



# SolidCAM

iMachining – The Revolution in CAM!

## Alcon Components Ltd sees SolidCAM as an Asset to their Business



Alcon Components Ltd specialises in the design, development and manufacture of specialist brakes and clutches for use in motorsport, performance road cars and specialist sectors such as defence, armoured protection and low carbon vehicles. [www.alcon.co.uk](http://www.alcon.co.uk)

*Formula Nippon, also known as Super Formula, is a one-make Japanese open wheel national race series that was originally formed in 1996. Races are held at tracks such as Suzuka, Fuji and Motegi. The cars weigh 650kg and are powered by two litre turbo engines from Honda and Toyota. Alcon designed their brake caliper (ref CAR3249BC03TES) to suit the Swift chassis that was used by all teams between 2009 and 2013.*

*A brake caliper is essentially a hydraulic clamp, a housing containing pistons, which when subjected to hydraulic pressure applies force to the brake pads on either side of the brake disc. Friction between the pad and disc slows the vehicle down as hydraulic pressure is applied. The efficiency and performance characteristics of a brake caliper is influenced by a number of design elements, but predominantly it is caliper stiffness that affects fluid displacement, deflection, release characteristics and pad wear/taper.*

*Alcon designers reviewed the available packaging space and found that a caliper of sufficient stiffness and weight could be designed to fit inside the existing wheel but with the disc diameter increased from 280mm to 285mm. This allowed a small increase in surface area of the disc, helping to reduce disc temperature at the hardest race tracks for brakes.*

*The caliper is a 6 piston monobloc, with the housing machined from a billet of aerospace grade aluminium alloy. The six pistons are made from Titanium so that heat transfer from the pads to the brake fluid is minimised. The caliper assembly without pads weighs 1900g.*

*The design envelope, fixed design elements and boundary constraints were defined and Optistruct was used to create the basic shape of the caliper housing. The designer then used SolidWorks software to model the caliper, carrying out stress analysis on the functional design to ensure performance was within the specified limits. The production engineer chose the machining strategy to be used and generated the machine code using the revolutionary SolidCAM software. The caliper housing was machined using a 5 axis strategy on a Hermle C20U, and the caliper bores and seal grooves were produced with right angle machining heads.*



*“Having used SolidCAM for nearly ten years, we find it to be an integral part of our business and look forward to our continuous work with SolidCAM UK Ltd in helping us further reduce our cycle times.” Phillip Smith, Director, Alcon Components Ltd.*

### SolidCAM

Founded in 1984 by Dr. Emil Somekh, SolidCAM has over 29 years of expertise in CAM development and applications. The integration strategy of SolidCAM, in the major 3D mainstream CAD systems, SolidWorks and Inventor, has created major growth for SolidCAM and established SolidCAM as the leaders in Integrated CAM. SolidCAM is a Consistent Growth Leader and has been named by CIMdata as the fastest growing CAM vendor worldwide, in five out of the past eight years.