

CTI Visit – part two

Last month, we reported from the Club's visit to Caterham Technology and Innovation (CTI) focussing on their work to develop the Caterham 160. This month, **Colin Cooper** provides a more personal perspective on his tour.



It was a very pleasant surprise to receive a mail from Sam Pearce to say I was one of the fifty L7C members who had been pulled from the hat to be offered a place on the forthcoming tour of Caterham's Technology and Innovation Centre, at Hingham, Norfolk.

Having recently retired, my wife Sue and I had made initial plans to travel up to the area on the Thursday, and spend Friday nosing around Norwich ready for me to do the CTI tour on Saturday, before making a gentle trip home on Sunday. The weather literally sunk that idea! The forecast was not good for the whole weekend, with a month's worth of rain and hurricane force winds expected.

So I travelled up (from Southampton), in the Caterham, alone. It was only the second time I had used the full hood in my eight years of ownership, despite using the Seven all year. To be honest, the weather started off not too badly – up the M3 and around the M25 it was mainly just spray. It wasn't until I had stopped to fill up just inside Norfolk (Nelson's County; isn't it time they moved on?) that it really started to tip it down. Under the hood, I remained reasonably dry; just a bit damp through the pedal box, with a wet shoulder from not sealing the door correctly. Now I know what the notch in the

door does! The heated screen came into its own on the heaviest downpours however.

Right up to the point at which I left home, I had been checking my emails continually to make sure the tour had not been cancelled due to the weather. Having overnighted locally, I would not have been surprised to arrive at Caterham's Technology centre to find it locked. However, as it happened, it was nearly a full house with forty-nine members signing in. However, it was mostly tin-tops filling the car park, with just three Sevens and one 21 representing the marque.

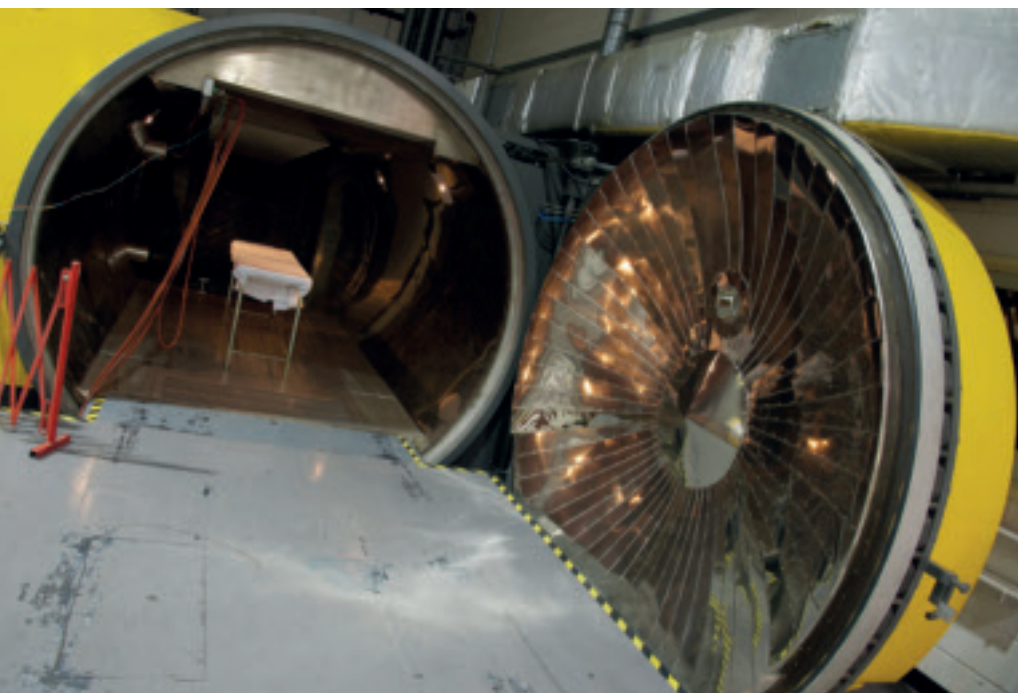
Having signed in, we were shown into a meeting room for coffee (thanks Paris), and to meet a few old and new faces from past venues. We were soon introduced to the Caterham team who would be conducting the tour. These were;

- Scott Thompson, Business and Development Manager
 - Chris Dunster, Head of Vehicle Engineering
 - Paul Birch, Head of Power and Electronics
 - Dave Minter, Chief Engineer, Vehicle Development
 - Ralph Sandford, Chief Engineer, Control Systems
- Not your oily rags then!

We were split into two groups; Group A to be shown around the facility, Group B to be given a presentation on the new Caterham 160.

The facility tour took in the composite shop with examples of various laying techniques using carbon fibre and fibreglass that showed the varying stiffness that could be achieved; the results weighed against cost and purpose. The carbon fibre rolls are stored in a large "fridge", as it goes off if not used quickly. We also took in the model shop where a mould was covered and top secret! Then the engine test and development department, various measuring floors and rooms, and different engineering departments where some of the lathes and tools were common, but much of the kit was highly specialised.

We ended up in the "garage" which held various models, including a Caterham go-kart, 160, 485 road evaluation test car, the AeroSeven concept, and two more covered "secrets". I for one had previously been unaware of the diversity of Caterham Group's portfolio, which includes not only the Seven and the F1 motorsport divisions, but now also cycles and motorcycles. On top of this, there was talk of a yachting connection, and even the aeronautical industry was mentioned.



Carbon fibre is carbon fibre – right? Well, apparently not. CTI took us through just some of the decisions which the team considers when designing a carbon fibre component. By way of example, we were shown various test parts which had been made for the bonnet of the AeroSeven concept car. From the outside, both looked identical – neat, clean carbon fibre weave under a deep lacquer. The first part had been constructed from two skins of carbon fibre sandwiched around a core of glass fibre. The part weighed 2.5kg, and although it was obviously strong, could be twisted relatively easily. The second part weighed in at a mere 1.3kg and was completely rigid. The difference – the second had a core of Rohacell, a foam-like material used heavily in the aerospace industry. So, half the weight, much more rigid, but also twice the cost. I can hear the arguments between accountant and designer raging as we speak.

No, not the factory's medical facility – this is the larger of the two autoclaves which CTI has on site. An autoclave is a pressurised oven, used to cure carbon fibre components. This particular facility is said to be one of the largest in use within the automotive industry. It was originally installed by previous occupiers of the building, Racing Technology Norfolk (RTN) who were behind the Bentley Speed 8 project which won Le Mans in 2003. The autoclave was designed to be able to accept the entire rear structure of a Le Mans car as a single part. It is also unusual insofar as the floor in front of the oven retracts, so that trolleys containing components can be wheeled straight in. From 2014, the bulk of Caterham's F1 carbon fibre manufacture has been transferred to its Leaffield facility. Previously, Caterham's F1 monocoques would have been through this oven and even now, certain components for the F1 car, such as wishbones, continue to be made in Norfolk.



CTI's very first project for Caterham Cars was the development of the EU5 compliant Duratec engine which is the base for the Caterham 485, a high performance Seven aimed at the export market. Although the engine is marketed as being EU5 compliant, CTI are particularly proud of the fact that it has actually now also been approved against the next set of standards, EU6. This apparently makes Caterham one of the first, if not the first European manufacturer to achieve compliance with a gasoline engine. With resources like this within the Caterham group, confidence that the Seven can be evolved to meet ever tougher regulations must be high.

Things have certainly moved on – and very quickly. The question was asked about where the group's real focus was, and we were assured that with the number of "fingers in pies" that the Caterham Group has, the continued support and development of the Seven is not under threat.

We were told that the go-kart is aimed at 13 to 16 year olds (shame, just missed) who, it is hoped, will get the taste for racing and perhaps move on to the Academy series and up through the Caterham motorsport ladder later on.

The Caterham 160 presentation showed how a mundane drive-chain, (in this case

Japanese), could be developed into a "fun" agile sports car through the team's expertise. The presentation dealt with all aspects of the development from the modified chassis, unique rear suspension, reworked engine, and in-house designed engine management systems. However, the original gearbox and live back axle were deemed to be well-engineered enough not to need modification.

It did seem (to me at least) that the 160 is aimed primarily at the far eastern market, especially Japan, rather than Europe where more "oomph" is generally expected. I guess that we are lucky enough to have the rest of the



Although the CTI staff were open and approachable throughout the trip, there were inevitably parts of the tour where confidential projects had to be covered up. Can anyone hazard a guess at the silhouettes under the sheets?



The "carbon tart's" dream toolbox? I could definitely see one of these in my garage.

Caterham range available to us to cater for these needs... Mind you, the model does seem to have gone down well with the motoring press, even if Clarkson chose to mock May for preferring it over the vastly more powerful 620R.

Some three and a half hours after arriving at CTI, the group broke up. Those who attended took the opportunity to express their sincere thanks to the Caterham team who had given up their weekend to host the "L7C 49", especially as it took place on the morning after Valentine's Day. Hopefully, they all have understanding partners and we didn't cause them too much grief... LF



The AeroSeven concept divided opinion upon its launch to the press. Having seen it in the flesh and learned a little more about the work which has gone into its design, many attendees agreed that they could see the potential for it to grow into an attractive car once the design has been allowed to mature.



The weather forecast broadcast above Caterham's display F1 car expressed clearly how brave some members had been by traveling up to Norfolk in their Sevens that day. The F1 car is actually a 2010 chassis, constructed when the racing outfit was known as Team Lotus, but repainted with Caterham's more current colour scheme and sponsors. The car is apparently the personal possession of Mike Gascoyne, Chief Technical Officer of the Caterham Group.