

Happy New Year Engine Development

Everyone at Brunel Racing would like to wish all of our supporters a happy and successful 2009.

We are delighted to inform you that following our final design deadline before Christmas, the specification of our 2009 Formula Student car, BR-X, has now been completed.

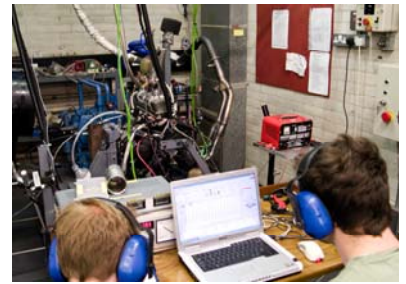
The highly refined design, combined with excellent results from ongoing testing and development projects, means the team are well on track to start the build process in February, with a completed car by June in order to conduct plenty of testing before Formula Student Silverstone in mid-July.

Nick John

Development work on our Yamaha R6 engine has been ongoing since early October. The engine is mounted on a dynamometer in Brunel Racing's specialist engine testing laboratory, and has been run regularly on a high volume test program.

In order to provide accurate results, our test equipment has been upgraded with a new cooling system, throttle, and exhaust thermocouples.

The test program has so far dealt with advanced mapping of the engine for BR-g's setup, assessment of petrol vs. E85 fuelling, and comparison between experimental and simulation results.



Work has progressed extremely well, with performance of the BR-g setup already increased from 45bhp and 29Nm torque to 61bhp and 41Nm, and torque values having been increased throughout the rev range.

The next stage of testing will focus on comparisons between a standard and modified engine, and determining the optimum intake geometry.

See our website for updates. ■

BR-X Final Design Overview

The design phase of the BR-X project is now complete, with the end result proving to be a great advance on Brunel Racing's previous cars.

Powertrain

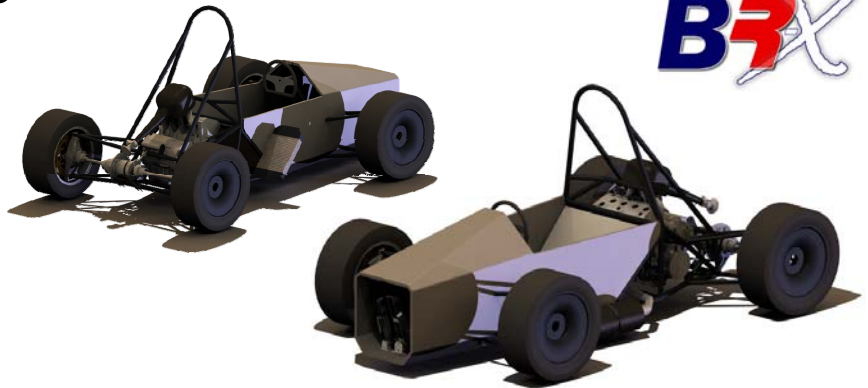
BR-X will be the third Brunel Racing car to use a 600cc Yamaha R6 engine.

This engine will be combined with a rear-entry intake and a side-exit exhaust. Engine mapping work is ongoing with power and torque gains still to be made. The car will run on petrol with 4 injectors.

For cooling, BR-X will use a single core radiator mounted in the right sidepod.

Drivetrain

BR-X will use a chain drive to power the rear wheels with unequal length driveshafts and a final drive ratio of 3.5:1. A Quaife ATB differential will be used with a custom lightweight housing.



Chassis & Controls

BR-X features an aluminium monocoque chassis with a steel spaceframe rear end.

Drivers will be accommodated with individually moulded seat inserts, as the pedalbox will be fixed in place to save weight.

Driver aides such as traction control and a semi-automatic gear shifter will improve driveability.

Suspension

Suspension geometry for BR-X is optimised for handling with shorter wishbones and more focus on driver feedback.

Whole car simulation is being developed to optimise setup during the events.

Aerodynamics

A short nosecone will fit the front of BR-X's monocoque and enclose the crash structure. Sidepods are designed for optimal cooling flow while minimising drag.

The build phase of the project is due to begin in February. More in-depth information on BR-X's final design can be found on our website at www.brunelracing.co.uk ■

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BR-9 Testing

Brunel Racing's 2008 car, BR-9, is now in use as a research and development platform. It has been equipped with numerous sensors including those for measurement of GPS position, acceleration and suspension travel.



The testing team recently completed their first dynamic test of BR-9 around Brunel's campus. The engine started successfully for the first time since returning from Formula Student Germany in August, and ran the latest fuel/ignition map produced by the engine

development program.

The aim of the test was to calibrate the sensor array by performing some simple 75m acceleration runs.

The effectiveness of engine development was clearly demonstrated as BR-9 set a 75m time one second quicker than that achieved at Hockenheim. As the map used for this test was only a development version, the team are optimistic of great gains with further testing. After several data acquisition runs however, the test was cut short by a stub axle material failure.

BR-9's next test will be in January. It will focus on development of traction and launch control, and will provide invaluable background information for their implementation on BR-X. ■

Made in Brunel Launch

Brunel Racing attended the launch of Made in Brunel 2009 in early December.

Made in Brunel is a design and engineering show run by students from Brunel University's School of Engineering and Design, and showcases the finest, most innovative work of the graduating students.

The team were exhibiting BR-8, the 2007 car, at the

launch and this proved to be a valuable networking opportunity.

MADE IN BRUNEL

We look forward to working with the Made in Brunel team throughout the year and to exhibiting at the event in June 2009.

www.madeinbrunel.com ■

Driver Selection

The first stage of Brunel Racing's 2009 driver selection program has been completed. 21 team members took part in a half-hour endurance race at Sandown Park go-kart circuit in Surrey in early November.

After analysis of the lap times and the overall finishing order, several clear-cut contenders for the chance to

drive BR-X at the 2009 Formula Student competitions have emerged.

The driver evaluation process will be ongoing with further karting events planned for the first half of 2009.

Shortlisted drivers will work on BR-9 test programs and will ultimately take part in driver training using BR-X. ■

Quaife Visit

In late November a group of Brunel Racing team members visited Quaife in Sevenoaks, Kent, for a tour of their workshops and manufacturing facilities.



The visit was an excellent opportunity to learn about Quaife's products in more detail. It proved particularly useful for BR-X drivetrain designers working with the Quaife ATB differential.

Our thanks go to everyone at Quaife who helped organise our visit. ■

Other News

Chassis Mockup

We now have a full-size MDF mockup of BR-X's aluminium monocoque chassis in the workshop.



The mockup will be used for ergonomics refinement and to check the fit of components. ■

Teamwear

The whole team have recently taken delivery of teamwear. Red jackets bearing the BR-X logo are now clearly visible around Brunel's campus.



Thanks go to Imprint Promotions. We all look forward to wearing our BR-X teamwear, complete with our partners' logos, at the 2009 events. ■

Website

Remember to visit our website which is regularly updated with all the team's news:

www.brunelracing.co.uk

You can now also keep up with our project's progress via the 'BR-X' page on Facebook. ■

