

From One Extreme to The Other

[i-sft GmbH](#)

Building “mission critical” display modules

In order to satisfy the high requirements of its' international clientele, i-sft GmbH develops and produces high-end customized display modules with Best-of-Bench solutions. Most of their vendors need the utmost in consistency and efficiency when operating under extreme environmental conditions where high temperatures and mechanical-wear drastically reduce a display's reliability. High energy-consumption and waste heat drive up system costs. Materials and components that can't stand the test of time in abnormal environments must be replaced, leading to high costs and at a high risk when the mission is critical. i-sft has its own individual Best-of-Bench concept to deal with such extremities.

360° approach

i-sft has its own unique concept for developing display modules. Initially i-sft starts with an in-depth all-round research on raw-materials, components and even bare substances. A broad portfolio of innovative and patented technologies, make it possible to optimize all products for its actual real-life requirements.

The heart of most i-sft display modules is the specially designed back-light technology known as e³.

e³ is a unique patented design merging high-energy with efficiency whilst staying environmentally friendly.

Other patented materials include the matrix; the mechanical structure; the e³ controller which has replaced the conventional



inverter; the corresponding circuit -boards; the e³ light-source and the complete back-light construction. All components are compatible with one another having no negative influence whilst operating with the maximum amount of efficiency. Other developments or improved materials may be introduced before the product is complete. Once complete, new or more efficient components may be added at a later stage under the factor same form, same fit & same function. i-sft uses no standard or mass-production elements but special components researched and developed by their own people.

In order to meet the requirements of most field applications, a complete backlight system is needed, supplying even spread light over the complete surface whether at full brightness or fully dimmed. The light source and glass matrix must be protected against shock and vibration meaning the source must be stabilised to withstand

forces of 100G of shock and 5G (2 - 200Hz) of vibration. Using special materials with intelligent structures, the light source is embedded in these materials to ensure such values can be achieved.

A thermal concept is needed to regulate the mass of hot air that develops inside a display module. i-sft uses the best materials such as stainless steel to counter-act thermal activity as much as conventionally possible. It is not just the material but the design that supports the concept. Apart from the complete conception of display modules i-sft has partner companies who offer services such as; passive enhancements, optical measurements and technical consulting.

Due to the fact that all components are made under licence and under the control of i-sft, long term availability is practically guaranteed and all parts can be re-produced for many years.

Critical components

In the field where comfort and space are secondary, "mission critical" applications have to be compact and low on energy consumption. i-sft tackles this area by integrating the power source for the backlight and using the Best-of-Bench materials available to combat such topics as heat problems or light distribution. Staying compact means integrating all its e³ controllers (inverter replacement) inside the display module saving space. The e³ controllers are finely tuned to the light source with a matching impedance bringing maximum efficiency and high brightness whilst staying low on power consumption. Materials for the light source are carefully treated to distribute the light equidistantly over the complete active surface of the display. All doubts about the level of EMI or high voltage problems are alleviated during the manufacturing process. i-sft has also developed its own thermal concept with conventional materials; leaving the display modules fully functional without using cooling fans. On the downscale side, i-sft backlights ignite well below zero temperature without assistance from energy consumers such as heaters. Special Chassis are built to deal with thermal expansion.

Tackling 'extreme parameters'

Applications with optical elements that are used in the world's most extreme climates need to be resistant to dazzling sunlight, extreme temperatures and severe mechanical shock. i-sft uses a complete range of harmonized custom-made products that are compatible with each other. Using their own developed e³ technology the backlight materials will not degrade under severe temperatures and don't suffer under the sputtering effects caused by the ignition in conventional ccfl lamps. Although the i-sft backlight systems can produce high brightness of up to 3000 cd/m² and a light efficiency of between 85 - 100 lm/w (ccfl 40 -60 lm/w)

depending on application, it is amazing how low the power consumption is.

Energy efficiency

i-sft has a tradition of producing more light consuming less energy. Sticking to this tradition the newest addition to i-sfts "Rugged Line" series is the 100i.10X-XT display which plays in the hands of those searching for the extreme. Trialed and tested at MIL-STD810 this 10,4" XGA module emits 1000cd/m² brightness and consumes a lowly 20 Watts on energy, which includes the e³ controller (inverter). The module has an excellent acute Omni-directional viewing angle of 80°, a dimming range of 1:1000 and a life time that stretches beyond 50,000 operating hours. Operating temperatures are from a freezing -31°C to a very hot +85°C. The usual features like shock & vibration meet military requirements and can be enhanced if needed. Although a fairly new display component to the market, the 100i.10X-XT has found its way into the hands of military and avionics customers all around the globe.

The company

i-sft is an independent private company based in Gundersheim in Germany some 40 miles West of the Main Metropolis Frankfurt. A modern infra-structure, spacious clean rooms (class 100) and the most intricate test and measurement equipment allows i-sft to comfortably develop, manufacture, test and prepare display modules for distribution on a global basis. Logistically i-sfts factory is situated on the edge of the Rhein-Main area adjacent to one of Germany's main Auto routes; leaving outbound shipments less than an hours' drive from one of Europe's largest airports.

Developments made in the past to enhance the versatility of display modules in driver cabins on high speed trains, where the sun drives its brightness directly on to the display, has driven the

owner and developer Klaus Wammes to turning i-sft into a thriving industrious company supporting many display applications for the world's defences with its high-end display technology. Such applications include field Radars, field computers, mine seeking robots, cockpit displays, amphibious and land vehicles, aircraft transport loaders, marine applications and many other confidential projects.

The Rugged Line

i-sft produces a line of unique displays which reflect the parameters i-sft has been developing for many years. These ready-made serial displays not only present excellent values but can be adjusted to meet the requirements of the customer needing mission critical components. Available in most standard sizes, these display modules can be available at short notice or even re-designed avoiding high costs involved in producing a completely new module. All modules are built to sustain the stress of harsh environments for as long as 50.000 hours on a round-the-clock basis. ■

Your vision is our mission!

