ATI FirePro™ Workstation Graphics

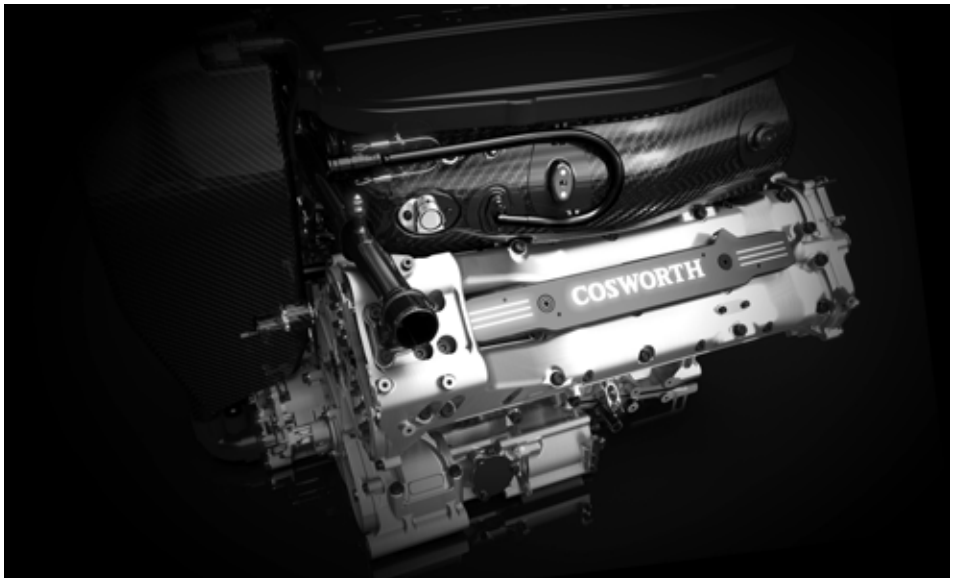
Case Study | Cosworth

The ATI FirePro™ V8800 workstation graphics accelerator, ATI Eyefinity technology and a Dell Precision T5500 workstation drive three screens to a photo finish

Cosworth returns to Formula One supplying competitive, high performance engines in line with stringent FIA regulations. Having been the most successful independent engine supplier in Formula One for over forty years, Cosworth is on the race track again, supplying four teams with its latest engine, the CA2010. That's eight drivers who each have an allowance of eight engines per season so production has to ramp up from 0 to 64 in record time. Operating globally in aerospace and defense, sports, automotive and energy, Cosworth supplies other famous names such as Rolls Royce, Aston Martin Lagonda and the United States Department of Defense. Most Cosworth engines, including those destined for Formula One, are completely customized and are designed, manufactured, built and tested in the group's Northampton facility. Others, for the niche automotive market, are part of longer term development programmes between Cosworth and its OEM customers.

Customers are keener than ever to see how their finished products will actually look. Cosworth's own designers are just as interested and they certainly want to satisfy customers by giving them a peek at the product ahead of time. The response? Provide high quality photo realistic images based on the actual CAD designs which are a key part of Cosworth's engineering processes. These are made possible by the combination of ATI FirePro V8800 professional graphics from AMD sporting ATI Eyefinity technology to drive three 24 inch screens*; and a Dell Precision Workstation T5500. This machine currently has 24Gb RAM but can be scaled up to a mammoth 72 Gb via its nine memory slots.

The satisfied user of this high octane solution is Yusuf Islam, Brand, Communications and Design Specialist. "Here in the marketing communications department we need to create sales collateral, sometimes when a product is still in development. Whether for print or the web, great pictures have the biggest impact and renderings are not only the best way to impress, they speed up the development process, creating productivity gains and enabling Cosworth to respond to customer requirements more effectively." Renderings can be produced well before a design goes into production. As designers at Cosworth use NX software from Siemens PLM, they supply an NX CAD assembly file which Yusuf imports into Autodesk 3ds Max with the help of a third party plug-in. Behind every fantastic rendering there is a painstaking manual process and Yusuf finds that the triple display configuration boosts his personal



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productivity. “I start by filtering out large components such as the engine block and head, assigning them to layers and switching off their visibility. Then I work my way down through all the internal components until there is nothing left except a set of well managed layers. With three monitors there’s no need to fight my way through multiple stacked windows in order to find the one I need. Toolbars and palettes I access most often are always in my peripheral vision while my primary software occupies one monitor directly in front of me.”

This critical groundwork takes between one to two weeks. Texturing an engine is approximately another week’s work as Yusuf picks out all the little washers, nuts and bolts and assign them all textures that mimic their real world counterparts. According to Yusuf it is at the texturing stage that the card really comes into its own and productivity increases dramatically. “I might be manipulating an assembly which consists of almost 7,000 components. A large screen operating at a high resolution means it is easier to see detail and with three of them I can work faster and accomplish more in less time. However at this point most of the processing is being handled by the graphics card. Having one that can keep up and drive three monitors simultaneously is crucial; a task that would be near enough impossible for a lesser graphics card. The ATI FirePro card is a major advantage when working on complex models like a Formula One engine assembly. A dense model like this has to be processed and previewed fast as I pan, tumble and zoom around yet I still achieve relatively high frame rates as I work the scene. I can systematically get the job done without experiencing awkward lags whilst the model is being updated on screen.”

At the final stage Yusuf is free to render a product in any position and at any angle. From here on, each high-resolution still image, typically an exterior shot, can be rendered in about two hours. “While traditional photography will always play a part in our communications, renderings have the advantage of always looking perfect and dirt-free; great for brochures and catalogues. Also, cameras cannot easily capture certain technical shots such as engine internals, cutaways and x-ray views. More importantly though, if a CAD assembly of a product exists, I can create renderings of it long before the manufacture and assembly processes are completed.”

Cosworth now uses renderings extensively. “Before, we had to rely on rapid prototypes as a visual representation of the product. They still have their use when testing for fitment issues; however, rendered images are now the basis for various stages in the development process, for example during meetings with customers. A photo realistic picture has much greater impact during the client approval stages than brightly colored CAD screen shots. Customers are more engaged and excited about the end product and as a result more satisfied with the level of service received from Cosworth.”

Yusuf now plans to take digital rendering at Cosworth to the next level with animation and videos. Meanwhile the visual appeal of renderings continues to arouse a sense of positive anticipation across Cosworth. “Everyone loves them and doing this work has turned out to an important part of my job. In the end it’s all about satisfying our customers and these images provide the ‘wow’ factor.”

ATI EYEFINITY MULTI-DISPLAY TECHNOLOGY

ATI Eyefinity technology can support multiple displays using a single enabled ATI FirePro™ professional graphics card; the number of supported displays varies by card model. Microsoft® Windows® 7, Windows Vista®, or Linux® is required in order to support more than 2 displays. Depe nding on the card model, native DisplayPort™ connectors and/or certified DisplayPort™ active or passive adapters to convert your monitor’s native input to your card’s DisplayPort™ or Mini-DisplayPort™ connector(s) may be required. See www.amd.com/firepro for details. ATI Eyefinity technology can support multiple displays using a single enabled ATI FirePro™ professional graphics card; the number of supported displays varies by card model. Microsoft® Windows® 7, Windows Vista®, or Linux® is required in order to support more than 2 displays. Depending on the card model, native DisplayPort™ connectors and/or certified DisplayPort™ active or passive adapters to convert your monitor’s native input to your card’s DisplayPort™ or Mini-DisplayPort™ connector(s) may be required. See www.amd.com/firepro for details.