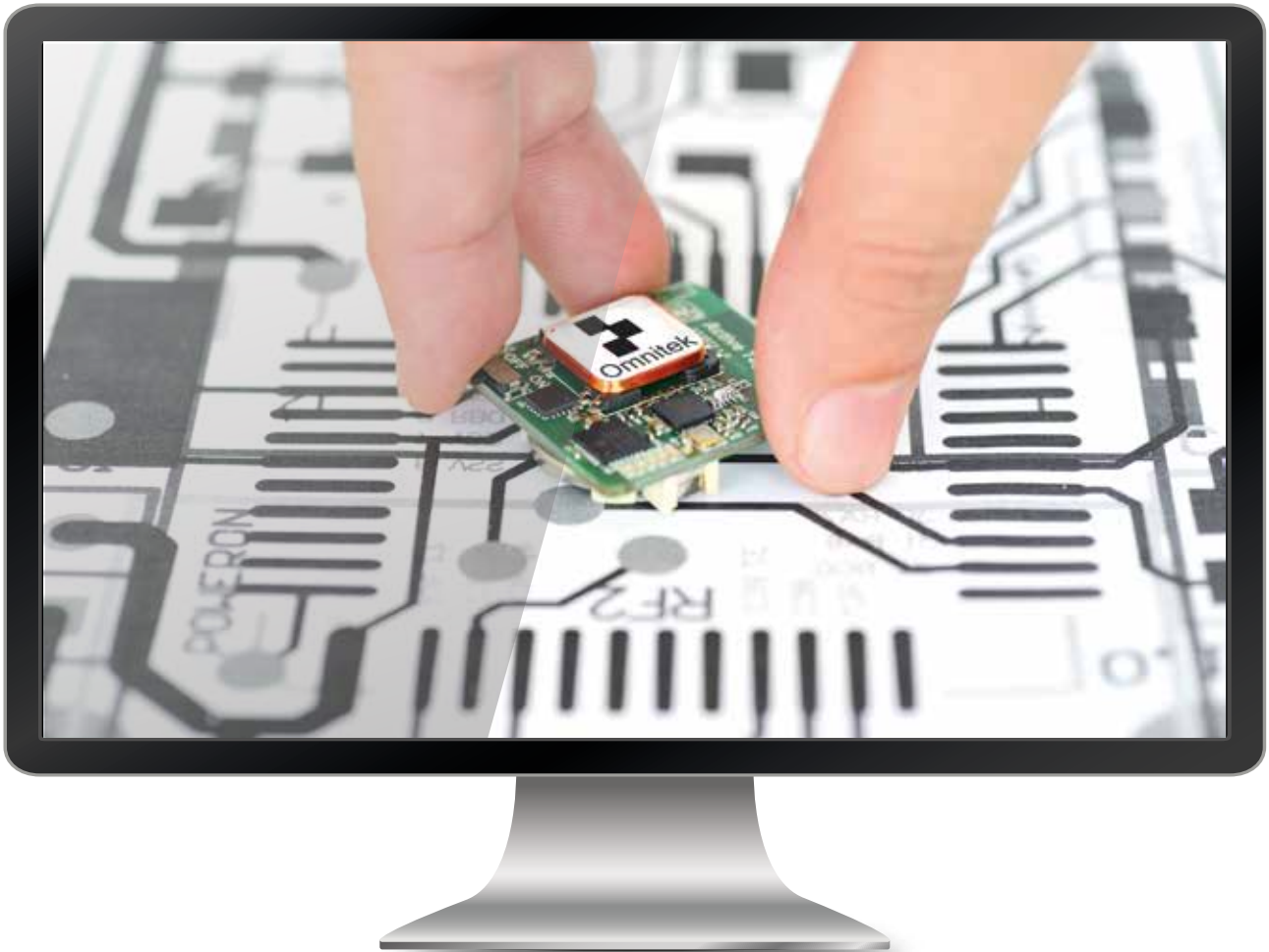


Design Services



***Reducing cost, risk and time for
Image Product Manufacturers***

About Omnitek

Omnitek is a leading independent engineering consultancy specializing in the design of video products and IP for the broadcast, post-production, digital film, Pro AV, medical, aerospace/defence, automotive and consumer industries. Since its foundation, Omnitek has completed many successful design projects for major equipment manufacturers throughout Europe, Asia-Pacific, and the Americas for some of the world's biggest names.

Omnitek offers a design service which specialises in FPGA IP, electronics and software for video and image processing applications for a wide variety of markets ranging from high volume consumer electronics to lower volume specialist design in markets such as aerospace imaging.

"Omnitek have established themselves as a world leading development partner for high performance, responsive and reconfigurable video and vision guided intelligent systems. By leveraging the Xilinx Zynq All Programmable SoCs and MPSoCs with their unique IP, platforms and design services, they have assisted many of Xilinx's leading customers to get to market faster with highly differentiated solutions."

Xilinx Corporate Strategy & Marketing

Our primary goal is to provide a pool of expertise in all aspects of video and image processing design. Our company philosophy is that excellence in design starts with outstandingly talented individuals who are motivated by innovative design. The fruits of this philosophy have been demonstrated many times through successful design contracts performed for companies throughout the world on complex products.

Omnitek is a Certified Premier Member of the Xilinx Alliance Program. Our staff are highly experienced and are individually certified to ensure comprehensive FPGA architecture knowledge and that all designs are efficiently implemented to take advantage of the latest technology. However, our independence means we work with customers' preferred suppliers and our IP can generally be targeted at all FPGA platforms.

The Xilinx Alliance Program is a worldwide ecosystem of qualified companies collaborating with Xilinx to further the development of All Programmable technologies. Leveraging open platforms and standards, Xilinx has built this ecosystem to meet customer needs and is committed to its long-term success.

Core Skills

- Design and Implementation of video and image processing algorithms in hardware, firmware, and software
- FPGA application development in VHDL and Verilog
- Printed Circuit Board design using the latest semiconductor devices and CAD tools
- Algorithm development and DSP mathematics
- In-depth knowledge of design standards for broadcast, medical and military systems
- PCI Express system design
- C / C++ / C# / Java software design for PC and embedded systems
- Windows and Linux OS software including driver design
- 3D Graphics, including GPU Programming, Open GL, D3D etc.
- ARM and x86 architectures
- Turnkey product design including PCB prototyping, documentation and manufacturer

Complete end-to-end projector solutions up to 8K at 120fps



Omnitek's Projector IP is a highly-optimised set of FPGA IP Cores for projectors that can be configured to support resolutions from HD video at 60Hz, up to 8192 x 4320 resolution video at 120Hz. Our Projector IP can be found in many of the leading high-end projectors offering 4K resolution and is already being implemented in 8K resolution projectors.

High quality image processing for the best VR / AR experience



Virtual Reality and Augmented Reality applications pose some unique challenges to system designers. In order to make the user experience rewarding and enjoyable, it is critical that the video (and audio) delivery is performed with very low latency, high frame rate, and best possible resolution. When these factors are combined with the need for low power lightweight headset designs, this requires our leading-edge technology to arrive at a successful solution.

Broadcast quality technology for Pro AV applications



Professional Audio Video is a broad market encompassing products including Video Conferencing, Video over IP, Interactive Displays, Digital Signage, LED Walls and Routers to name a few.

This market is currently responding to the rapid increase in demand for 4K resolution support. Hot on the heels of 4K is the need for 8K support, HDR, WCG and Higher frame rates. This accelerating change in consumer requirements is accompanied by an equally fast change in industry protocols, including the move to IP based distribution, H.265 and JPEG2000 compression standards, and advances in DisplayPort & HDMI standards.



High performance, high specification IP for broadcast manufacturers



Omnitek have a deep-rooted history in the design and manufacture of broadcast equipment. Over the years we have created an enormous portfolio of IP that has been developed for its extensive list of broadcast manufacturers and also used in Omnitek's own Video T&M products. Much of our IP can be found in leading broadcast manufacturers equipment in daily use around the world.

Ultra high quality imaging and display IP for medical applications



Omnitek provides a range of IP Cores targeted at image processing of surgical endoscope and stereo 3D microscope feeds. These include ISP IP (to process the RAW sensor image), HDR Tone-mapping IP (to improve image contrast), Warp IP (to correct lens artefacts) and the OSVP Suite (to add overlays, scale and combine other sensor images and to apply false colour, augmented reality and other effects to the image). 3D Depth Mapping IP can be used to provide measurements based on the content of the left and right images.

Robust, reliable and dependable solutions for aerospace and defence



Aerospace and Defence design often poses unique challenges. Omnitek has proven to be a trusted partner for some of the world's leading aerospace and defence suppliers.

Our FPGA and MPSoC-centric design is ideally suited to lower volume, specialist product design. While many of the video requirements for Aerospace and Defence are similar to other markets, we also recognize the different design methodology and standards required for this demanding market. For video over IP, Omnitek have uniquely developed robust IP cores for the defence and aerospace markets.

Professional quality image processing for surveillance applications



Omnitek provides a range of IP Cores that apply to surveillance processing of surround-view camera images. These include ISP IP (to process the RAW sensor image), HDR Tone-mapping IP (to improve dynamic range and contrast), Warp and Image Stitch IP (to seamlessly stitch images with different positioning geometry, correct lens distortion and aberration) and colour-correct images from different sensors.

Low latency image processing IP for automotive ADAS applications



Modern automobiles contain a growing number of cameras for surround view and camera mirror replacement systems. Omnitek has a range of IP Cores aimed at automotive image processing applications using surround view cameras. These include ISP IP (to process the RAW sensor image), HDR Tone-mapping IP (to improve image dynamic range and contrast) and Warp & Image Stitch IP (able to automatically bend and stitch together up to 8 HD source images to create a 4K composite image for high resolution surround view displays).

Omnitek Standard Products

Omnitek has several standard chipset solutions (Omnitek Standard Products - OSP) for manufacturers who need a short time to market for new products and who wish to benefit from Omnitek's optimised IP instead of developing and implementing or re-inventing new functionality themselves.

New MPSoC technology reduces manufacturer development costs and time to market. The use of Hard IP-cores such as ARM processors, GPUs, CPUs, VCUs (video compression units), etc. within OSP solutions means that fewer devices are required. This reduces unit cost as and simplifies PCB design, layout and signal integrity concerns.



Omnitek IP and Technology

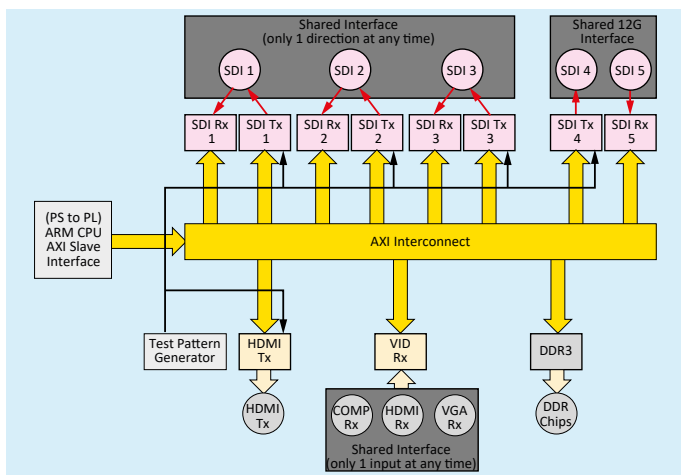
Omnitek's IP and Technology library includes the following that are detailed in separate data sheets:

| | | |
|-------------|--------------------|-----------------------------|
| SDI IO | 12G-SDI Design | SDI Gearbox / Converter |
| SDI Audio | MPSoC | Video & Audio Monitoring |
| HDMI 2.0 | H.264 / H.265 VCU | MPEG 2 Decoder |
| 2D Graphics | 3D Depth Mapping | OSVP IP Suite (scaler, etc) |
| V-by-One™ | HDR (Tone-mapping) | Image Signal Processing |
| GPU | Multi Image Stitch | Warp (Lens correction) |
| | | DMA Controller |

Reference Designs

OZ745 Evaluation Reference Design

The OZ745 board is delivered with an Evaluation Reference Design (ERD) which accepts SDI and HDMI video inputs. It also displays a test pattern on the SDI and HDMI video outputs. The ERD provides a convenient way to test many of the board's features and gives a skeleton design upon which users can build their own firmware and software applications. Source is provided to allow creation of initial designs.



OSVP (Omnitek Scalable Video Processor)

The OSVP Suite is a highly configurable set of IP blocks and optional features that together provide a powerful range of tools for multi-video format conversion and image enhancement for video formats up to 60Hz Ultra HD, with 120Hz Ultra HD output as a further option.



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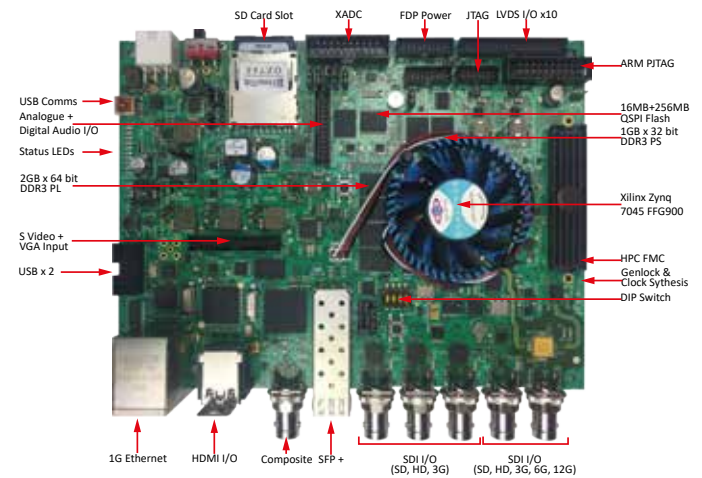
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Development Platforms

Omnitek's development platforms include the OZ745 development board. This is based around the Xilinx® Zynq- 7045 All Programmable SoC. The kit includes all the basic components of hardware, design tools and IP, together with pre-verified reference designs, to rapidly develop video and image processing design prototypes.



Omnitek's Experience

In addition to our foundation in design services, Omnitek is also a leading manufacturer of video T&M equipment based in the UK.



There is a direct synergy between these two areas of the business. In order to develop video products that support numerous formats, image sizes and frame rates, it is necessary to have appropriate equipment to test the design. We have developed IP to perform measurement, monitoring and logging and this is used within our own T&M products.

As a Design Services provider and T&M product manufacturer, we are ideally suited to help others develop their own products. We have built up expertise over many years and understand the stages, processes and challenges that are faced when getting products to market on time. We have expertise in-house, and industry contacts, to be able to find solutions to problems in circuit design, PCB layout, manufacturing, testing, compliance and other areas.

Our Design Services projects are managed as part of an overall program of resource management, risk management and tracking to ensure that projects are delivered on time and on budget. All Project Lead engineers have extensive experience both within Omnitek and elsewhere. All project engineers are chosen based on their knowledge, skills and experience of similar projects.

Omnitek's ISO 9000 Quality Management Process ensures that all activities are performed repeatably and professionally and places the customer's needs at the heart of the business.

www.omnitek.tv

