Flat Panel Displays
Innovative Products
Open Horizons
Humans are a visually-oriented species. We comprehend the world around us most effectively with our eyes. With the intensive information flow of today’s world – could you imagine your life without displays? Displays are the ultimate human-machine interface. New vistas for innovative products open up particularly with flat panel displays: Laptops and mobile phones are only the beginning. Flat panel displays are about to offer totally new perspectives on our daily lives. The variety of the technically possible in the least amount of space opens horizons – for a brighter future.

Everything points to flat panel displays
Very soon flat panel displays will be a part of almost all aspects of our daily lives. No wonder – their guiding qualities enable applications which make visions come true:

- Space-saving
- Lightweight
- Energy efficient
- Excellent ergonomics
- Strong announcement effect
- Broad variety of uses
Flat panel display technologies meet highest demands
Flat panel displays have taken display technology to a whole new level. A large variety of technologies is employed to realize the broad product range in which flat panel displays can be used. You can currently choose from around a dozen major technologies for your specific application. From pocket calculators to PC monitors: Liquid crystal displays (LCDs) currently dominate the flat panel display market. High quality LCDs offer sharp, full-color graphics rich in contrast and free of geometric distortions.
Organic Light Emitting Diodes (OLEDs) are considered to be the most promising new flat panel display technology. The incredibly thin, bright, lightweight panels are energy efficient and are suitable for use in daylight. These decisive advantages, compared with various other technologies, make OLED-displays attractive, especially for portable appliances.

Giving the market what it needs
Know-how and cutting-edge technology mean demands for future possible applications can be met. This is above all apparent in the challenges to current flat panel development and its trends:
- Full color graphics
- Video-capability
- Suitability for use in bright daylight
- Large size
- Portability
- Flexibility

An almost infinite number of new applications can be created then: From a mobile phone with a roll-out display for full internet access to movie screen wallpaper. From wrist computers with integrated health-watch sensors to display cloth for fashionable clothing.

In the future flat panel displays will become an important technological “raw material” similar to microchips. They already influence the market success of a product decisively. Our information society needs flat panel displays – What is your vision?
The global flat panel display market
The ever-increasing demand for computer monitors and portable information systems has brought an unprecedented boom in the global flat panel display market: Today, the annual turnover is valued at more than $20 bn. Furthermore, leading market research institutes forecast annual growth rates of at least 20%. By catching up on the Far Eastern industry, the European market will be boosted to even higher rates.

Germany – Big opportunities in the heartland of Europe

Although the biggest markets for flat panel display products are in Europe and North America, approximately 97% of all flat panel displays are produced in the Far East – primarily in Japan. In the 1980s Japan discovered the enormous success potential of display technology. Considerable investments were made there early in order to expand production capacity. In addition to the large producers of flat panel displays, a far-reaching infrastructure has been established with more than 100 supply companies. These firms now represent a separate branch in Japan with more than 100,000 employees. However, Korea and most recently Taiwan have successfully entered this key industry sector.

Even companies new to the field have recognized the importance of flat panel display technology and have massively invested in volume production. Japan, Korea and Taiwan have chosen the right path – What about Germany? We have ideal conditions for successful flat panel display production. Right in our own backyard!

The supplier industry in Germany
Many basic developments in the field of flat panel display technology have been carried out in Germany and numerous German corporations take leading positions in the development and production of display components. For example, the world leader in production of liquid crystals is headquartered in Germany. The company running the only plant able to produce OLED material on an industrial scale is located in Germany, too. And the world leader in certain types of thin glass for flat panel displays is also a German company. Many equipment, machinery and plant manufacturers, as well as producers of clean room processing and automation equipment are headquartered in Germany. Furthermore these industries are supported in flat panel display research and development by world-renowned German institutes and universities.

The very high degree of automation in modern flat panel displays production make wages play a minor role in the overall costs: Highly skilled engineers and well-educated, trained personnel are vital to run production effectively and dependably. Staff and machinery you can rely on make Germany a very attractive location for this innovative industry.
**German flat panel display manufacturers**
Up to now, there have been two German producers of flat panel displays. Their successful market position shows that profitable display production in Germany is certainly possible. Important factors are customer-oriented development and production as well as the proximity to one of the biggest markets for flat panel displays – to the German user market!

**Huge market potential in Germany**
The demand of German key industries for high-quality flat panel displays is enormous. The collective turnover of our large export branches of automobiles, electronics and engineering adds up to approximately $500 bn. They all depend on innovative flat panel displays!

However, high-quality displays are not always easy to buy. High development speeds and ever shorter innovation cycles aggravate this situation. Only the close cooperation of local display manufacturer and end-user as well as the implementation of the most modern technology ensure quick reactions to market needs. A market which is present throughout Europe and can be tapped in a very short time – if we use this once-in-a-lifetime opportunity... now!

**The roots of DFF**
An important supply industry, renowned research institutes and a multi-billion dollar market with strong user branches: Germany offers every prerequisite for the consistent establishment of flat panel display production.
In December 1998 Prof. Dr. Wolfgang Ehrfeld in his function as then managing director of the Institute of Microtechnology Mainz (IMM), started an initiative gathering 24 companies and institutes to elaborate a strategy for the set-up of globally competitive flat panel display production capacities in Germany – the seed of the "Deutsches Flachdisplay-Forum (DFF)", the German Flat Panel Display Forum.
DFF was founded in February 2000 as a cooperation of the German Engineering Federation (VDMA) and IMM. Within a year DFF has grown to become the official lobby of the German flat panel display branch. With the resources of the VDMA, DFF has a well-established background to make the interest of the branch heard – in public as well as on the political scene.

DFF: Perspectives become far-reaching successes

DFF activities
DFF has worked to establish international co-operations right from the beginning. It is clearly seen that national activities can only be successful if international strategies are pursued.

We offer our members the following services:
- DFF has launched an effective communication platform promoting information exchange between European companies and the international display community.
- DFF fosters contacts to other display societies and producers in the Far East.
- DFF provides its members with up-to-date information about leading-edge technologies and market developments.
- DFF links supply industries, flat panel display producers, end-product manufacturers and research centers in order to speak with “one voice” to public and politics.
- Long-term strategies, essential to penetrate the exploding billion-dollar market, are worked out in DFF expert groups.
- DFF supports education and training of display specialists.

The DFF members
DFF is an industry-led association. Our member companies are involved in a broad spectrum ranging from display production, material and equipment manufacturing, plant manufacturing, handling, system integration, to user industry as well as research and development. DFF is financed solely by membership fees. Enclosed you will find a list of our members.

If we have piqued your interest, please do not hesitate to contact us. Welcome aboard!
Visit our website for further information

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Robert Bosch GmbH
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Siemens i-SFT

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