

Initial Situation



In 1949 the company ABARTH & Co was founded by Carlo Abarth. During the 70's his sport cars were some of the most successful in Europe. Due to the lack of spare parts for these cars, Mr. Ing. Horst Pichler, a graduate of the HTL Steyr, brought this project over to our school. Building upon the excellent work of our predecessors (3D-construction of the engine block, manufacturing of cores and pattern plate, two castings) we are going to finish this project in stage three this year.

Targets

The target of this project is the first casting of the engine block type 236. This should be reached by a transfer of know-how between teachers and sponsors to the students



Dominik Hofmann and Jürgen Hönig, attending the 5th form of the higher department of automotive engineering.

Milestones

- 06/01 **Handing over of the project to 5AHK**
- 18.01.02 Presentation at "Tag der offenen Tür"
- 04.02.02 4th casting
- 12.03.02 3D measuring of 4th casting
- 04/02 5th, 6th casting and casting of the bearing caps
- 26.04.02 Presentation on project day
- 03.05.02 7th casting
- 18.06.02 **End of project – Matura**

ABARTH Engine Block Type 236



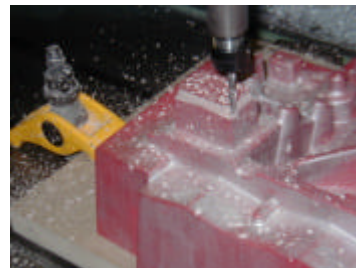
The engine type 236 was used in the Grand Tourisme sportcoupe and in the open version racing car at competitions in the years 1963 to 1970. This engine has a cubic capacity of 2 litres and a performance of 285 hp.

3D-Construction on Pro-E

After the construction of the engine block by the project team last year, we had to change some details to improve the result. We also had to construct a series of bearing caps to support the team producing the finished unit.



Pattern Plate Changing



Because of the fact that we had problems with the form of the water supply unit, we changed the structure of the pattern. By the help of Kerbl Modellbau we programmed a joblist and shaped the new form of the water supply by using a 5-axis milling machine.

Sand Core Manufacturing

Being supported by Kerbl Modellbau we had the chance to produce core tools. The cores themselves were manufactured applying the so-called Coldbox method at SLR Gusswerk.



Because of the thin core of the water jacket it was the only laser-sintered product, and was sponsored by Becker in Germany. We also came across the fact that the settlement of the cores played a very important role and had to be done carefully.

The Casting

After the 4th casting we changed the form filling method. The 5th casting was filled in a manner of rising molten material. This effect and a better ventilation helped us to remove the mineralizations and reach a better quality. The reduction of the casting temperature from 1436°C to 1400°C also played a very important role. In order to handle the process of serial casting correctly, we drew up a detailed plan. Due to a broken core we couldn't reach a serial result.



Results / Benefits

- Construction on CAD system Pro Engineer 2000i²
- Drafting for other team
- 5 castings and 9 bearing blocks
- Contacts to the industry
- Special know-how in casting processes

Project Team

Left to right: Dominik Hofmann, Jürgen Hönig

Project Managers**Theory**

Dipl.-Ing. Alfred Benedetto

Dipl.-Ing. Dr. Bruno Losbichler (Coordination)

Workshop

FL Gerhard Riepel

FOL Peter Großauer

Graduates

Thomas Kritzinger

Sabine Madlmayr

SponsorsSLR-Gußwerk II
Betriebs GmbH

wagnerguss



PICHLER WELS

HTL Steyr - HighTechLife

HTL Steyr represents the biggest and most modern school of the region. Over 1100 pupils, more than 130 teachers and thousands of graduates shape the positive school climate. A boarding school is next to the main building.

Departments**Electronics – Computer engineering**

Higher department: 5-years with “Matura” examination

Technical school: 4-years with final examination

Automotive Engineering

Higher department: 5-years with “Matura” examination

Technical school: 4-years with final examination

Mechanical Engineering

Higher department: 5-years with “Matura” examination

Emphasis: mechatronics

Arts and Handicrafts - Metal Design

Technical school: 4-years with final examination

branches of training: engraving,
goldsmithing and artistic smithing

Department of Mechanical Engineering
Automotive Engineering

ABARTH 2000 - Step 3
Project raw-part

That project's target was to rebuild the original crankcase
type 236 of the legendary ABARTH 2000.

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