FUJITSU

Enhancing System Solutions

FUJITSU MICROELECTRONICS EUROPE

" Here at Fujitsu Microelectronics Europe (FME) we are engaged in an on-going program of responding to the changing nature of the European market. We provide state-of-the-art semiconductor devices and leading-technology plasma and liquid crystal display panels. But, more than that, we endeavor to develop systems solutions in partnership with our customers while at the same time, we try to broaden the scope of our operation and genuinely add value wherever possible.

The global perspective

Fujitsu is a world leader in customer-oriented IT and communications solutions concentrated on three areas: software & services, hardware platforms and electronic devices. Our global goal is to focus on customer needs, quality, timeliness and management speed.

25 years of experience in Europe

Over the past 25 years we have established ourselves in the major European markets of Automotive, Networking/Telecoms, Mobile Communications, Multimedia and Industrial & Home appliances through a special blend of technical experience and applied expertise. What's more, FME continues to drive technologies forward to meet the ever-increasing demands of tomorrow's applications – in which Europe leads the world! "

Shimpei Hirata
President
Fujitsu Microelectronics Europe GmbH
Dreieich-Buchschlag / Frankfurt / Germany

Enhancing System Solutions

Fujitsu's traditional corporate strengths, in markets ranging from information technology to telecommunications and from displays to semiconductors, have helped it become one of the world's leading suppliers for the Broadband Internet era. Our mission – to offer customers products that meet their needs, quickly and efficiently – is achieved by exploiting key competitive advantages, keeping closely in touch with the world's markets, and offering products that meet local needs through long-established operational bases locally in the USA, Asia and in Europe.

As a pivotal part of this global multidisciplinary organisation, Fujitsu Microelectronics Europe (FME) develops and supports highly value-added solutions for target sectors, using its European technology expertise as the foundation for solutions spanning the total value chain. FME focuses on markets where Europe leads by innovation such as automotive, mobile communications, networking/ telecoms, industrial & home appliances and multimedia, together with flat panel displays for consumer products, infotainment systems and industrial/medical applications. This integrated solutions approach to technology is underscored by innovative components, IP and display products, backed by Europe based design, software and application support.
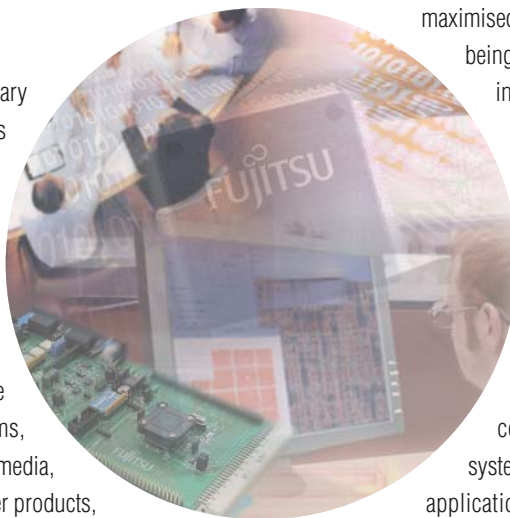
Technology Focus

Marketing and technology expertise is focused on specialist groups, dedicated to application-specific ICs, microcontrollers, and mixed-signal and RF devices, working closely with customers and third parties. Through these groups, the complete integration of design and production processes is applied across all semiconductor market sectors. This strategy of skills & technology integration, together with re-use of intellectual property and a company-wide system solution focus, benefits the fastest-growing sectors of the information age.

The FME ASIC design group concentrates on developments comprising all semiconductor technologies leading to systems-on-a-chip (SoC). Through the use of virtual components, design time is minimised and the re-use of IP is maximised. FME's microprocessor IC technology is being harnessed to provide creative solutions in key applications, especially in automotive and home appliances. It includes general-purpose 8, 16 and 32-bit microcontrollers and a family of graphic processors, as well as specialised integrated circuits for peripheral control.

FME's Mixed Signal strengths in architecture optimisation and data converter development enable improved system performance in telecoms and access applications, which depend critically on mixed signal technology.

Services

FME's customers and partners in Europe are supported by a comprehensive array of design, development, manufacturing and integrated IT services.

Drawing upon the expertise and resources of the Fujitsu group to provide world-class technology and platform products, we use our multinational presence to deliver locally optimised solutions for customers in all corners of the world.

Design Services/IP/SoC

Engineering strength is employed in FME's European Design Centres located in Frankfurt & Munich, Germany, and Maidenhead in the UK. Focused on microcontrollers, ASICs, Multimedia and Telecom development, RF and mixed signal design, they deliver localised design service for European customers, ensuring optimum use of resources and minimum time to market.

Throughout worldwide Fujitsu operations, use of third-party vendor tools and Fujitsu's own CAD tools ensure an innovative and mature design flow, providing customers with a global network for system development and support.

For custom and semi-custom designs, FME provides the latest in SoC cores designed for the wireless and network access ASIC markets. The company's extensive line of re-usable building blocks ranges from complex microprocessors to mixed-signal functionality cores.

With IPWare™ and other Fujitsu tools, customers can integrate cores optimised for performance, routability, and flexible integration into the chip environment, which helps get them to market ahead of the competition.

Integrated IT

Throughout the design-to-delivery process, customers benefit from Fujitsu's global IT systems and infrastructures. Standards-based systems like electronic data interchange, enterprise resource planning and Internet/Extranet solutions provide up-to-the-minute information on demand. This ensures increased data accuracy and reliability enabling lower costs, reduced cycle times and smaller inventories.

FME also offers local programming and taping services, mainly for Flash MCU, and can support VMI (Vendor Managed Inventory), which entails delivering parts to a consignment warehouse at customers' premises under specified conditions. We can also arrange special transport or logistics according to specific needs of customers.
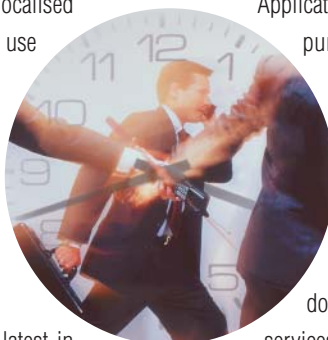
Application software and system packages for sales, purchasing, development, warehousing and customs & excise processes are fully integrated and linked to an EDI system to forge an application-to-application EDI with our partners.

Furthermore, to facilitate automation of business documents exchange, FME offers customers EDI services to include support of classical order cycle and VMI scenarios – both EDIFACT standard – and the implementation of RosettaNet PIPs based on mutual agreement.

Manufacturing

Fujitsu's many sites in Japan and overseas ensure it remains an ideal partner for customers. The Group's global business activities provide a steady supply of products and services in response to customer needs. Four world-class Japan-based production facilities cater for global semiconductor production, while wholly or partly Fujitsu owned subsidiaries supply FME with LCDs and plasma displays. FME also works actively to help forge links between customers and cost-effective end-product manufacturing units.

Automotive

Europe leads the world in automotive electronic systems, with locally developed vehicles incorporating more and more advanced electronics, supported by specialist suppliers and reliable, innovative technologies from FME.

Our solutions cover key areas of innovation such as: vehicle body control and comfort systems, chassis control and instrumentation clusters; driver information and passenger entertainment systems. Solutions that range right through the supply chain – from highly sophisticated hardware solutions such as gyro-sensors, microcontrollers, graphic display controllers, power management and multimedia devices, through software and hardware development tools, software drivers, real-time operating systems and connectivity, to reference designs with application software.

Development & integration

Offering reliable embedded Flash memory, together with LIN and CAN interfaces, and FlexRay™ and MOST in the future, Fujitsu's MCUs form part of a well-established solution for automotive applications. Along with our graphic display controllers, advanced MPEG devices and gyro sensors, they allow low part-count, high-availability systems to be developed with minimum integration effort. Tools to accelerate development include a variety of design kits, in-circuit emulators, productivity-boosting tools, and comprehensive support across the

leading control, automation and real-time environments. Interoperability will be boosted by hardware and software under development in line with AUTOSAR standards.

Partnership for innovation

FME is delivering end-to-end systems through a comprehensive network of partnerships: Working closely with vehicle manufacturers, Tier 1 suppliers and third-party specialists to create advanced automotive platforms.

For example, as a member of the FlexRay™ consortium, FME is working to develop next-generation automotive by-wire applications. It is also in partnership with leading vendors creating reference designs for in-car entertainment using the MOST® (Media Oriented Systems Transport) networking technology.

FME is the first-choice automotive electronics partner right through the design-to-production cycle.
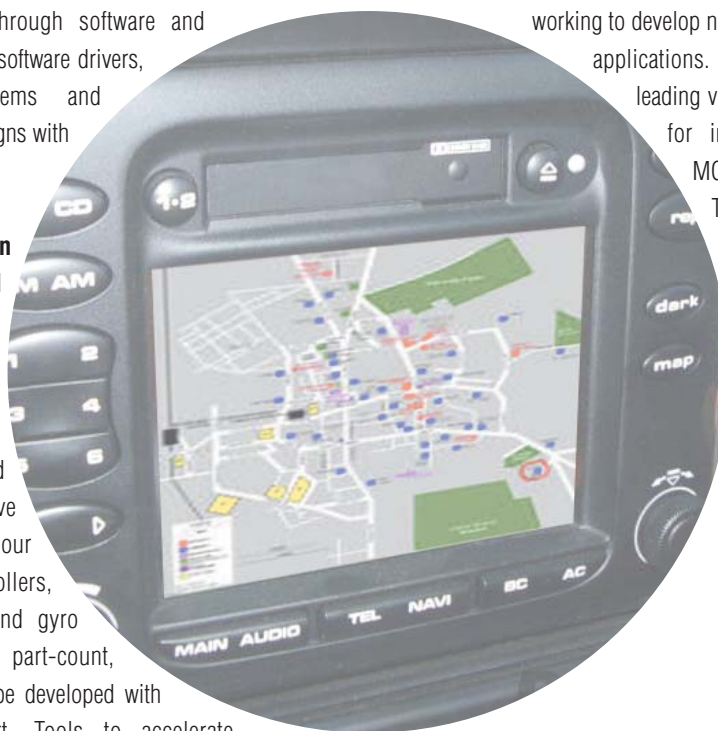
Multimedia

The multimedia market includes a wide area of applications, ranging from the home to the office, even in the car. FME offers an extensive range of technologies and solutions to cater for this rapidly growing demand.

FME's Europe-based multimedia hardware and software development centre has established global technical leadership in MPEG and graphic display solutions. In the digital video broadcasting arena, Fujitsu provides comprehensive technical, design-in and manufacturing expertise covering MPEG-2 technology, with products and IP embodied in world-leading decoder & encoder and access products. FME is setting the pan-European pace, partnering with the leading players to develop reference designs and platforms, ranging from set-top boxes to integrated Digital TVs (iDTV), and complete mobile and portable DVB-T solutions. Such integrated reference designs allow set-top box (STB) and iDTV manufacturers throughout the world to meet the demand for more cost-effective products for consumers.

Complete graphic display sub-systems can be flexibly designed from components throughout the Fujitsu multimedia portfolio. The full line-up of graphic display controllers – from compact single-chip 2D systems to high-end 3D, six-layer solutions designed for embedded automotive applications, in combination with MPEG decoders and Fujitsu MCUs, form a fully operational multimedia application with state-of-the-art features. Comprehensive tools and software support for these systems are available, as well as third party products and operating system drivers. Fujitsu's market-leading position in graphics for automotive navigation systems is mainly attributable to ensuring our system solutions for the European market are well communicated with customers' demand for higher integration and more multimedia features.

In addition, FME is collaborating with the leaders in Media Oriented Systems Transport (MOST) technology to develop reference designs for ground-breaking in-car multimedia systems. Fujitsu intellectual property and application-specific standard parts are helping to create one-stop technical solutions, delivering ease of implementation, superior performance and low price points. They can accelerate time-to-market for end customers delivering new classes of MOST-enabled embedded in-car consumer solutions.

Mobile Communications

Spearheaded by Europe-based global brands, the mobile communications industry is in perpetual revolution. A dynamic global market is driving developments like multimedia phones, location-based services and Wi-Fi networking – all enabled by mobile system solutions from FME and its partners. The breadth of its solutions spans sophisticated mobile multimedia processors, AGPS chipsets and fingerprint sensors, along with the most advanced system-in-package technologies. These are complemented by a broad spectrum of world-beating component level products such as SAW filters, RF modules, and Super PLLs, through high-performance DACs and power management devices. Across the board, FME solutions meet the demanding power-consumption, EMI and temperature requirements of the mobile market – in cost efficient, space-saving packages.

Whether the requirement is for highly cost-effective chipsets or premium solutions combining RF, analogue and digital circuitry on a single-chip, there is an FME solution to suit your application.

Dynamic mobile landscape
The Fujitsu European Design Centres in Germany and the UK provide unmatched RF, Mixed Signal, and Digital design capabilities for mobile communication products and solutions. Our specialist hardware and software engineering team has the experience and know-how to deliver system solutions on time. We are working not only with leading manufacturers based in Europe, but also with the leading suppliers of software and silicon IP. Delivering solutions for 3G, GPRS and GSM air-interface technology-based

platforms. Looking to the near future, FME continues to develop partnerships with the leading players in the wireless technologies to deliver complete solutions for broadband connectivity for both base stations and access terminals.

Support at the heart of the matter
FME has established technology, sales and applications support facilities right at the centre of Europe's mobile revolution. As well as the design centres in Frankfurt, there are focused solutions teams in the UK, Scandinavia, France, Italy and Germany, which are dedicated to supporting manufacturers and platform developers in these key strategic locations. And broader still, the scope of Fujitsu global operations runs from miniature GaAs microwave technology right through to complete WCDMA solutions for 3G network operators.

The mobile possibilities are infinite, with Fujitsu.

Networking / Telecoms

FME provides its customers with advanced solutions for networking and telecom applications. This is achieved through a combination of world class IP, leading-edge mixed signal design, fast and accurate design flow, advanced deep sub-micron process technology and superior packaging.

Proven hierarchical design methodology based on leading-edge, industry-standard commercial tools consistently delivers fast timing closure success for multi-million gate designs…and these are designs that perform; thanks to robust process technologies down to 90nm, fast processor cores and high-speed I/O macros.

Interoperability is assured through OIF and XAUI compliant SERDES interfaces. These include clock-data recovery at rates from 622Mbps to 3.2Gbit/s, and a range of source synchronous macros, covering SPI-4, SFI-4 and SFI-5 standards, as well as high-speed RGMII, HSTL, LVDS and SSTL I/Os. Complementing these is a wide choice of processor cores (ARC, ARM, DSP, multi-channel VOIP), peripherals, memory controllers and connectivity solutions including USB 2.0, PCI, 10/100/1000 Ethernet MACs and IEEE1394.

Examples of FME successes include: ASICs at the core of a packet switching solution featuring RGMII, SPI-4.2 and physical layer 10Gbit/s interfaces; the world's first 12-port 10Gbit/s Ethernet switching chip allowing higher-density system design at a lower cost; seven SoCs for the industry's first infrastructure-class routing platform; and very high pin-count (700-100 pins) ASICs in enhanced BGA packages for a leading-edge family of high-performance, end-to-end switching and routing products.

Such designs can draw from FME's advanced manufacturing facilities, in-house assembly and test for high-performance flip-chip packing, and a range of specialist services for burn-in, load boards and test boards. The result: faster, predictable design cycles and superior time-to-revenue.

With Fujitsu, the possibilities are infinite and the results are right first time.
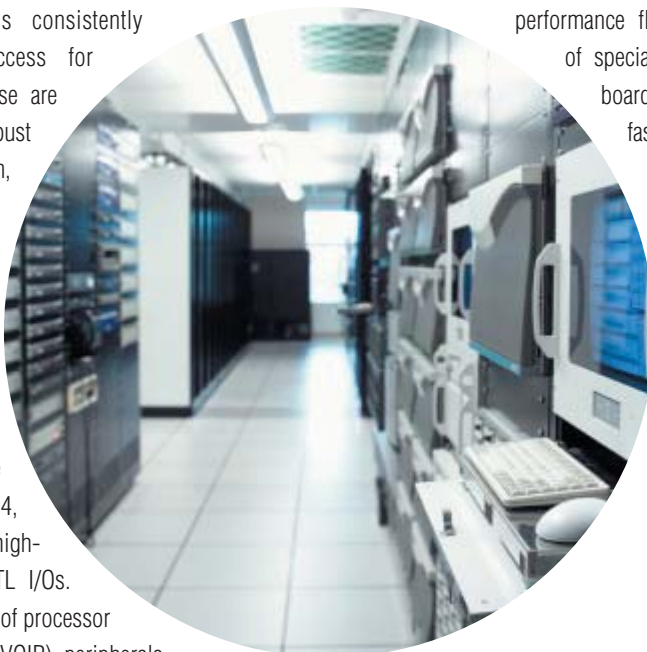
Industrial & Home Appliances

System solutions from FME are powering the demands of European industrial and home appliance manufacturers – in particular for safety and reliability at highly competitive price/performance points.

Solutions based on microcontrollers benefit from FME's broad range of general-purpose 8, 16, and high-performance 32-bit RISC embedded MCUs, together with specific specialised ICs for peripheral control. Fully-featured CAN bus protocol controllers are ideal for industrial and home automation applications.

Reliable, cost-effective performance

Dependable applications are assured thanks to the reliability of FME Embedded Flash technology, along with on-chip watchdogs and power brownout detection.

Complementing these solutions is an expanding family of graphic display controllers specially optimised for embedded systems. Featuring video input and many 2D and 3D rendering functions, there is a flexible layer concept, support for screen resolution of up to XGA (1024x768) and interfaces to allow direct connection with embedded CPUs and MCUs.

Our comprehensive set of development services and tools accelerates time-to-market and eases the integration headache. As well as starter kits, application notes and software samples, FME offers an integrated, free-of-charge development tool, which provides a consistent environment across the full range of Fujitsu MCUs. There are also emulation tools and a choice of real-time operating systems.

Forward in partnership

Feedback from leading white-goods manufacturers is embodied in the latest generation of 8-bit MCUs, which provide LCD controller and embedded Flash ROM options. Next-generation end-products will offer on-chip TCP/IP stacks for home networking and Internet access, brushless AC motor control enabling quieter, more energy-efficient products, and seamless links to larger, full-colour graphic displays.

Integration is supported by the Microcontroller Design Centre in Frankfurt, Germany: the focus of FME's partnerships with Europe's OEM suppliers, and associated consultants, hardware and software providers.

The home of the future is connected, quiet and efficient with Fujitsu.
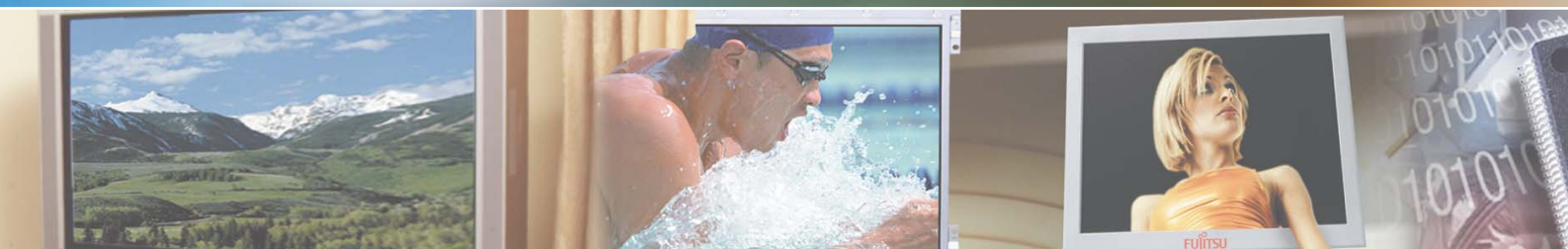
Flat Panel Displays

When it comes to displays, flat is where it's at. And Fujitsu leads the world in both plasma display and LCD technologies.

Fujitsu developed many of the fundamental technologies for AC plasma displays. Since joining forces with Hitachi, the Fujitsu Hitachi Plasma Displays (FHP) operation continues to lead the world in development and manufacture of this technology. With its brilliant picture quality, fully flat large screen formats, high brightness & contrast, wide viewing angle and fully digital internal operations, FHP plasma displays are used throughout the modern world: in airports and aircraft, shops, banks, arcades and hotel lobbies; in offices, meeting rooms and home cinemas. Sizes range from 32-inch to a mind-blowing 55-inch diagonal.

FME has a fully dedicated sales force for PDPs as well as European applications support. Furthermore, FME's Plasma Display Service Centre offers technically trained full time staff to ensure professional service with quick turn-around time.

We are also a world leader in TFT-LCD technology, having invented the best active matrix TFT-LCD technology yet developed, called multi-domain vertical alignment (MVA). Fujitsu Display Technologies Corporation (FDTC) integrates LCD development, manufacturing and sales operations to pursue greater efficiencies, develop new business opportunities and unleash further growth potential. Under FDTC's guidance, FME supplies its full range of high quality MVA and ultra-high quality MVA-Premium LCD panels to the European marketplace. Working in partnership with system builders and OEMs, the displays team for Europe is helping to develop solutions in the consumer segment, gaming, radar, marine and medical applications.

Where the requirement goes beyond the display itself, FME can leverage its experience and expertise in multimedia and microcontroller technology, for example integrating embedded graphic display controllers to create a total solution. Furthermore, close relationships with sister companies such as Fujitsu Components Europe enable us to include touch screen panels and interfaces.

Whatever the flat panel technology, Fujitsu ensures successful design-in, production and logistical support.

Quality

At FME, quality has from the earliest days gone beyond product specifications, to encompass organisation-wide policies and objectives. Each process and procedure is clearly defined, from design-in to production and logistics, through to business planning and back-up capacity options, with customer expectations and continuous improvement at the core of its objectives.

Formal quality management systems were established in 1994, with the aim of continuously monitoring, improving and auditing quality to maintain the high standards customers expect. Since 1994, FME's quality management systems have been recognised according to ISO 9001. Current certification is to ISO 9001 : 2000 standards.

What is more, the high reliability of FME products, together with the skills of our solutions-focused teams, means we are able to fulfil even the most stringent customer requirements. Just one example: products for automotive systems are certified to ISO/TS 16949 quality standards. The quality program in FME is on-going and continues to strive for new levels of customer satisfaction.

Environment

At the heart of Fujitsu environmental philosophy is 'Green policy 21 – We make every activity green'. Current activities include: creating 'super green' products; developing eco-efficient solutions; abolishing hazardous substances in all Fujitsu-brand products; rolling out the recycling programme throughout the world; reinforcement of environmental management based on EMS; and improving environmental efficiency throughout product lifecycles.

In Europe, FME makes substantial contributions through specific projects. Amongst the Green successes are collection and re-use of flat display panel packaging and empty trays; using multi-use containers that make outer boxes & filling materials obsolete; and new techniques for producing ultra-thin wafers without using chemicals. These, plus the introduction of lead-free solder material and new solder processes, together with organised collection and recycling of products, all help to reduce negative environmental impact.

Furthermore, FME is fully compliant with the time plan for implementation of Fujitsu's RoHS* and WEEE** programs. More details of our Environment policy can be found on: www.fme.fujitsu.com.

Throughout the world, Fujitsu takes its Corporate Social Responsibilities (CSR) seriously. And in Europe, FME has taken on an active role in forging links with local communities in order that this CSR programme is implemented at a local level.

*RoHS: Restriction of Hazardous Substances
** WEEE: Waste of Electric & Electronic Equipment
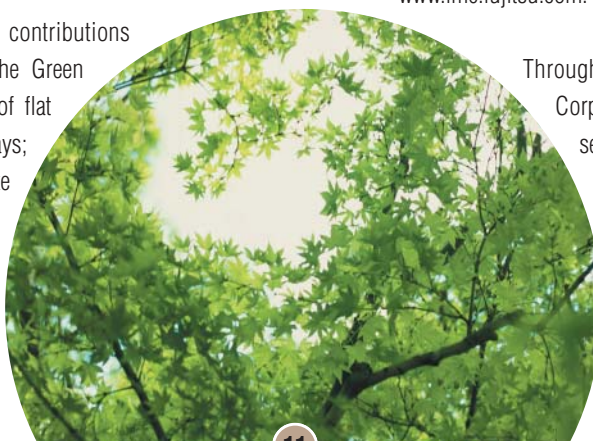
Local Support

F ME's overall strategy is firmly driven by its customers' requirements, with the aim of becoming an important value-added link in the complete supply chain. Sales teams are based in regional offices in France, Germany, Italy and UK – each providing local interfaces, sales support and logistical services.

Complementing our direct sales operation, a single, strong pan-European distributor, together with specialist local distributors, leads FME's strategy for IC distribution. All have been selected to add value to customers, in the form of technical applications support along with comprehensive logistics. FME provides training for all distributors in the latest technological developments while the close co-operation between FME and distributors enables quick response to customer needs.

Fujitsu's displays businesses in Europe – both for plasma display panels (PDPs) and TFT/LCDs – are also supported by dedicated sales, marketing, applications, with technical teams working alongside specialist distributors and systems integrators.

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