University of Patras
Department of Mechanical Engineering & Aeronautics

Laboratory for Manufacturing Systems & Automation

Newsletter No.2

01/02/03'07

UP Racing

The new year has come and the final procedures for the completion of our car are currently under way. Here you will find all the progress accomplished during the last three months along with the remaining steps for the roll out of the car.
In addition we would like to welcome Eurocarbon composite materials and SNR bearings as our new sponsors. Their assistance will be significant for a better car performance.

Frame:

Safety harness system has been installed. In addition driver's seat has been created using two-additives foam in order to be formed using driver's body geometry.
Moreover carbon-fiber protective under tray of the car has been constructed .
Aluminium foam, as impact attenuator, has been mounted on the chassis in a way that stresses from crash are driven to the bulkhead. This improves crashworthiness for frontal collisions.

Only some final mountings remain to be constructed and welded to the frame for the completion of it.

Purchased parts
Completion percentile: 100%
Manufactured parts
Completion percentile: 95%

Powertrain:

Most of our engine parts have been finalized and only

some minor details remain for the first ignition of it.
Intake manifold has already bee constructed from composite materials and only the mounting of it on the frame

remains to take place.
The fuel tank construction, constructed from aluminum sheets, has been finalized with the welding of the sheets and the installation of the fuel pump and filter.
Furthermore the E.C.U. has been mounted on the chassis, in a position that accommodates easy access to it.

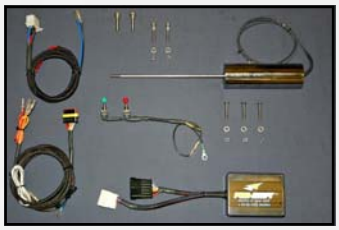
Last but not least the engine has been re-assembled after

the internal modifications in order to increase the engine's performance.

Purchased parts
Completion percentile: 95%
Manufactured parts
Completion percentile: 80%

Drivetrain:

The use of a system that would enable a quicker gear shifting was considered essential for a more competitive racing car. Therefore we have chosen and ordered the Pro-Shift Univer-



sal system. It allows the sequential up shifting without the use of a clutch, resulting

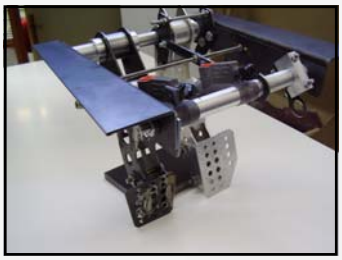
in quicker and easier gear changes.
In addition the differential was lightened by removing the factory mounts.

Purchased parts
Completion percentile: 95%
Manufactured parts
Completion percentile: 60%

Brakes:

Pedal box has been constructed and assembled on the frame. In addition brake calipers have been acquired and now the only thing that has to be done is purchase some final parts (pressure lines) and assemble he calipers on the uprights and the discs on the hubs.

Purchased parts
Completion percentile: 80%



Manufactured parts
Completion percentile: 95%

Suspension:

Upright and hub design has been finalized after the acquiring of the rims. All the parts that have to be purchased are in our workshop and we wait for the remaining

shocks and springs to arrive. After the completion of the design the uprights will be constructed from laser cut aluminum sheets and the hubs from aluminum blocks processed on the lathe.

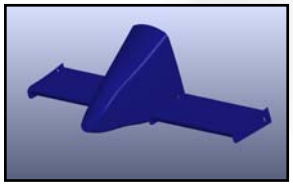
Purchased parts
Completion percentile: 90%
Manufactured parts
Completion percentile: 10%

Composite materials:

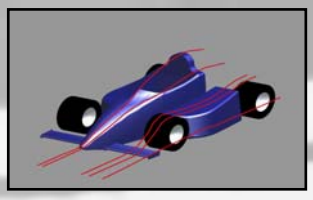
The intake of the car has been completed with the use of Vacuum Assisted Resin Transfer Moulding, resulting in a very light and qualitative part.
Moulds have been created with the use of Laminated Object Manufacturing and afterwards carbon fibres were used to shape the desired geometry.
The construction of the nose cone have started with the construction of moulds with metal sheets and polyurethane foam.
The next step will be the con-

Class 3 team:

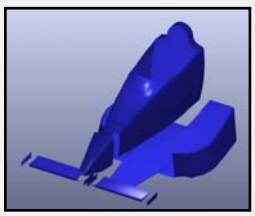
The design of UoP3 has already started with a new goal: the best possible aerodynamic behavior of the car. The design of the main frame includes extensive use of aerodynamic devices that



improve the car's perform-



ance. Due to the competitions nature that point to low speeds, special attention has been given to additional panels that offer grip in low speeds, such as a flat under tray which leads to ground effect utilization. Moreover two side pods have been added to provide the required amount of air for the cooling of the turbo-charged engine.
However elements like modularity still remain as an aspect of our new car.



Formula Student Competition News:

New Record for First-day Registrations! A total number of 57 teams, from 49 universities across the globe, registered for FS2007 on January 16th which was the first day of registrations, with many new universities competing.

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Contact Information:

LABORATORY FOR MANUFACTURING SYSTEMS and AUTOMATION (LMS)
Director: Professor George Chryssolouris
Department of Mechanical Engineering and Aeronautics
University of Patras
Patras 26110, GREECE
Tel.: +30-2610-997262, 997264
Fax: +30-2610-997744
Email: xrisol@mech.upatras.gr
www.lms.mech.upatras.gr