



Members of Oakland University's Formula SAE Team at the 2009 competition. To create the racecar body, Oakland University called on Solid Concepts to create four CNC molds from tooling board for layup molds.



Solid Concepts' Nylon 12 GF, a glass filled SLS material, and proprietary Nytek™ 1200 CF, a carbon fiber filled SLS material, were used to create portions of École Polytechnique de Montréal's racecar engine.

Oakland University & École Polytechnique de Montréal Team Up with Solid Concepts for Formula SAE Competitions

Attracting over 140 schools annually, the Formula SAE (Society of Automotive Engineers) has become world renowned as one of the most prestigious student engineering competitions. The competition requires each student team to use their creativity and engineering intellect to design, fabricate, fund and compete with a small single seat racecar. The Formula cars are then judged as a possible production product in numerous categories including design, innovation, reliability and performance.

In 2009 Solid Concepts Inc. paired with two Formula SAE teams, Oakland University in Rochester, MI and École Polytechnique de Montréal in Montréal, Canada. While the two teams needed to build fundamentally similar racecars, each used Solid Concepts' capabilities in a unique way.

Oakland University enlisted Solid Concepts to help produce their Formula-style car body. Solid Concepts created four CNC molds from tooling board for layup molds. The molds were then used to create the carbon fiber panels that composed Oakland University's car body.

"The body molds that Solid Concepts cut came out great. Because of the great molds, our bodywork looked fantastic and generated a lot of positive response at the competition," commented Oakland's Formula SAE Team member Rob Petrach. "I can't thank Solid Concepts enough for all their consideration, cooperation and hospitality. If it weren't for the great people at Solid Concepts, our car would not have looked anywhere near as nice as it does now."

École Polytechnique de Montréal sought out Solid Concepts for the construction of numerous parts for their car's engine and dynamometer. Since eleven of the team's geometries needed to withstand varying degrees of heat and vibrations, Solid Concepts' Project Engineers worked closely with the team to select the ideal process and materials to meet each of the geometry's requirements.

Ultimately, Selective Laser Sintering (SLS) was used to produce the parts, utilizing the exceptional properties of both the glass filled Nylon 12 GF and carbon fiber filled Nytek™ 1200 CF materials. During preliminary tests on a flow bench, the team found that the new intake system made by Solid Concepts' SLS material produced a 15% increase in air flow compared to the old systems.

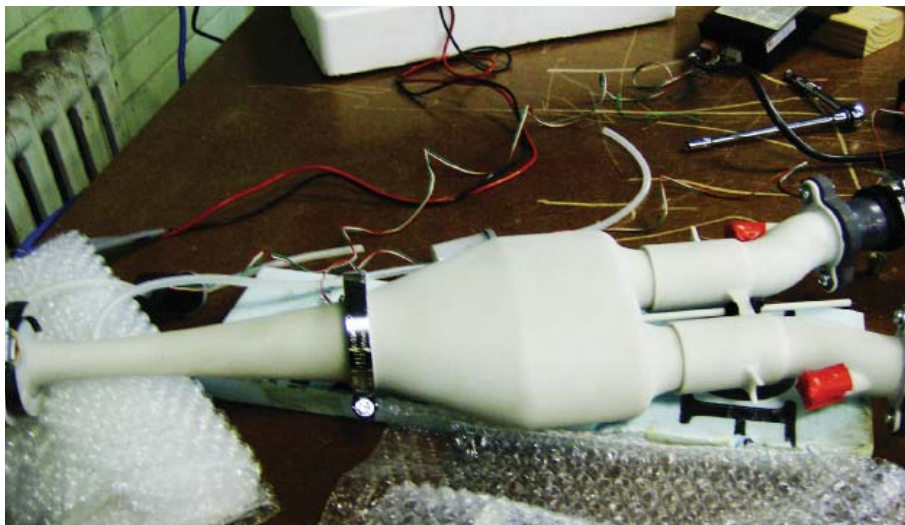
"We were surprised how fast the whole process went. When I finished reviewing the design with Frederick Claus (SLS Business Development Manager for Solid Concepts), a Project Engineer called me the same day before manufacturing the parts that night," stated Alexis Roussel, École Polytechnique de Montréal's Engine Team Manager. "We often have to wait a long time to receive our parts. We were really surprised how fast you manufactured our first parts... we are not used to that kind of fast service from sponsors."

Solid Concepts Inc.

Solid Concepts Inc. is a supplier of rapid prototyping, direct digital manufacturing, tooling and production molding services. Capabilities in PolyJet, SLA, SLS, QuantumCast™ cast urethanes, CNC and FRP prototypes and short run production parts. Tooling and Molding expertise to bring your project through to completion. ISO 9001 and AS9100 certified.



Metal inserts and glass filled SLS material were utilized in this portion of École Polytechnique de Montréal's intake system. Even after rigorous testing the parts consistently continued to perform superbly.



École Polytechnique de Montréal achieved a 15% gain of air mass flow due to the more complex and precise forms capable with Solid Concepts' SLS process. This increase represented a significant gain in both maximum power and torque at a much higher engine speed, making the car easier to control for the team's drivers.



Oakland University competed in many events where their Formula car was judged and scored as a possible production product. In the 2009 competition the team set new school records in both the Accel and Skidpad events.