

Attention to details: it runs through everything we do. It is our identity.

What do we do?

We are a leading European printed circuit board (PCB) design company, specializing in high-performance layout design for high-speed, high-density and high-power applications in consumer and industrial markets. We provide customers with low-cost, turn-key solutions to prototyping and production-engineering challenges, that minimize design and production costs, as well as risk. We have one of the longest track records in the industry, with >35 years of activity and >12 years of UNI EN ISO9001 accreditation. We have working knowledge and experience with most European and worldwide certification requirements.

What are our capabilities?

We cater for a diverse customer base, and routinely design PCBs of varying complexity, ranging from 1 to >20 layers, using rigid as well as flexible and hybrid substrates, with through as well as buried vias. We also offer our customers complete 3D modelling solutions for space-constrained applications, and formal signal-integrity and cross-talk analysis. We can work with the Orcad, PADS and DX Designer environments, and have in-house conversion tools that enable us to read and write many other formats too. We also provide complete prototyping solutions, and can take care of component procurement, PCB assembly and prototype testing and characterization.

We invite you to view our competences related to:

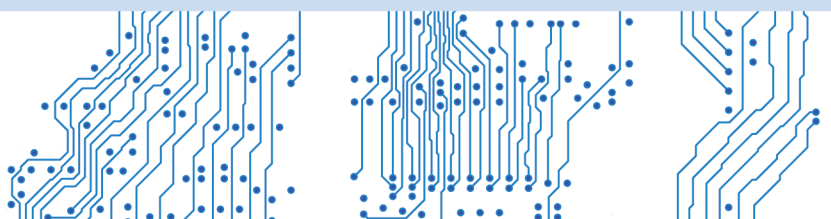
- > *High-density design*
- > *High-power design*
- > *High-speed design*

Where are we located?

Our head office is located in Brendola, near Vicenza, in the Veneto region, northern Italy. We are within easy reach from the Venice, Treviso and Verona airports, which are directly connected to most European cities. The area provides a unique blend of technology and culture: historic Vicenza is a UNESCO world heritage site, and the surrounding towns have developed over decades into one of Southern Europe's most densely industrialized electronics and mechanics hubs. We routinely serve customers from all over Europe and the Mediterranean basin, most of whom do not even need to physically visit us thanks to extensive use of video-conferencing facilities.

How do I request a quotation?

Please explore our website (www.tecno77.com) and fill our *enquiry form*. We will then contact you within a week to discuss your requirements, via email, phone or Skype. Thanks to our experience and knowledge, we can usually offer better deals than most other design houses, and can help you cut down considerably on production costs too. Most importantly, we are always happy to perform preliminary evaluation of customer designs at no cost!



High-density design

Our first designs were large pizzabox-sized boards that would fill many cabinets! Nowadays, most designs in consumer and industrial applications are heavily space-constrained: in many cases volume has gone down by three orders of magnitude or even more! Our long experience equips us ideally to deal with the challenges of miniaturization: we know how to shirk size, without compromising on reliability or increasing costs.

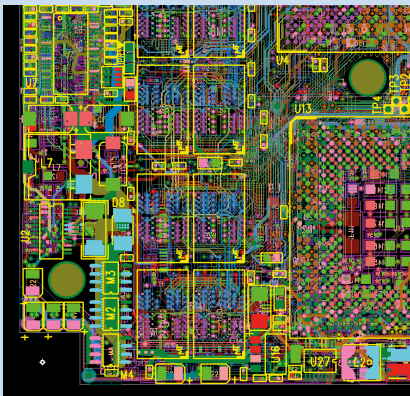
We can help you shrink your design using:

1. high-density routing (down to 3 mils track thickness and spacing),
2. large number of layers (the most complex design completed so far had 24),
3. very high pin-count FINE PITCH and BGA packages (up to 1500 and even more),
4. optimized placement of active and passive components on both sides.

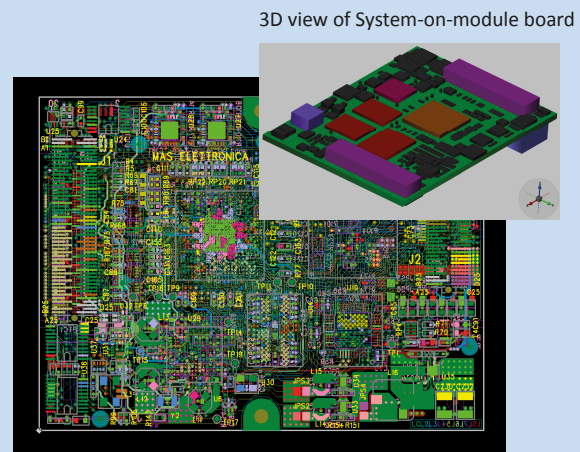
In particular, we have long experience developing optimized layouts for the main families of programmable devices, such as the SPARTAN® and VIRTEX® series Xilinx FPGA, CYCLONE® and STRATIX® series Altera FPGA, ARM® and OMAP® series processors from Texas Instruments.

Our main customers for high-density design solutions include:

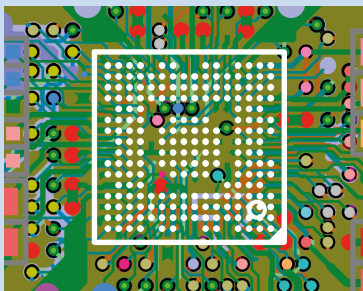
EUROTECH	(High Performance Computing, Embedded Devices and Systems)
EOPTIS	(Optoelectronic Instrumentation and Vision Systems)
MAS ELETTRONICA	(ARM-based Embedded Systems)
IPTRONIX	(Digital Video Processing and Streaming Systems)
LGL ELECTRONICS	(Thread Control Systems for Textile Products)



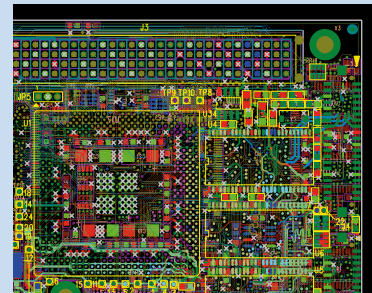
DDR memory routing example on high-density board



3D view of System-on-module board



Fine pitch BGA (ball pitch = 0.4 mm)



FPGA and SDRAM routing on PC104 board

High-speed design

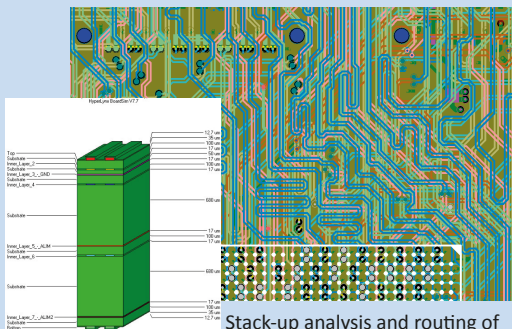
In our early days, microprocessors simply did not exist, and logic gates operated in the kHz range; no-one would have imagined that three decades later clock speeds would have been six orders of magnitude higher, well in the GHz range. Having lived through these times of transition, we are ideally equipped to design very high-speed solutions, benefiting from the experience accumulated over many technological transitions.

For the majority of our current customers, we perform:

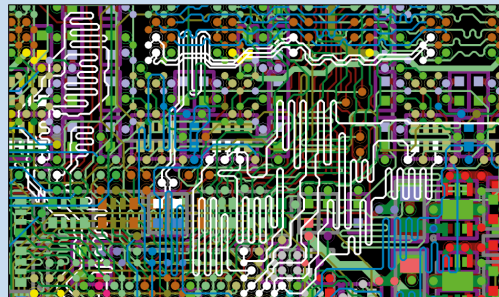
1. layout design for high-speed single-ended and differential busses, for microprocessor, DSP and FPGA applications, using a variety of memory technologies including DDR3 and DDR5,
2. layout design for high-speed serial busses, such as USB3, Gigabit Ethernet, DVI, LVDS, Infini band all way up to data rates over 10 GBit/s, for HIGH SPEED applications ranging from general purpose boards, to backplanes and optical communication systems,
3. hybrid analog/digital high-speed design, managing the unique challenges that arise from mixed-signal design in the GHz range,
4. stack-up calculation using a variety of models and technologies, and formal signal-integrity and cross-talk analysis, with provision of detailed reports and waveforms.

Our main customers for high-speed design solutions include:

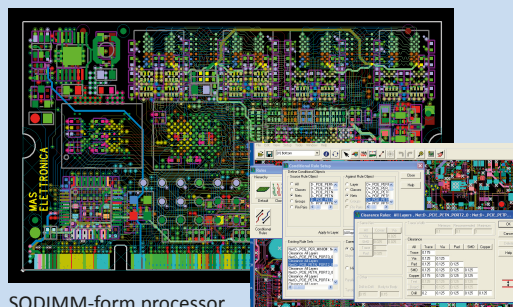
EUROTECH	(High Performance Computing, Embedded Devices and Systems)
EOPTIS	(Optoelectronic Instrumentation and Vision Systems)
MAS ELETTRONICA	(ARM-based Embedded Systems)



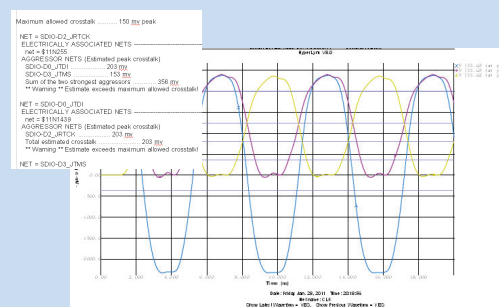
Stack-up analysis and routing of controlled traces



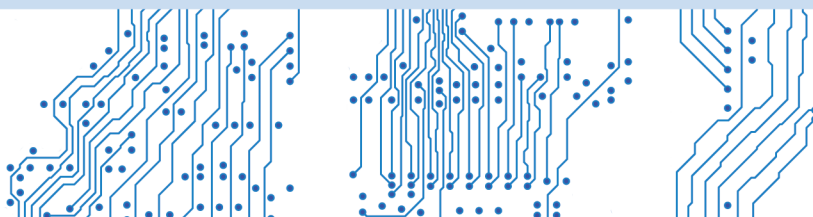
Routing of single-ended and differential clock lines on DDR2 board



SODIMM-form processor module and associated routing rules



Signal integrity and cross-talk analysis



High-power design

Thirty-five odd years ago, when we started, it was a different world: power was managed through large relay switches, and switching regulators were almost unheard of. Power consumption was hardly a concern, it was enough that something worked! Nowadays, most power actuators are digitally-controlled, often with complex algorithms, and semiconductors happily commute currents of thousands of Amperes. Linear regulators are disappearing, and power efficiency is just as important as functionality. Having experienced all phases of this complex transition, we understand exactly what it takes to design a successful high-power PCB, and all associated hidden trade-offs.

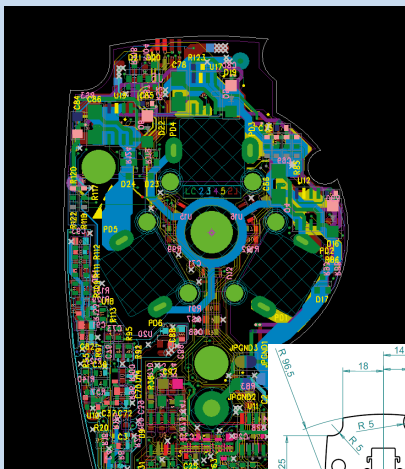
We can design:

1. high-power regulators and power supplies, operating from the kHz range to tens of MHz,
2. motor control boards, combining very noisy, high-current parts with sensitive analog front-ends and digital circuitry,
3. high-efficiency LED lighting solutions, using aluminium based substrates,
4. high-voltage solutions, with formal analysis of insulation performance in the kV range, to comply with certification requirements.

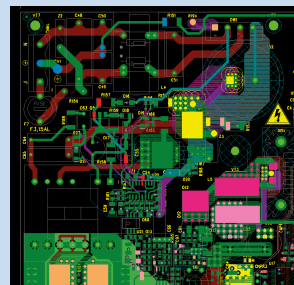
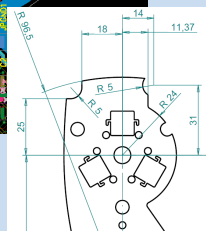
We design layouts for high-power boards that involve devices ranging from simple diodes, rectifiers, IGBTs, FETs, thyristors, integrated H-bridges, up to complex DC-DC and AC-DC converter modules, power drivers and high-frequency switching controllers, convertes and voltage/current sensors, for managing several kV and high currents up to hundreds of Ampères.

Our main customers for high-speed design solutions include:

GDS	(Display Systems, Photovoltaic Systems, Kiosks Instrumentation, Printers)
LGL ELECTRONICS	(Thread Control Systems for Textile Products)
ELSY	(Motor Drivers, Design and Production of Printed Circuit Boards)
TELWIN	(Welding and Cut Systems, Electronic Battery Chargers)
AERMEC	(Air Conditioning Systems)



Custom-design motor control board, tightly fitting around motor assembly



Examples of high-power and high-voltage layouts

