

PRODUCTIVE



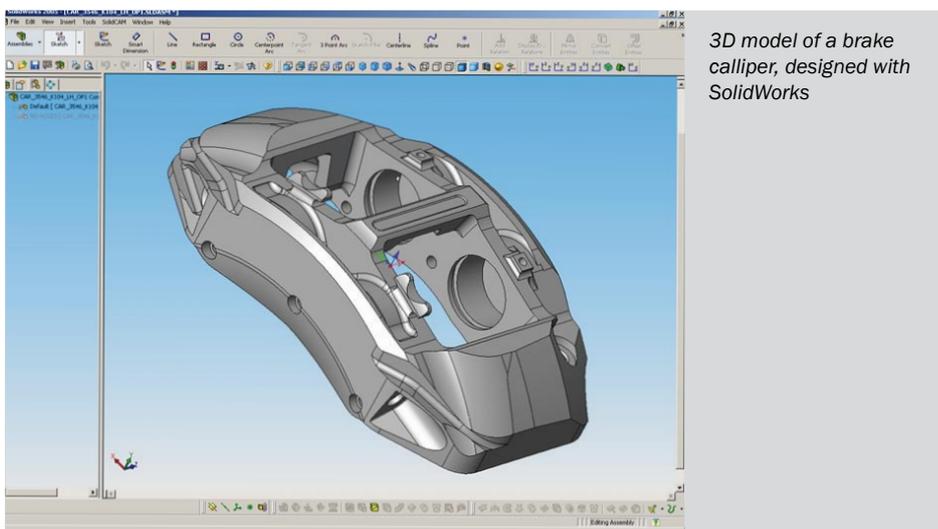
High Performance Manufacturing for High Performance Car Components

The town of Tamworth, Staffordshire; is not only known for its historic merits; but also for its engineering and manufacturing industry. Here the engineer and sports car racer John Moore founded in 1984 Alcon Components Limited. The company has gained a worldwide reputation for manufacturing and supplying high specification brake components and clutches to motorsport and for high performance road vehicles.

In the world of motorsport; Alcon became a Technical Partner to the Honda F1 Racing Team by supplying brake callipers of a patented design. Alcon is also cooperating with other Formula 1 teams to develop the next generation of F1 braking systems. Alcon is well known in US motorsport, providing brake components to the leading racing teams of the IRL and NASCAR series. In addition the motorsport departments within Audi, BMW, Ford, Honda, Peugeot, Renault and Volkswagen count on the technology of Alcon, as well as some prestigious road car manufacturers; including Brabus, Jaguar, Land Rover and Prodrive.

Alcon employs over 80 staff at its headquarters and manufacturing facility in Tamworth, located in the English West Midlands region. The international presence is ensured by further sales personnel in the United States and France. According to the requirements of the automotive industry, Alcon is certified to internationally recognised ISO TS16949 Quality Standard.

Alcon's customers are making high demands on their suppliers. They demand not only highest precision and machining quality, but also manufacturing flexibility and short response times. This is the key to Alcon's success. At the headquarters in Tamworth; many of the production functions are under one roof to maintain maximum control over quality and scheduling - an essential aspect

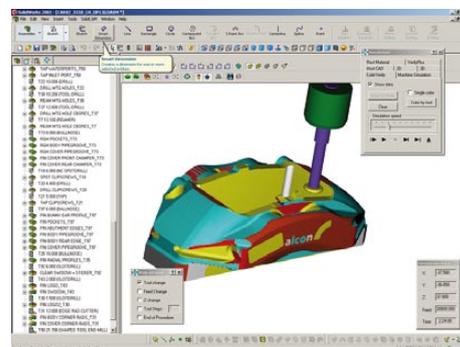


3D model of a brake calliper, designed with SolidWorks

to the 'rapid response' approach. The ability to machine, finish, assemble and test components in-house is often crucial to meeting customer deadlines.

Allan Ford, Senior Production Engineer with 15 years service at Alcon is one of the "veterans" in the company: "In the last 15 years, I have seen the company grow from 8 to more than 80 employees. Bottom-line; the reason for our success is our flexibility to convert design ideas into metal as fast as possible." Alcon engineers are equipped with state-of-the art CAD/CAM software and profits are constantly being reinvested in capital equipment, including new CNC machining centres, computer controlled inspection equipment, and specialist tooling systems.

Alcon's engineers are always in tight cooperation with its customers. They take their ideas and complete the design through the manufacturing process. This requires a 3D CAD system, which can easily import the different CAD formats of the customers and has powerful 3D modelling capabilities to modify and create the geometry. For several years, Alcon has been using the SolidWorks 3D system for design, and the Engineering



NC-Programming of a brake calliper with SolidCAM



Applying High-Speed Machining to a calliper part results in excellent surfaces.

department is equipped with 6 seats. Allan Ford: "For us, SolidWorks is a versatile software tool to accelerate our design process. E.g. in Formula 1, weight is always an issue. We are permanently investigating the reduction of weight while maintaining the stability. For this, we need an easy-to-use and powerful CAD system, which also supports integrated analysis tools. Moreover, we use SolidWorks in the manufacturing department to design fixtures for locating and clamping the workpieces on the machine tools".



Gordon Drysdale, Managing Director of SolidCAM UK: "We provide our customers not only with powerful manufacturing automation software, but also with all kind of CAM services."

To convert the SolidWorks design files to machined parts; Alcon uses CAM software which generates the G-Code for the CNC-machines. Bob Luck, who joined Alcon as CAD/CAM system manager in the beginning of the year 2004, states: "We analyzed our CAD/CAM process chain for a couple of months and found some weaknesses in our CAM system. As it had not been integrated into SolidWorks, it was sometimes not easy to get the design data quickly enough and error-free into CAM. Furthermore, we had to wait about 6 months to get a suitable post processor from our CAM supplier, so that our Moriseiki CNC machine could run efficiently." To optimize the overall process, Alcon finally decided to look for a new CAM system. Based on the experience with the old CAM system, 4 main criteria for the selection of the new software were defined: 1.) Seamless integration in SolidWorks, 2.) Broad range of CAM functionality, 3.) Powerful post processor capabilities and 4.) Excellent UK support.

After selecting 3 different CAM systems for the short list; each of the CAM systems had been installed in the Tamworth headquarters for one month. During this period, Alcon had the chance to test all systems under real working conditions. Bob Luck: "Our approach gave us the opportunity, not only to test the software functionality, but also the underlying support organization. For us, an excellent local support is absolutely vital." Finally, Alcon decided to select SolidCAM as the new CAM solution. The company purchased two seats of the combined solution "SolidWorks+SolidCAM" for their manufacturing department. Bob Luck continues: "We found out, that SolidCAM reduced our NC programming time by half. Also, we have been pleased with the ease-of-use and power of the 2.5D Machining module. A major criteria for us has been the UK support. Marks Stocks; the Technical Director of SolidCAM UK, helped us a lot in implementing the SolidCAM software in our shop floor, also by customizing the post processors perfectly to our machine tools. "Gordon Drysdale, Managing Director of SolidCAM UK adds: "Manufacturing automation is a solution business and has to do a lot with competence and know-how. We at SolidCAM UK provide our customers not only with powerful automation software, but also with all the services including training, post processor development, project support, consulting and systems integration. This helps them to meet their cost and time targets in parts manufacturing."



Allan Ford (left) and Bob Luck (right) introduced state-of-the-art manufacturing technology at Alcon Components Ltd., including a Hermle C20 5-axis machine and SolidWorks+SolidCAM as CAD/CAM "

SolidCAM has been used now extensively since 2005 at Alcon. Recently, a new 5-axis CNC machine from Hermle has been installed, and SolidCAM's 5-axis simultaneous milling module is used simulate and program the machining process. Besides all the positive experience with SolidCAM,



Mark Stocks (SolidCAM UK) supported Alcon to customize the post processors for the CNC machine tools.

Alcon has still some wishes. Bob Luck: "We are currently working on the machining of a newly developed calliper with many complex surfaces. We want to apply the Solid Verify module on it, and we need to speed up this process." Like all relationship's this is very much a "work-in-progress", SolidCAM have always worked closely and listened to their customers requirements who in turn have to meet the demands of their customers to develop tools for the shop floor that deliver.

About SolidCAM UK Ltd.

SolidCAM UK was formed in January 2002 by the current directors to sell and support SolidCAM in the United Kingdom and Ireland. Since then, SolidCAM has been on a rapid growth path with annual growth rates more than 30%. SolidCAM UK is based in Barnsley, South Yorkshire, where a fully equipped training facility can be found for training and support purposes. All the people at SolidCAM UK are from engineering backgrounds, essential for the smooth operation, knowledge of the customer's requirements and levels of support.

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