class B marine Automatic Identification System (AIS) applications. The CMX910 reduces component count, minimises board size and operates at an ultra-low voltage.

Half duplex in operation, the CMX910 comprises two parallel I and Q Rx paths, and one Tx path, all configurable for AIS or FSK (DSC) operation. The device performs channel filtering and signal modulation/demodulation, along with associated AIS functions such as training sequence detection, NRZI conversion and HDLC processing (flags, bit stuffing/de-stuffing, CRC generation/checking and slot-timing).

The 1200bps FSK demodulator interface provides the third parallel decode path, using an external FSK modem, required by the AIS class A market. Integrated Rx/Tx data buffers and a slot/sample timer are also provided, all of which greatly reduces the processing requirements of the host micro-controller. The thoughtful provision of a C-BUS controlled interface expansion port, device enabled ports and versatile auxiliary ADCs and DACs, further simplify system hardware design, reducing the overall end-equipment cost and size.

The two main receive channels support simultaneous reception of two AIS (GMSK I and Q) channels or one AIS and one FSK



(1200baud DSC). Additionally a supplementary FSK-only (FX/MX604) receiver can be supported via an external FSK demodulator interfaced to the CMX910. The CMX910 is also capable of transmitting on either AIS channel (GMSK – 9,600bps) or FSK (1200bd) on the DSC channel, as required.

As an ultra-low-power IC, many of the CMX910's on-chip functions can be powered down when not actively required. This innovative feature even allows inter-slot powersaving to the Rx and/or Tx channels when not required in the operating cycle.

The CMX910 is designed to work with any AIS system, providing all the required baseband processing, control and data formatting/un-formatting.

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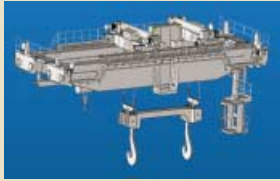
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HEIDENHAIN Makes Plain Language Even Easier: smarT.NC - The Alternative Operating Mode of the iTNC 530

At the Metav 2004 in Dusseldorf, HEIDENHAIN introduced for the first time a new alternative operating mode for the iTNC 530. The new operating mode - christened smarT.NC - guides the machinist in an intuitive, self-explaining manner through the entire part programming process. But what makes it special is even insert "genuine" plain language blocks between individual smarT.NC machining blocks. Of course HEIDENHAIN leaves it to the machinist to decide whether to edit in the conversational editor or in smarT.NC. This procedure is possible because both smarT.NC and the conversational editor access one and the



that smarT.NC can be used as an alternative to conversational programming. This means that smarT.NC lets the machinist decide whether he wants to create and run a program on the conversational level or in the new operating mode. In other words, all previous TNC programming features remain as available and functional as they've ever been.

With smarT.NC, HEIDENHAIN is abiding by its principle: the machinist need only learn those features that are really new - he does not have to relearn features that he has already mastered.

The benefit to the machinist becomes evident: even if a TNC program has been created with smarT.NC, it can be edited as before with the TNC (plain language) editor. He can

same file: the plain language program.

To allow beginners to learn quickly and without extensive schooling, smarT.NC supports the user during programming through easily understandable help graphics that illustrate all required input. Also, easily understood graphical symbols are used in the forms so that types of input information are quickly recognized for different operations.

But smarT.NC offers more than just an alternative, and simpler, type of programming. Many new features were integrated - for example the pattern generator. This geometry function has something special about it. Machining positions that are definable by regular or irregular patterns are especially easy to pro-

gram with smarT.NC. The new user interface provides a comprehensive selection of patterns.

The definition of contours is self-explanatory through graphically aided forms. The individual contour elements are likewise displayed in the outline; the associated data are shown in a form. The TNC saves the contour itself as a plain language program in a separate file. Since these contour descriptions do not include tool radius

compensation, they can be individually reused later for various operations. The programming graphic immediately displays the contour element as it was entered.

TNC contouring controls are used most extensively in tool and die making. They also play an important role in the educational field. There are now more than 170,000 TNC controls in the field. Introduced more than 25 years ago, plain-language is still the standard

programming language for all TNC



Thanks to HEIDENHAIN's consistent development efforts over many years, conversational programs written on earlier TNC contouring controls can also be run on the newest

controls. When you HEIDENHAIN control, hear people talking the iTNC 530.

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SEE NEWS

Navision to be implemented in Trakya Glass Bulgaria

The Turkish holding SiseCam decided to implement in its daughter company Trakya Glass Bulgaria JSC the ERP system of Microsoft Business Solutions - Navision. The factories in Targovishte, that are in process of construction, will manufacture flat glass and table glassware. The MBS Navision implementation project launched on March 14th, 2005 and will be carried out jointly by Team VISION experts from company offices in Bulgaria and Turkey.

The project started with 18 users and the modules: General Ledger, Purchase and Payables, Sales and Receivable, Fixed Assets, Payroll. By 2007, it is expected to increase the number of users, as well as modules and MBS Navision functionalities. „Our colleagues in Sofia and Istanbul face one of the largest project on the Balkans - the project in Trakya Glass Bulgaria JSC. I am convinced that collaboration among our teams and representatives of the customer will result in project success“, said Zora Blagoeva, Customers and Partners Relationship Manager in Team VISION Bulgaria Ltd.

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REDLER is back on Balkans

Due to the latest business development plans to recover its positions on the Balkans market the leading company specialized in the field of chain conveyors - REDLER Ltd., together with its Bulgarian representative - TOTEMA Engineering, just finished their first trip visiting their current clients in Turkey.



"Being the traditional exporter in Turkey since 1986, REDLER Ltd. is a well known name among the users of material handling equipment with proven quality and productivity. Till the end of 2005 the next targets will be the industrial markets in Bulgaria and Romania", said TOTEMA Engineering representatives.

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ProDesign unveils CHIPit Gold Edition Pro

ProDesign, will announce the immediate availability of CHIPit Gold Edition Pro at DATE 2005. The new high-speed prototyping platform is cost effective, flexible and applicable wherever functional ASIC design verification is required.



The fields of application range from the initial phases of design algorithm creation, the basic IP development and debugging to the validation of complex SoC designs and early „quasi prototyping“ for firmware and software development. CHIPit Gold Edition Pro specifically targets multimedia ASIC and SoC designers and features important functions such as multi-gigabit serial links, embedded PowerPC processors, SSRAM & DDR-RAM memories and PCI Express, LVDS, USB 2.0 and DVI interfaces.

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Omron Strengthens Support in Eastern European Markets

Omron has announced the opening of a new regional office in Bratislava, Slovakia, following significant growth of its components business in Eastern European markets. The company is also expanding into Russia and Russian speaking territories with the opening of a new office in Moscow.

The new Bratislava office will build on the success of Omron's existing Emerging Markets activity by enhancing local presence and providing more direct support for customers. It will be formally opened by Omron's Electronic Components president Mr Steve Yukawa on 18th April 2005.

„Bratislava, capital of the Slovak Republic, is the ideal location for Omron in terms of its central geographic position, good connectivity by air and roads, as well as its well-educated and skilled workforce,“ commented Dr. Miroslav Trifunovic, General Manager, Corporate Planning and Business Development, Omron Electronic Components Europe.

Supervised by Dr. Trifunovic, Omron's new Sales Division Manager - Bratislava, Mr Sinisa Pljevljakusic, will head up a young and enthusiastic team of five, carefully selected for their components expertise, understanding of local indigenous industries and familiarity with Slovak society and culture. This knowledge and experience will help Omron to build strong and lasting relationships with customers and partners in the region.

„Omron has previously supported East-



Sinisa Pljevljakusic

ern European customers through local representatives,“ said Pljevljakusic. „Our new local operation will be dedicated to providing direct support for local customers and we expect to see increased levels of customer satisfaction as a result of improved customer relations activity.“

Mr Pljevljakusic has six years experience within Omron having worked as a Sales Manager for the Industrial Automation Business

where he was dedicated to business development in the Former Soviet Union Republics, South-East Europe, Middle East and Africa. Mr. Pljevljakusic brings with him considerable experience in developing sales networks in Eastern European countries, as well as extensive relationships with key personnel in local industries in the Emerging Markets area.

The Omron Corporation manufactures a wide range of electrical and electronic control equipment and components. Omron's electromechanical and electronic components business in Europe is handled through Omron Electronic Components Europe (OCB-EU), reporting direct to its global HQ in Japan, and managing a series of subsidiary companies in ten major European countries including the UK.

Omron is Europe's leading supplier of electromechanical PCB relays, and a leading supplier of micro switches, DIP switches, opto-switches, photomicrosensors and connectors.

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Eurointegration in Action

Mutual acceptance of the testing certificates and reports has been established by Bulgarian and Romanian testing laboratories

Being deeply involved in the processes of establishment and stabilization of a conformity assessment system in the field of the New Approach Directives of EU in the Balkan Region, on 22.03.2005 an agreement concerning the mutual acceptance of the testing certificates and reports between:

„Testing of electrical products“ JSC (TEP JSC - www.iep-bg.com) and The Research and Design Institute for Electrical Engineering – Department of electrical products testing and certification (ICPE-DICPE - www.icpe.ro) was signed.

Taking into account the both partners act according to EN ISO/IEC 17025:2001 as a testing laboratory and to EN 45011:1998, as a certification body, the parties agreed to recognize and accept testing certificates and reports issued by each of the parties under the following conditions:

- testing is performed according to the EN/IEC standards
- the test results are fully presented
- the testing reports are issued in English language.

The Laboratories agreed also to carry out joint testing in order to build mutual confidence.

TEP JSC is an independent private company, successor and inheritor of the traditions of the former Laboratorial complex „ELPROM - IEP“ Ltd., the Testing laboratories at IEP „Nikola Belopitov“ and NIPKIEP-Sofia. The company has over 40 years of experience and practice in the field of testing of electrical prod-



ucts and of conformity assessment and certification of products - CB procedure (in the part CB Test Report). IEP JSC collaborates with and under the supervision of VDE, TUV Rheinland, SGS, Lloyd's Register, GOSSTANDARD and other similar organizations and institutes.

ICPE-DICPE has both the Certification body and the Testing laboratory designated by the Ministry of Economy and Commerce of Romania (MEC), for LVD and EMC. ICPE-DICPE has accredited by RENAR - unique administrator of the accreditation national mark.

The fields of competence of both laboratories are:

- Certification of electric and electronic products
- testing in accordance with Low Voltage Directive
- testing in accordance with Machine Directive
- testing in accordance with Electromagnetic Compatibility Directive

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SEE NEWS

High temperature versions of Omron's D3V

Omron has introduced new high temperature versions of its D3V miniature unsealed switch designed to withstand temperatures of up to 200°C in domestic ovens and similar applications. Rated at 11, 6 and 0.1A the new Omron D3V switches use Polyphenylene Sulfide (PPS) plastic molding material because of its excellent high-temperature performance, inherent flame retardance and chemical resistance. The 6 and 0.1A versions are VDE and UL approved for an operating temperature of 200°C whilst the 11A has been submitted to VDE and UL for approval at 155°C. Omron has released the new D3V switches with the same range of actuators and contact layouts as the standard types. All are available with either internally or externally fitted levers, two fixing positions for external levers and a choice of terminal options. The switches are offered in SPDT, SPST-NC and SPST-NO configurations. The D3V 0.1A type features a gold alloy cross-bar contact ensuring long life expectancy and high contact reliability.



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Ultra-Small, Low-Power Temperature Sensors from Microchip

Microchip introduced two temperature sensors that offer low cost, a small SC-70 package and low current consumption of 6 microamps (typical), making them an attractive alternative to thermistors. The MCP9700 and MCP9701 temperature sensors provide a complete solution for thermal protection, temperature measurement or thermal calibration. The low power consumption is less than most of the thermal sensor ICs on the market, enabling longer battery life and reducing self-heating for better accuracy. The low output impedance allows direct connection to an analog-to-digital converter input, without the need for buffering amplifiers. The extremely small SC-70 package (40 percent smaller than a SOT-23 package) and the elimination of external components results in a more compact board layout.



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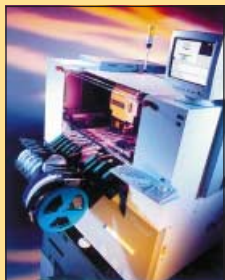
SEE NEWS

Universal Instruments' Exemplary Customer Service Receives a Frost & Sullivan Award

Frost & Sullivan's recent analysis program, 'Growth Opportunities in the SMT Placement Equipment Markets', selected Universal Instruments Corporation as the recipient of the 2004 Award for Customer Service Leadership. Universal receives this Award for its proactive service partnership approach that meets both the stated and unstated requirements of its customers globally.

"In the evolving world of electronic assembly, Universal has a refreshingly proactive and predictive approach to customer service in the surface mount technology (SMT) placement equipment market," says Frost & Sullivan Senior Research Analyst Vikram Shanbhag. "This includes the establishment of a highly networked global service infrastructure with regional hubs to meet specific customer needs."

Universal utilizes a network of over 200 service personnel distributed across the globe to respond to customer installation, training, and servicing needs. The company has a global service headquarters at Binghamton, United States, and regional hubs in Budapest, Hungary and Shekou and Suzhou, China where highly skilled engineers facilitate the design and implementation of locally demanded services.



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Siplace X-series wins "iF product design award" and "reddot design award"

The new Siplace X-platform - co-designed by the Siemens subsidiary designafairs, Munich, Germany - convinced the juries of the international iF product design and reddot design competitions in every respect. This is proven by the recent successes in the international iF product design and reddot design competitions.



For 2005, the "iF product design award" received more than 2,300 submissions from 31 countries. There are 12 categories, with the Siplace X-series winning one of the coveted awards in the Industrial Design category. The experts on the jury under the chairmanship of Fritz Frenkler evaluated not only the form and function of products, but also their ergonomics and use of environmentally friendly materials and processes.

The jurors of the "reddot design award" confirmed these outstanding features of the SIPLACE X-series. This year they looked at more than 1,900 submissions. The red dot design award ranks among the largest design competitions worldwide. The coveted trophy is the red dot, the international seal of quality for outstanding design.

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WIN - World of Industry 2005



by Bisser Katev, Liudmil Vashev

WIN - World of Industry 2005 closed its doors on the 20th of March with overwhelming record numbers. More than 82.000 (78.000 in 2004) visitors attended the show at the TUYAP Fair & Convention Centre in Istanbul, Turkey, getting an overview of the latest trends and innovation in the manufacturing industries. A total of 819 direct exhibitors (664 in 2004), of which 108 came from 18 different countries (12 in 2004) showcased their products, technologies and services on a net area of 27.315 sqm (21.450 sqm in 2004).

The exhibitors were highly satisfied with their participation in the fair. The extraordinary number of well qualified visitors and the smooth, professional way in which the event was organized were the top reasons for the exhibitors to indicate that they will return next year. Especially the strong increase in the number of international visitors has contributed to the high satisfaction of all participants in WIN 2005. With the support of the Turkish Undersecretary of Foreign Trade, O.A.I.B., D.E.I.K. and IMMIB, trade delegations from Bulgaria, Greece, Indonesia, Iraq, Jordan, Kuwait, Macedonia, Malaysia, Romania, South Korea, Syria, Thailand and

Turkish companies are optimistic for their SEE market

by Liudmil Vashev

During the traditional WIN - World of Industry Fair 2005, Istanbul, Turkey, SEEIM journalists realized a brief inquiry among some of the more interesting participants in the field of automation, electronics and electric equipment, chemical industry and machine building.

The bigger part of the participating companies were presented by employees working in the marketing and sales departments (over 77%) and occupying high or middle level management positions which is explained by the trade character of this event and the aspiration for establishing of new contacts and partnerships.

The participants declared that for them any information related to the status of SEE region market, the market trends data and of course the contact data of customers and other companies involved in their business is essential.

Being asked "Do you intend to establish trade relations with companies from SEE region?" any of the inquired answered positive and asked a lot of questions for the specific market conditions, which is a good evidence for their serious intentions for developing business in the countries from this part of Europe - SEE.

It was nice to find out that the Turkish companies except to the traditional and proven for them markets like Middle East, Asia, more or less South Africa and Western Europe, pay more and more attention to SEE region as important and potential part of the future United European market. Furthermore, over 30% of the inquired Turkish companies already have established trade structures in some countries from SEE.



visitors from many other countries came to the fair to strengthen their business relations with numerous producers and suppliers from Turkey and all over the world. Furthermore, the national as well as the international media showed significant interest in the various industry sectors of the fair.

For the first time WIN 2005 hosted **an official partner country - Greece**

With the support of The Federation of Greek Industries – SEV International - a valuable Greek-Turkish Business Forum was organized alongside the fair. More than 20 topics were presented and discussed in the forum, panels and workshops. A special emphasis was given on the growing trade between both countries focusing on the current investment climate in Turkey and Greece. Considerable interest was also shown at the „Industrial Activities Summit“, a perfect platform for information exchange consisting of 150 conferences, seminars, forums, panels, round table discussions, workshops and company presentations. The activities brought together international expertise in the seven interrelated sectors of Automation, Electrotechnology, Machinery, Materials Handling, Welding, Chemistry and Hydraulics & Pneumatics. Professionals gained valuable insights about the current situation and future trends of the relevant sectors and had the opportunity to conduct fruitful discussions with key-players of the industries.

WIN – World of Industry was strongly supported by 25 national and international associations and organizations including the Turkish Undersecretary of Foreign Trade. The support given contributes not only to the growth of WIN but increases the dynamism of the manufacturing industry. WIN 2006 will be held from 16th to 19th of March at the TUYAP Fair, Convention & Congress Centre in ISTANBUL.



TLL Media Ltd. Publishing House is traditionally participated at WIN - World of Industry last few years. The main publication we present is **South-East European Industrial market**, distributed on Turkish market and the other 7 countries in South-Eastern Europe - Bulgaria, Croatia, Greece, Macedonia, Romania, Slovenia, Serbia & Montenegro.



GFC AntriebsSysteme GmbH presented itself as an efficient and market-oriented company for manufacturing of high performance and valve gear units.



The well-known Bulgarian company **Rocon** participated at its partner stand **Girisim Elektrik** - specialized in the field of LV-MV and HV electrical equipment.



Esman Co. Inc. represents 26 overseas companies specialising in electronic assembly machines, solder, flux etc. and supplies to manufacturers in Turkey.



ZGPU is popular Bulgarian manufacturer of incremental and absolute rotary encoders; Hall sensors; plotters; of vibration discharge hopper feeding devices, vibration linear conveyors and orientation systems, etc.



The **MICRON 20** factory, specialized in design and manufacture of prototypes, small/middle volume single/double sided and multilayer PCBs is a traditional exhibitor at WIN - World of Industry.



New ranges of boxes and enclosures were presented at **Tempa Pano Stand**



Ekon Ind. Co. Ltd. is specialized in workshop equipment, shelving systems, mobile storage systems, office and project cabinets.



Aktif Muhendislik is an engineering company, which works for LV/MV/HV systems on measuring, monitoring, protecting, controlling and SCADA based automation systems in power and energy sector.

Using temperature sensors in electronic equipment

George Paparrizos,
Microchip Technology

Electronics designers have made use of temperature sensors for many years, in applications ranging from shutting down the system during an over-temperature condition, to providing thermal calibration in high-accuracy designs and displaying temperature data. In the past decade, the need for higher performance and more-compact systems has driven the wide adoption of silicon-based thermal sensors in many different types of design.

The growing use of high-performance digital devices, such as CPUs and ASICs, has resulted in systems that dissipate a significant amount of power. These systems have new thermal management requirements that have led to the development of a new generation of temperature sensor ICs that can simplify design and provide an easy interface to other components. Designers need to understand the differences between the most popular types of temperature sensor ICs, so that they can select the best one for their application – increasing system performance and shortening development cycles.

Silicon temperature sensors

Silicon temperature sensors make use of the predictable variable properties of semiconductor materials. To be more precise, they operate by measuring the voltage across a bipolar diode, which is created from a PNP or an NPN transistor formed from the substrate of a CMOS-IC process.

The fundamental voltage equation for a diode includes two parameters that are process-dependent: non-ideality constant (η) and saturation current (I_s). This dependency can be eliminated by using two current sources to cancel the saturation current variable via subtraction. The non-ideality factor is nearly „one“ and varies only slightly for a given process. The simplified expression for a voltage of a silicon pn-junction at two current densities that is proportional to temperature is:

$$\Delta V_{BE} = (K/q) \ln(N) \times T$$

where T is the temperature in degrees Kelvin, K is Boltzmann's constant, N is the current source ratio, and q is the charge of an electron. This equation shows that the difference in forward voltage is directly proportional to temperature and three constants. Thus, an accurate forcing of the ratio of the two current levels – and not the current source absolute magnitude – can allow a V_{BE} measurement that is (almost) independent of the initial forward voltage, physical size of the junction, leakage, or other junction characteristics.

Temperature sensor types

The principal method of classifying silicon temperature sensors is by their output-signalling method. The first silicon-based sensors on the market were basic analogue-output types. However, there is now a growing trend toward using ICs that incorporate a large part of the signal-conditioning circuitry. Today, the most popular types of thermal sensors are voltage, logic, and (multi-bit) digital output.

Voltage-output (or analogue) temperature sensors function very similarly to thermistors – providing a voltage output proportional to the measured temperature. A silicon temperature sensor is a better choice than a thermistor when a linear relationship between voltage and temperature is needed, as it eliminates the need for an external linearisation circuit and in many cases a voltage-follower operational amplifier (see Figure 1). Analogue temperature sensors are available with different output scales (K, °C or °F) and voltage offsets. This allows negative temperatures to be monitored while using a single-ended supply. The output signal of an analogue temperature sensor can be input to a comparator to generate an over-

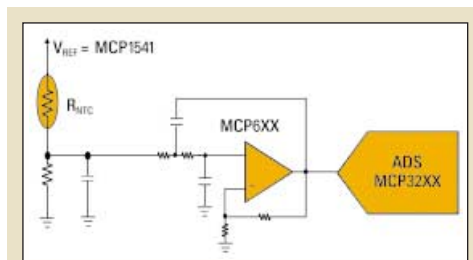


Figure 1: Typical thermistor-based circuit

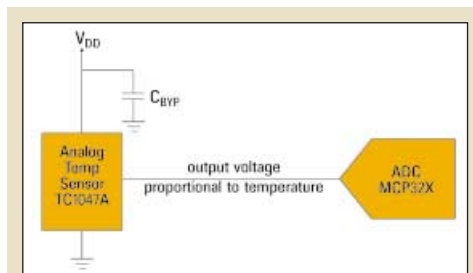


Figure 2: Typical analogue temperature-sensor based circuit

temperature indication, or it can be input directly to an analogue-to-digital converter (ADC) for displaying real-time temperature data (see Figure 2). Analogue temperature sensors are ideal for applications requiring low cost, small size and low power consumption.

Another type of sensor is the temperature switch or logic-output device. This asserts a logic signal when a measured temperature is higher (or lower) than a specified limit. The trip point (limit) is either factory-programmable or can be set via an external resistor. These ICs provide simple logic-level outputs, providing ease-of-design and low cost. Temperature switches often offer additional features, such as adjustable hysteresis level and multiple temperature trip-points and output signals. Typical applications for temperature switches are systems that require a simple over- or under-temperature indication (temperature alert) to shut down the system, turn on a fan or start a heater (thermostat control).

Digital temperature sensors were developed to meet the need for more sophisticated control, better accuracy and higher resolution. These devices were first used in computing equipment, but quickly found applications in many other systems. Typical uses include data-com equipment, in which the high-performance FPGAs or CPUs need to be monitored for over-temperature conditions, and equipment with hard disk drives, where temperature extremes can result in read errors and data loss. A typical temperature-driven implementation for high-power processors is the clock frequency reduction, which results in lower capacitive switching losses, and therefore reduced supply current and extended battery life. Digital temperature sensors provide direct temperature readings without the need for external components. They accomplish this by integrating all the necessary functional blocks in space-saving packages (see Figure 4). A major advantage of the digital interface in these devices is the increased level of sophistication in the temperature-control loop, as well as software control, which allows an easy upgrade when system hardware or thermal properties are changed.

Figure 4 shows a block diagram of a typical digital temperature sensor. The TC77 serial-output sensor integrates the temperature sensor, a

high-resolution ADC and digital registers on a single chip. Communication with the processor is possible via an industry-standard SPI™ serial bus interface. This bus uses SCK, SI/O and CS pins to transmit and receive data. Temperature is measured by monitoring the voltage of a diode with the 13-bit onboard ADC. The temperature data is then stored in the *Temperature Register*. If a *Temperature Register* read operation occurs while an ADC conversion is in progress, the previous completed conversion will be read out. The *Configuration Register* is used to select either continuous temperature conversion or a shut-down operating mode. The shutdown mode disables the temperature conversion circuitry to minimise the power consumption. However, the serial I/O communication port remains active.

Digital thermal sensors are currently offered with various, industry-standard communication protocols, primarily the SPI™ interface, I2C™ protocol and SMBus™ serial interface. The current trend is the development of sensors with lower temperature error and higher temperature resolution. These attributes allow the system to monitor temperature environments more accurately and at the same time detect very small temperature changes. Such a performance allows the system to react more quickly, ensuring a higher level of reliability and thermal protection. In addition to reporting temperature readings to a microcontroller or a logic IC via the digital interface, many of the devices can also receive instructions from a microcontroller. Those instructions are often temperature limits, which, if exceeded, activate a digital signal on the temperature sensor IC that interrupts the microcontroller or the microprocessor. In this

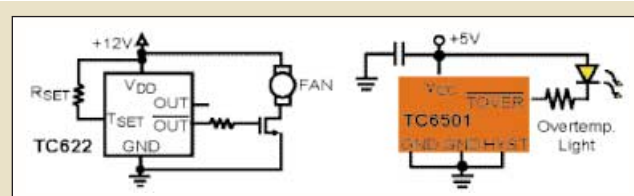


Figure 3: Typical temperature switch applications

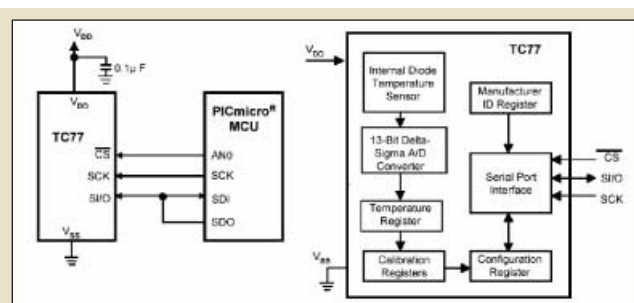


Figure 4: Block diagram and application of a typical digital thermal sensor

way, even in the case of a software lock up (communication not possible), a hardware-based signal can initiate a system action while the temperature is rising to a dangerous level. The microcontroller can then, for example, adjust fan speed or back off the speed of a microprocessor to keep the temperature under control.

System and design engineers now have access to several temperature sensor types. An evaluation of the application's purpose and requirements can significantly simplify the choice. The output (and type) of the thermal sensor selected for a specific application is determined by the available microcontroller hardware and software resources, as well as the complexity of the sensor circuitry. This can be a hidden cost for the design and can lead to both cost and performance surprises. Digital temperature sensors are easy to interface to the rest of the circuitry and require no additional signal conditioning circuitry. Understanding the differences between the temperature sensor IC types can help engineers to select the best product for the task.

Navigation system with integrated road map of Bulgaria and Europe

The navigation system offered by "Trans Logistics Systems" Ltd. with integrated detailed road map of Bulgaria and Europe is the first of its kind. It is provided in two versions: Pocket PC and integrated multimedia center - "AUTO GUIDE". "AUTO GUIDE" turns your vehicle in a mobile office. The system is a mini car computer Pentium 4, with 7" TFT display and integrated GPS receiver. "AUTO GUIDE" has a wide range of features: Internet, DVD, CD, Radio, TV etc.



gistics, security and control of road fleets, using various data transfer methods: SMS/GPRS/Data call/Radio. As a tradition "Trans Logistics Systems" Ltd. participated again in the international fair CeBIT-Hanover in Germany this year, where it presented its latest products. The quality of the provided services is very high, which is evidenced by the numerous joint projects, implemented across Europe and in Bulgaria.

The navigation system Pocket PC introduced by "Trans Logistics Systems" Ltd. can be used with equal convenience both in a vehicle and during walking/hiking journeys. The presence of a voice directing guarantees the easy and convenient use of the navigation system.

The wide product range of the company includes also GPS devices, designed for lo-

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Omron's implementation in crane construction

One of the leading companies in the automation field, OMRON can provide complete technical equipment and software for crane construction. This applies particularly for high tonnage cranes with demanding requirements for the electric equipment.

In Bulgaria, the teams of the „GEMAMEX“ and „KRANOSTROENE ENGINEERING“ companies have had successful experience in this area. Three joint projects for high tonnage cranes (over 50 t.) with a frequency control of the motion and hoists and PLC control have been accomplished.

A distinguishing characteristic of these projects is that they combine original developments of „KRANOSTROENE ENGINEERING“ in the electric equipment and the construction of the metal structure and GEMAMEX know-how in the area of OMRON based hardware and software for control of such installations.

The realization of the control of a 150 t. overhead crane with 2 hoists and an additional electric hoist will be presented as an example.

Its structure is shown on fig. 2. The traverse carrying the load is mounted on two hoisting mechanisms of 75 t. each, located on two separate carts. In order to keep the traverse horizontal during lifting and lowering, it is necessary to have a synchronized control of the two frequency inverters of 110kW with vector control, which power the electric engines of the hoisting mechanisms and reverse connection by speed. Each inverter controls two electric engines of 45kW, setting in motion the respective cylinder of the hoist.

The movement of the bridge of the crane is controlled by a frequency inverter of 110kW with vector control, which sets in motion four 2-shift engines of 22/14kW.

Each of the crane carts is set in motion by two 2-shift electric engines of 7.5/3.8kW. The four electric engines are powered by one frequency inverter of 37kW with vector control.

The second shift of the electric engines for horizontal movements is used in the bypass service mode and the sway-free movements of the bridge and crane cart are guaranteed when the inverter is disabled.

The inverters are made by OMRON-YASKAWA, 1 CIMR-F7Z40370A and 3 CIMR-F7Z41100A respectively and the ones for the hoists are supplied with specialized crane software. The communication with the inverters is implemented via Profibus DP interface. The shaft encoders are by OMRON, too. The crane control system in-

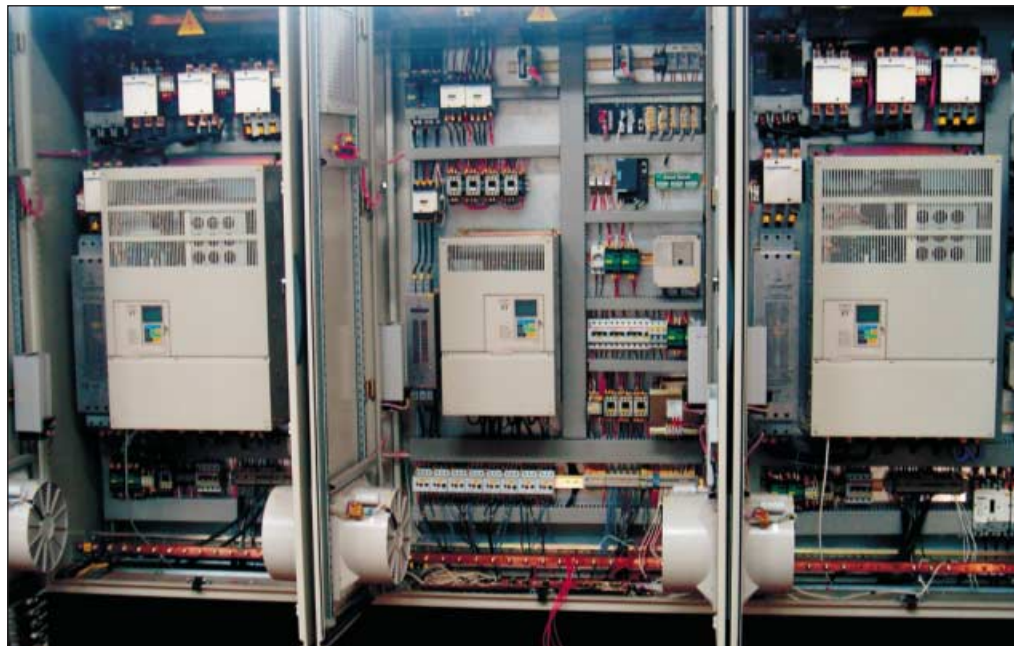


Figure 1.

cludes two OMRON CJ1M PLCs with a distributed architecture.

The first programmable controller is located in the operator cabin and serves the OMRON NS5-SQ00B sensor video terminal and the joysticks in the cabin, as well as the control of the crane movement through out-

operate in a temperature range (-40 to +40°C) and for that purpose the cabinets are thermostated, while the frequency inverters, regulated by the PLC, heat the engines against freezing and condensing.

The development allows the controlling of the crane movement by the fuzzy algo-

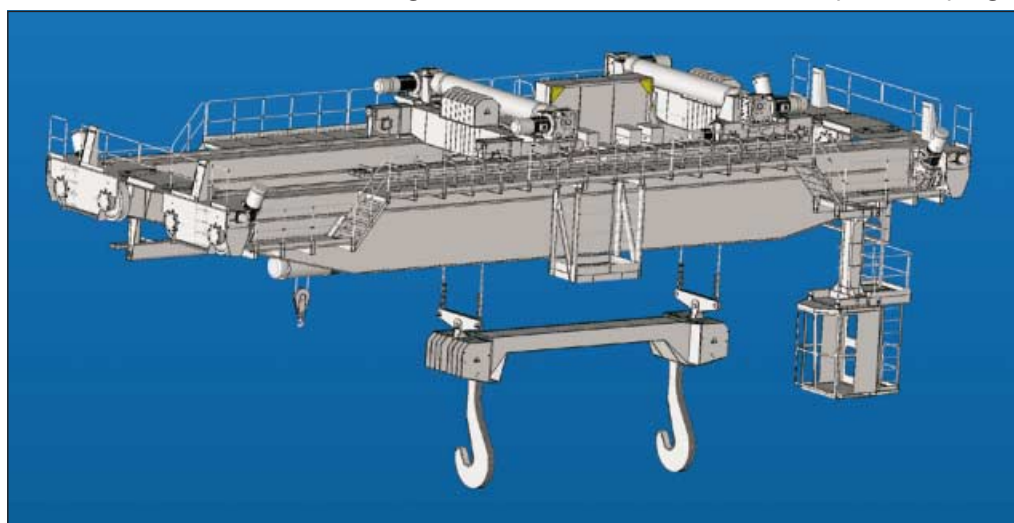


Figure 2.

side islands for input-output signals. A PCM-CIA card is used to provide an archive of the status and movements of the crane. The second PLC is located in the 3-section cabinet (fig. 1) with the frequency inverters, filters and electric bypass part on the cart platform. It processes the information for the hoist weight sensors (two on each cylinder), the end switches of the hoist mechanisms and the travel switches of the cart movements. It also controls the movement of the cart and the two hoists. The supply of the system is of the closed trolley multiconductor type, the power supply and the supply of the Profibus DP network. The cabinets are assembled by Bulgarian company Telecon Co. The entire control system is designed to

rithm for minimizing the swaying of the traverse, as well as the retrieving of the energy back to the system during lowering of the loaded traverse. The recuperation of the energy from the lowering of the load towards the setting in motion of the cart and the crane movement is achieved through the DC busses of the inverters.

Additional testimony to the quality of the projects is the fact that a part of the structures and electric crane controls is realized and programmed in Bulgaria, the construction of the heavy metal structures is done abroad and is implemented in another country.



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SEE companies participation at Hannover Fair 2005

By Teodora Ivanova, Marieta Krasteva

Comparing to the huge amount of exhibitors (6,090) from 65 different countries which took part at Hannover Fair 2005, the SEE companies participation seems relatively small. But if it is not just a question of numbers, the companies of the region presented good and competitive products and technologies and some of them (still few) were exhibiting themselves at attractive stands. Still bigger part of the countries of SEE region traditionally participates on national stands and such stands at Hannover Fair 2005 were popular, too. Most of these 'common' stands were well organized and looked better than last years.

Most of the SEE exhibitors accented on their satisfaction of the Fair participation sharing again their experience that the results are expected at least after few months. Of course, among the SEE exhibitors we met there were few disappointed exhibitors of the visitors interest - the international visitors are less this year, just German ones are more, they said.

Generally the South-East European markets are still very strong in Subcontracting and very good presented in other parts of Hannover Fair 2005, especially in electronics, electric equipment, automation, hydraulics and pneumatics.

Croatian participation

included not big number but the most famous companies in electrical industry - well known everywhere KONCAR ELEKTROINDUSTRIJA, ELKA kabeli, DALEKOVOD and Energy and industry focused companies of Duro Dakovic Group. Duro Dakovic, known as a big metal producing company and famous producer of equipment for power plants and industry, participated with 6 companies of the group of the areas Energy and industry, Vehicles and machines and Infrastructure. Zagreb Company Dalekovod is specialized in suspension and jointing equipment, steel lattice towers for overhead transmission lines 10 - 500 kV, as well as various steel structures, end fittings for insulators, lighting poles, antenna masts and similar products.

Greek participation

at Hannover Fair 2005 included only 2 companies - NEOKEM S.A. and TROPICAL S.A. NEOKEM is specialized in development and production of industrial coatings, one of the leading companies in its field in Greece and good positioned in Romania due to its subsidiary Neokem Romania SRL and extending its exports network in Europe, Middle East and North Africa. TROPICAL is well known provider of fuel cells and hydrogen technology systems.

The only Macedonian company

presented on the Fair was Sigurnosni Pojasi, well known as manufacturer of Safety belts and Fabric parts. Sigurnosni Pojasi participated together with Romanian companies specialized in the field of casting - ALTUR and Faur S.A.

Totally 37 Romanian companies

took part at Hannover Fair 2005. Big part of them works in the field of moulding and casting. Some exhibitors presented on the joint Romanian stands work in the field of electric equipment - for example: AUTOMATICA S.A. well known producer of low and medium voltage switchgear and distribution systems; Marsat specialized in integrated solutions for process automation for mining industry; Sykatec SRL producing accessories and chassis for housing and switch cabinet construction, and empty housings as well. Pumps and valves producers UPRUC TAP-SDV (industrial valves, centrifugal pumps, castings of stainless steel or cast iron) and HIDROJET S.A. (gear pumps and hydraulic, and also of carburettors and fuel injectors, etc.) showed good presence of the Fair, too.

pneumatic plants and equipment for nuclear power stations safes.

- S.C. HIDROSIB - a manufacturing facility producing both hydraulic pneumatic equipment, privatized in 2004 by the British company ADVANCED HANDLING.

Serbian Participation

at Hannover Fair 2005 with one exception (IMT AD, Livnica) was presented at one good looking stand of companies members of Serbian Chamber of Commerce. Nevertheless it consisted not many exhibitors Serbian participation was really visible due to the good products presented, Serbian Business Relations Day at 04/12/2005 and because of the visit of the Serbian delegation, led by Serbian President Boris Tadic.

Among the exhibitors at the Serbian stand were the popular manufacturer of hydraulics and pneumatics PRVA PETOLETKA, system integrator Informatika, technical rubber goods producer Trayal, motors and engines producer Industrija Motora Rakovica, bearings producer FKL, manufacturer of pumps and motors Industrija Precizne Mehanike, etc.

Exhibitors South-Eastern Europe

Country	Exhibitors	Exhibition space in sqm
	2005	2005
Bulgaria	32	281
Croatia	10	177
Greece	2	35
Macedonia	1	0
Romania	37	428
Serbia and Montenegro	6	60
Slovenia	17	413
Turkey	126	3,418
Total:	231	4,812

Bulgarian participation

was very similar to the last years in terms of companies and the way of participation. As before there are several Bulgarian stands and very few separately exhibiting companies. Traditionally presented are companies as BETA Trading, Dinamo, Kirkovo, Precis Inter Holding, Spartak, Technoles, etc. Among the exhibitors at SIPPO - SWISS Import Promotion Programme, stand were IPO, Drouzha, Forging and Press Plant, Progress - also very traditional participants at Hannover Fair for years. At the Bulgarian stand joining the participation of Bulgarian companies in the field of measurement and electric equipment few popular producers were presented - ZGPU, Telephone and Telegraph Technique, Incoms Tokoizpraviteli, Elhim Iskra, etc. Companies working in Hydraulics and Pneumatics area (for example, Hidropnevmotekhnika) were presented by German company Bulmak.

Among separately participating exhibitors at nice looking and well organized stands were:

- Multiprocessor Systems - producer of electronic (static) electrical energy metering devices - E-meters, hand-held units for automating reading of E-meters, software.
- Industrial Technic - manufacturer of hydraulic pumps; valves and hydraulic accessories.
- Comeco - manufacturer of wide range automation and control equipment.

Interesting presentation of the following companies should be also mentioned:

- Angular contact ball bearings, radial ball bearings and tapered roller bearings manufacturer from Brasov Rulmentul S.A.
- The traditional and popular manufacturer of great ball and roller bearings in Central and South-Eastern Europe RULMENTI.
- ELECTROPRECIZIA S.A. showed wide range of industrial motors and hydraulic pumps, as well grinding and polishing equipment and plants and belt sanding machines.
- Importer in many countries, incl. Bulgaria - HESPER S.A, manufacturer of hydraulic gear pumps, motors and steering units, hydraulic and



Nice looking stand of the traditional exhibitor Industrialtechnik



ZGPU management were satisfied by their participation at Hannover Fair 2005



Traditionally participating BG producer with already strong German market Comeco

Turkish participation

was times bigger than any of the others countries in our region. It consisted 126 companies in most of the trade fairs within Hannover Fair 2005: INTERKAMA+, Factory Automation, Motion, Drives & Automation, MicroTechnology, Subcontracting, Energy, etc.

The most interesting and visible participation of the following companies should be mentioned:

- Known to SEEIM readers producer of measurement and control instruments and temperature sensors EMKO ELEKTRONIK.

- INTER Electric-Electronic, one of the leading manufacturers of Industrial Control, Automation and Monitoring Relays, Various Electronic Timers, Liquid Level Controllers, Photoelectric Relays, etc. and Panel Multimeters, Power Factor Controllers and MCM-Built Detective Multimeter for early-stage-motor fault detecting, etc.

- Producer of low-voltage quick-break fuse links up to 1 kV; network cabinets up to 1 kV and modular designed switching systems up to 1 kV Yavuz Pano

- Federal Elektrik – leading company in the field of low-voltage protection and measuring equipment. Presented plenty of brand new products and a lot of upgraded products within their successful lines.

- Arcelik – member of the KOC Group, one of the most world-wide successful companies, presenting their home appliances motors, hermetic compressors and three-phase and single-phase induction motors.

- FEMSAN DC ELECTRIC– well known manufacturer of D.C. servomotors; D.C. voltage converters and Variable-speed D.C. motors

- ENTES ELEKTRONIK – manufacturer a wide range of electronic relays, Reactive Power Factor Controllers, Liquid Level Monitors, Digital Ammeters, Voltmeters, Frequency Meters, Electric Energy Meters, etc.

- Emas - one of the leading companies in the field of electrotechnical low voltage switch gears and tractor spare parts.

- ELEKTRA Elektronik – producer of single and 3-phase Main Transformers, PCB Mounting Transformers, Ferrite Core Transformers, Harmonic Circuit Filter Reactors and Line Reactors, etc.

- EAE Elektrik manufacturer busway systems (25A...6000A), cable trays, enclosures and underfloor ducting systems.

A new feature of HANNOVER FAIR 2006 will be the „Pipeline Technology“ display sector, covering all transportation aspects regarding petroleum, natural gas and water. We expect that SEE region would be well presented next year at Pipeline Technology exhibition - not by big number of exhibitors but by the most active and impressive companies for sure.

All figures and numbers within the article are based on official information by Hannover Fair organizer Deutsche Messe.

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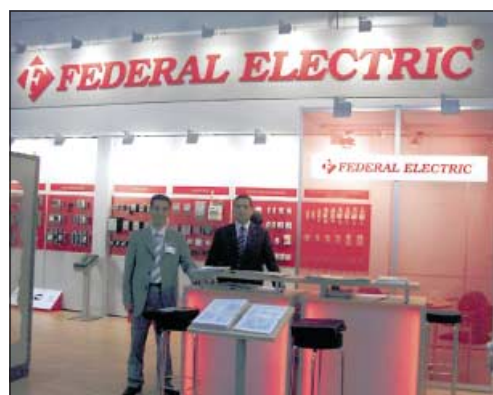
The Romanian stand



The joint participation of Serbian companies included members of the Serbian chamber of commerce



Duro Dakovic Kompenztori stand



Plenty of new products at Federal Electric stand



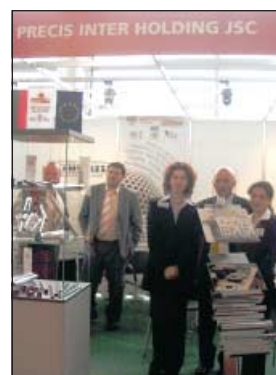
Top products at Multiprocessor Systems stand



Beta Trading Company stand



Kirkovo Ltd. stand



Precis Inter stand

Optimal Technical-economic Solution for Heating of a Production Hall

What is the optimal technical-economic solution for heating of a production hall (workshop) with a total area of approximately 2500 m²? The structure of the hall is a frame with pillars. The distance between the pillars in the walls is 6 m and in the room – 18 m. There are three assembled and functioning portal cranes in the workshop.

The altitude of the factory is approximately 600 m. Gas supply has been installed. The work is done in one eight-hour shift, five working days a week. The nature of the production process does not require frequent opening and closing of the doors. There is a stipulation for guaranteeing 18° C with a -7° C outside temperature. In terms of the production process it is important that the temperature in the workshop does not get lower than 5° C in the nights.

In reply to the organized by the South-East European Industrial Market magazine market research for the possible technical solutions for heating of the aforementioned industrial hall among firms that offer HVAC equipment in Bulgaria we publish various expert opinions on the topic. The received opinions can be generally divided into three main groups – solutions based on heat-conducting appliances, industrial floor heating and gas radiant heating. It should be taken into consideration that in order to find the optimal technical solution to the task, further specifications and characteristics of the site and its application should be supplied.

Heating systems based on heat-conducting appliances

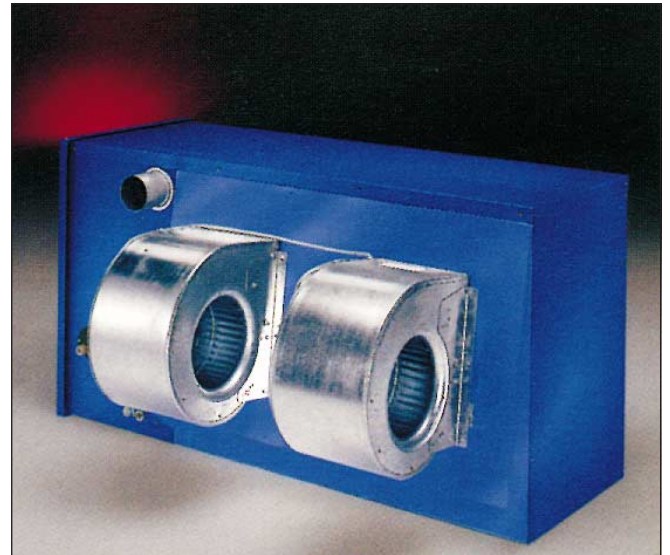
Typical of the heating with heat-conducting appliances is the initial warming of the air, which results in the eventual warming of the subjects and people in the room. The use of heat-conducting appliances requires a beforehand switching of the system in order to provide a sufficient period of time to heat the rooms to the desired temperature. Therefore, in the mornings, when the hall is cold, the heating of the working areas requires time and additional energy. The use of atmospheric heat-conducting appliances is one of the possible technical solutions to the task. The advantages of this type of heating are that it is not necessary to construct a pipe system, but only gas-mains, which accounts for the lower initial investment and also that it is possible to realize zone heating. The disadvantages



of this type of heating are that it leads to great convection and unnecessary heating of great air volume, resulting in higher operation expenses, which can be significantly reduced by careful regulation. Another option for the practical realization of the task is to use water heat-conducting appliances. These are heat-conducting appliances supplied with a water air-heater and a fan. The water heat-conducting appliances require the construction of a central supply system.

The heat supply to the separate appliances comes from a boiler. The appliances can be supplied with a thermostat for easier regulation. The heating installation in this case is based on a boiler, usually regulated by the outside temperature. It is characterized by its high maintainability. Its disadvantages are the heating of great air volume, the necessity of constructing a pipe system. Heating sys-

tems based on atmospheric heat-conducting appliances are offered in Bulgaria by the „ITA COM“ company, and „Ruvex“ company with the trademark KROLL. The „Horoz“ firm recommends the use of heat-conducting heating system, if the production category is either A, B or C according to the international standards. Other firms that have expressed the opinion that in numerous industrial applications the use of gas heat-conducting appliances is rea-



Heat-conducting appliances

sonable are the „ET Dinel-Nedialka Colova“ and „Bulgaria Therm“. The „Energy-BG“ company recommends the use of the ORION AL-KO heat-conducting heating system. Water heat-conducting appliances are also offered by the „Ruvex“.

Industrial floor heating

Its characteristic is that it quickly heats the working areas, but its construction is accompanied by a relatively difficult assembly of the pipes in the floor of the workshop and limitations on the loading during operation. It can be realized as a floor radiant heating.

That is a low temperature heating (temperature range 50°/40°C), performed by coiled in the floor loops of polythene pipes with aluminum deposit. This type of installation requires the construction of a central heat supply line. The water in the installation is heated by the boiler, located in a specially designed boiler-room. The advantages of this method are that it only heats a zone of about 2.5 m above the floor, resulting in the heating of small air volume, which leads to lower



Industrial floor heating

operation expenses.

The systems are usually realized on the base of a central heat supply by a boiler,

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which control is fully automated and it controls the combustion process in accordance with the outside temperature. The effect could reach up to a 30% energy saving. This method of heating allows the convenient solving of the matter with the daily hot water supply, as well as other temperature circles (if any). There is an option for cooling through the floor loops for the summer. It is considered that the high efficiency justifies the higher initial investment. Some other advantages are the even temperature distribution and the reduced convection mobility of the air, which leads to less dust in the air. The relative inertness of the system is also an advantage.

A disadvantage is the necessity of ceasing the production process for the assembly of the floor loops. Maintenance expenses should also be taken into consideration, for example, those for floor coatings. The inertness of the radiant heating is considered by many experts to be an advantage, while others believe it is a disadvantage.

The system mainly functions through radiation and not convection, which prevents the raising of the dust from the floor and protects the respiratory process of the building occupants. The use of a low temperature boiler and/or air cooling heat-pump unit air/water as an energy source can prevent the condensing on the surface of the combustion chamber, which aids the proper application and secures a prolonged functioning of the boiler.

This solution is applicable when the floor surface is not occupied with any special equipment, materials, goods etc. A relative inconvenience of this solution is the raising of the floor level with approximately 15 cm, due to the thermo-insulation, waterproofing, loops, reinforcement, reinforcing plate and coating. Such systems can be implemented by the „Eco-



Infrared gas radiants

thermal“, „ITA COM“ and „Ruvex“ companies.

Infrared gas radiants

It is considered that the competition of the industrial infrared gas-ceramic heating is due to the:

- Use of cheap fuels – natural gas or propane-butane. The radiant system pro-

vides high efficiency.

- Distribution of directed radiant energy without any transportation loss.
- Flame-free, wasteless and noiseless combustion. The maintenance of the system is financially advantageous – there are no expenses for boiler maintenance, heat exchangers, hot water pumps, softening devices and anti-scale chemicals, heating mains and radiators, air conduits and any installations for conducting heated water or air. The options for making serious savings of fuel, personnel etc. make the investment for the purchase of the system a rather profitable one.

Another advantage of the system is the unaging materials of its components – ceramics, stainless steel, brass. This type of heating is characterized by its many advantages compared to conventional heating. First and foremost, it does not require the use of antifreeze systems. Moreover, the working areas and the people are heated directly and as a secondary result they start to heat the air themselves. It is possible to switch the heating only in particular zones of the production rooms.

The effect of the heating can be felt by the people minutes after the switching of the radiants, i.e. it only takes minutes to reach the comfortable working temperature.

Among the Bulgarian companies recommending the use of such systems are „VAC“, on the base of SCHWANK equipment; „CBM Incorporated“, offering CBM International; „Horoz“, by the use of Solaronics, „Gema Engineering“, „Bulgaria Term“, „Nora Gas“, offering systems of Roberts Gordon and „CBM Bulgaria“ by CBM International.

TLL Media Ltd. Editorial Department is waiting for any comments and new ideas for heating solutions of such a production hall.

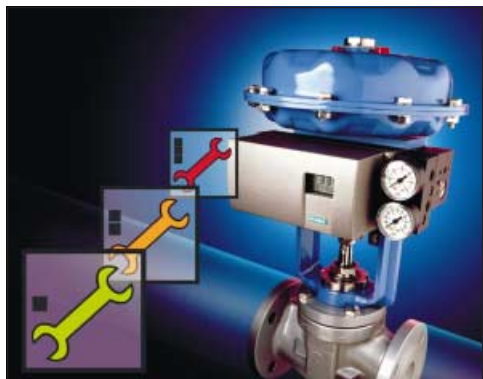
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Hannover Fair 2005 - product news

Positioner provides early signaling of impending failure of a valve or actuator

Siemens A&D has added new diagnostic functions to its Sipart PS2 electropneumatic positioner. The positioner signals imminent malfunctions in the valve or actuator using „traffic light signaling“ in accordance with the Namur NA64 and proposed NE107 requirements. This diagnostics signaling permits the development of ingenious maintenance strategies which improve plant safety and availability. By detecting the early stages of a serious fault, maintenance schedules can be optimized to support both production and safety requirements.

An outstanding innovation of the Sipart PS2 Auto-Tune software is that it automatically learns the reference performance characteristics of a new valve and actuator system. This innovative process provides a performance benchmark stored in the positioner memory and eliminates the requirement to define actuator models and other installation details through complex calculations, table evaluations and measurement procedures.



Usability is further enhanced by optionally displaying the diagnostic signals on the local display, via alarm outputs built into the positioner, or via a communications interface: Hart, Profibus or Foundation Fieldbus to a control system such as Siemens Simatic PCS 7. With easy, flexible access to the diagnostic conditions, performance values, and configuration data the user can choose the interface that works best for their maintenance strategy – from control room PC to onsite local display and pushbuttons.

For fast info - enter 1901 in Free Information Card

Starter solution with Industrial Ethernet communication for Simatic controllers

A new communications processor is suitable for the Simatic S7-300 controllers for small to medium Industrial Ethernet communications solutions: the CP 343-1 Lean from Sie-



mens Automation and Drives (A&D) can connect a controller with up to 12 partner devices. The new module, which is only half as wide as the other Ethernet CPs for Simatic S7-300, possesses the communications functions required for industrial applications.

Communication is possible using the following protocols: TCP/IP with RFC1006, TCP native, UDP, IP-Multicast, S5-compatible communication and S7 communication (server). The module supports SNMP to permit integration of the Simatic controller into network management systems. "Autosensing" permits the CP 343-1 Lean to automatically detect the transmission rate of 10 or 100 megabits/second. Equipped with mechanical "sleeves", the RJ45 connection is particularly suitable in addition to standard RJ45 connectors for the FastConnect RJ45 plug. The new CP is configured and diagnosed using Step 7, just like the other Ethernet CPs. The communications processor can be replaced without the necessity for a programming device since all configuration data are saved on the controller's CPU.

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ESM-xx50 Series Process Controllers with smart recognition modular system

EMKO ELEKTRONIK AS announced the newest ESM-xx50 series process controllers innovative, flexible and reliable controllers. The smart recognition modular system offers a lot of opportunities for high-end process control applications.



Among the main features of the series are: Universal input for TC, RTD, mV, V, mA; Smart I/O module system; Motorized valve control; Temperature profile control; Self tuning/Auto tuning PID; RS-232 or RS-485 MODBUS; Re-Transmission and Remote Set.

For fast info - enter 1903 in Free Information Card

Optical - Audible Signal Combinations with Horn and Multi-tone Siren

WERMA is to extend the successful product group 420 by the addition of signal combinations. An optical as well as an extremely loud audible signal can now be combined neatly using a diameter of only 90mm. The signals



can be triggered variably i.e. both the light and the audible element can be activated in whatever sequence necessary, or simultaneously. In addition to the proven base mounting bracket mounting is also available. The base will be in an attractive grey.

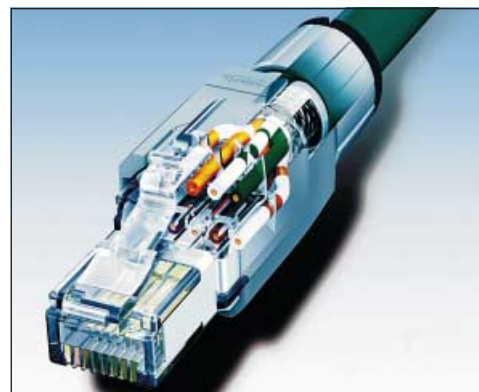
The optical signal component is available as LED permanent light or as a flashing light. The audible component is available as a buzzer, a multi-tone siren or a horn. The buzzer has a continuous or pulse tone. The multi-tone siren is adjustable in eight tones, and the volume can be adjusted continuously up to 100dB.

The horn version is a high-tech product and has a life duration of up to 50,000 hours, 10 times higher than that of a conventional horn. The volume can be adjusted likewise.

For fast info - enter 1904 in Free Information Card

RJ 45 Plug Connector with Quickon Connection Technology

The Variosub RJ45 Quickon plug connector from Phoenix Contact is the world's first 8-pin Cat 5e RJ45 plug connector that requires no tools to assemble. Its standards-conforming design is suitable for industrial Ethernet transmissions, Ethernet-based fieldbuses such as Profinet and Ethernet/IP and for regular office and Gigabit Ethernet use.



Assembling using the insulation displacement technique requires no tools. According to the orientation in pairs, the wires are easily inserted in the chambers and pressed into the displacement terminals with the closing cap. The plug connector is pre-assembled, which means positioning it is not necessary and small parts will not be lost. Therefore, installation is easily possible even under adverse conditions at the construction site.

Well shielded against high EMC loads, this plug connector can accept both flexible and rigid wires from AWG 26 to AWG 22. With a maximum cable diameter of 8 mm and its additional cable glands, the plug connector is especially suitable for robust Ethernet cables in the industrial environment.

EPIC® CIRCON M23 - Industrial connectors for electrical drives, control and measurement

Contact GmbH, a Lapp Group Company, presented the new EPIC® CIRCON M23 product range for signal transmission, aimed for drive technology and control & measurement engineering.



The whole Circular connector program has been revised. The innovative EPIC® CIRCON M23 has been pending for three patents. Not only design aspects (form, material and colour) were considered but also functional characteristics. Functional application as well as easy harnessing and assembly are essential characteristics. These product features are considered as well in the series EPIC® CIRCON M23.

Among the technical characteristics of EPIC® CIRCON M23 Circular connectors are the following available styles: 3 with 4 different no. of contacts: 9, 12, 16 and 17; electrical data according to IEC 61984, M23: 125V/7A; termination: Crimp, solder, 0,14-1,0qmm/AWG18-22; and protection class: IP 68 (dust and water proofed). The new products are vibration-tested and corrosion-tested.

Manufacturer announced the following product advantages:

- Signal circular connector for rated voltage up to 125 V and rated current up to 7,5 A
- Unique marking possibilities at the connector
- Patented coloured marking clips allow the marking directly at the connector
- Extremely high protection against the penetration of dust and water due to protection class IP 68

- Vibration-tested - and therefore perfectly suitable for electrical drives and moving machines
- With integrated EMC screen
- The patented insert can be assembled from the front and from the back - which makes the assembly easier and more flexible

For fast info - enter 2001 in Free Information Card

Yaskawa wins the race for the matrix converter

Yaskawa Electric announced the development of the world's first variable speed AC motor control using the matrix converter technology. How to develop a practical matrix converter has puzzled universities, academic research establishments and variable speed drive manufacturers internationally for years.

The benefits of the technology include minimal generation of harmonics, regenerative braking without the need for additional resistors, automatic return of energy to the supply during braking and enhanced operating life

Matrix-converter drives, which offer efficient operation in all four quadrants, differ radically from VSDs in common use today. Ordinary drives convert the incoming AC supply to DC, and then convert the DC back to AC at the required frequency and voltage. In contrast, Yaskawa's matrix converter drives use an array of semiconductor switches - packaged insulated gate bipolar transistors (IGBTs) - to connect the three phases of the supply directly to the motor in a precisely timed sequence.

This method of operation reduces harmonic generation to approximately 8% of the ground wave unlike conventional drives that measure at typically 80%, while also offering almost unity power factor - that is, no wasted energy. The elimination of the DC-bridge section of the drive makes it easy to arrange for energy to be returned to the supply during braking, and also removes the need for energy-wasting, heat-generating braking resistors.

A further benefit is that the new drives need no large electrolytic capacitors. Since the unavoidable deterioration of these capacitors is the principle life-limiting factor in most modern electronic equipment, their elimination boosts both drive reliability and lifespan.



Initially, Yaskawa's new matrix converter drives will cost more than conventional counterparts. They are, however, expected to be an attractive option for applications such as lifts, cranes and presses where their efficient regeneration is a particular benefit, and in sensitive environments, such as hospitals and computer centre installations, where it is essential to keep supply harmonics to a minimum.

The new drives, which could be available by the middle of next year, will initially be supplied in three-phase 400V versions with ratings from 5.5 to 22kW. Yaskawa plans to extend this range up to 75kW, and also to introduce 200V models with ratings from 5.5 to 45kW.

Yaskawa Electric is the world's largest manufacturer of variable speed drives and has a history of pioneering developments in motors and motor control technology. It produced some of the first DC servo motors in the 1950s; introduced a minicomputer based CNC system in the 1960s; the first ever vector controlled inverters in the 1970s; the first PWM inverter in the 1980s; and the world's first sensor-less flux vector inverter in the 1990s.

For fast info - enter 2002 in Free Information Card

14th Romcontrola, Romenvirotec-SEP

From 16 to 19 March 2005, pavilion 18 of the Bucharest International Fair Romexpo Exhibition Centre two specialised exhibitions took place - Romcontrola, an international exhibition of measurement and control instruments and apparatus, and Romenvirotec-SEP, an international exhibition of equipment and technologies for environmental protection. For the first time, the event was organised by Romexpo in partnership with the famous Italian fair and exhibition organiser Padova Fiere Spa.

Within 14th edition of International exhibition of measurement and control instruments and apparatus Romcontrola, 167 companies participated (66 from Romania and 101 from abroad). In the international exhibition of equipment and technologies for environmental protection Romenvirotec-SEP participated 57 companies, of which 33 from Romania and 24 from abroad. Based

on organizers data there is an increase comparing of 2004: participation of major exhibitors: 256 per cent; exhibition area: 400 per cent.

„I dare say our company numbers among the veterans of Romcontrola, which is why I tend to choose a different approach of the participant companies, and a different addressability as regards the visitors", said Dragos Ofrim, D. Sc., General Manager, InterNET S.R.L.

„The genuine technological performance - to which Romania is committed and which it has to cope with in order to have a chance to attract foreign investors or technological capital - is represented by the achievements of these economic actors that I dare define as international", he added. „The 2006, and mostly the 2007 Romcontrola should focus on these new economic entities. I expect a beneficial changeover in terms of visitors



and specialists structure that is much more oriented to hi-tech. We, the exhibitors, need ever more young specialists in our stands, who should be much closer to us and eager to absorb worldwide technological performance. It is our intention to focus, ever more, on the future of technology in Romania."

For fast info - enter 2003 in Free Information Card

PECAR 2005: pumps, seals, compressors, fittings, taps

Specialised exhibition with international participation

An exhibition event unique in Central and Eastern Europe took place at the beginning of March in Bucharest: PECAR 2005. Producing and importing companies from the energetic industry, chemical industry, water treatment industry and environment protection domain exhibited on 2000 square meters between March 8th - 11th in a location that suits best the dimensions and importance of the manifestation - The International Conference Centre from the Parliament Palace, Unirii and Tache Ionescu Halls. The theme includes the main sections of product groups: pumps, seals, compressors, fittings, taps in a word: PECAR.

The pumps, compressors and seals had the highest presentation percentage. The



specialists had the opportunity to find a great variety of models: pumps with membranes operated by compressed air, industrial peristaltic pumps, centrifugal pumps with magnetic coupling, pumps with cogged wheels, static and dynamic mixers,



peristaltic laboratory pumps, vacuum pumps, dozer pumps. The participating companies exhibited also equipment for water treatment, motopumps for draining, fittings, cords and compressors.

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18th DETROP

With 30,000 visitors and a 50% increase in foreign trade visitors, this was the biggest event in DETROP history.

This year, the 18th DETROP 2005 International Exhibition of Food - Beverages - Machinery & Equipment achieved a 25% increase in the number of visitors. At the same time, there was a significant 50% increase in the number of foreign trade visitors, who numbered 665, as compared to 432 last year; this reinforces the international character of the exhibition, which is the largest such exhibition event in the country and in South-Eastern Europe.

High visitability, quality visitors, new HEL-EXPO services, numerous and significant satellite events and a new perception of the event, which, thanks to the contribution of the Municipality of Thessaloniki, became a city feast, ensured absolute exhibitor and trade visitor satisfaction, rendering the exhibition the most successful and effective in the sector. During the exhibition, many important business meetings took place, both within the framework of ExpoPartenariat and in the form of direct business contacts, which set the foundations for new, profitable cooperation schemes.

In total, 30,098 people visited the 18th DETROP, as compared to 26,067 during the previous event; this year's visitors came from the whole of Greece and 27 other countries, namely: Albania, Australia, Austria, Bulgaria, Canada, China, Cyprus, the Czech Republic, Egypt, Finland, France, FYROM, Germany, Great Britain, Israel, Italy, the Netherlands, Norway, Poland, Romania, Serbia-Montenegro, Spain, Sweden, Turkey, Ukraine, the United Arab Emirates and the United States of America.

This year's DETROP was recorded as the largest in history, with a 17% increase in exhibition space and a 24.5% increase in the number of direct exhibitors.

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SEE Exhibitions' Calendar

May - June 2005

METAL PROCESSING TECHNOLOGIES
04.05 - 08.05
Bursa, TURKEY

TURKEYBUILD
04.05 - 08.05
Istanbul, TURKEY

FOOD AND FOOD PROCESSING, PACKAGING INDUSTRY, PLASTIC AND RUBBER FAIR
05.05 - 08.05
Konya, TURKEY

TECHNICAL FAIR
09.05 - 13.05
Belgrade, Serbia and Montenegro

INTERNATIONAL CONSUMER GOODS AND TECHNOLOGIES FAIR
09.05 - 14.05
Plovdiv, BULGARIA

PIVO, GASTRO, BAKERY
09.05 - 14.05
Plovdiv, BULGARIA

AGRARIA
10.05 - 14.05
Cluj-Napoca, ROMANIA

EXPO SECURITY
11.05 - 15.05
Bucharest, ROMANIA

CONSTRUCT EXPO
11.05 - 15.05
Bucharest, ROMANIA

MARMIN
12.05 - 15.05
Thessaloniki, GREECE

ELEKON
12.05 - 15.05
Ankara, TURKEY

INTERNATIONAL AGRICULTURAL FAIR
14.05 - 21.05
Novi Sad, Serbia and Montenegro

PRINTING AND PAPER INDUSTRY FAIR
17.05 - 22.05
Istanbul, TURKEY

FOOD & DRINKS - FOOD TECHNOLOGY
18.05 - 22.05
Chisinau, MOLDOVA

PACKAGING DEPOT
18.05 - 22.05
Chisinau, MOLDOVA

DECOYAP
19.05 - 22.05
Ankara, TURKEY

CYPRUS INTERNATIONAL FAIR
20.05 - 29.05
Nicosia, CYPRUS

INTERKLIMA SARAJEVOTHERM, SANITARIA, CONTROLA
24.05 - 27.05
Sarajevo, Bosnia and Herzegovina

KOMATEK
24.05 - 29.05
Ankara, TURKEY

EXPO ENERGY
31.05 - 03.06
Sofia, BULGARIA

EXPOLIGHT
31.05 - 03.06
Sofia, BULGARIA

ELTECH
31.05 - 03.06
Sofia, BULGARIA

OIL & GAS
31.05 - 03.06
Sofia, BULGARIA

BULTHERM - BULCONTROLA
31.05 - 03.06
Sofia, BULGARIA

TIBCO
01.06 - 05.06
Bucharest, ROMANIA

CER-GLASS
01.06 - 05.06
Bucharest, ROMANIA

SUBCONIST
02.06 - 05.06
Istanbul, TURKEY

AYAKKABI
02.06 - 05.06
Izmir, TURKEY

WINE
03.06 - 06.06
Ljubljana, SLOVENIA

INTERGRAFIKA / MODERNAK
07.06 - 10.06
Zagreb, CROATIA

INTERNATIONAL TRADE FAIR
07.06 - 11.06
Skopje, MACEDONIA

PRINTCOM
07.06 - 11.06
Plovdiv, BULGARIA

ANKOMAK
08.06 - 12.06
Istanbul, TURKEY

MOTOR SHOW
11.06 - 19.06
Sofia, BULGARIA

RECYCLING
30.06 - 03.07
Istanbul, TURKEY

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ESIT	7
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