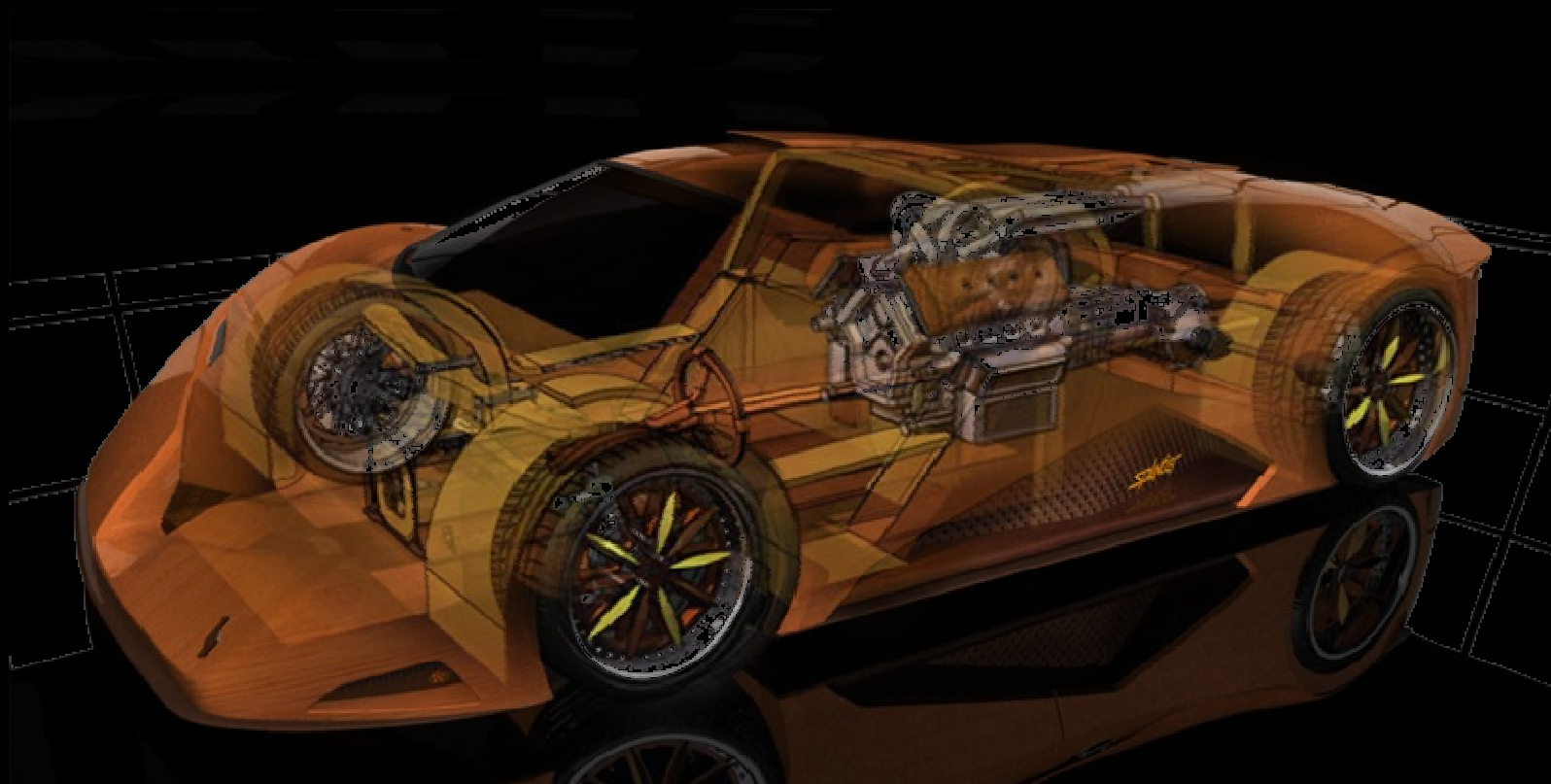


## DAuto News Letter



*Design engineers turn designs into reality. Without them, a great idea but nothing more than, well, a great idea.*

## 2011 Pagani Huayra

The all-new monocoque central Huayra is built in carbon-titanium, with its gull-wing doors that include a good portion of the roof. The research focused on the application of advanced composite materials and technologies first tested on the Zonda R, to achieve the highest levels of rigidity combined with maximum lightness.



The constant quest for weight reduction has led to an ingenious combination of aesthetic, structural and otherwise. One example comes from the pipes of the cooling and air conditioning: the ambitious choice of integrating them into the monocoque structure has rendered superfluous the inclusion of additional components. The result of the reduction program is summed up in a vehicle weight of 1350 kg which makes lighter Huayra the supercar segment.

## 2011 Pagani Huayra

Mercedes-AMG provides the heart of Huayra. The 12-cylinder biturbo engine with 60 Å° V? with 5980 cm<sup>3</sup> has been developed to meet not only the technical application and the strictest quality aspects, but also to give the car its dual character. The calm and harmony that are perceived to drive one of GT's finest today are interrupted when the pilot called Huayra to unleash its power over 700 hp and a torque of over 1000 Nm.



The turbines are designed to offer an immediate response to the minimum stress of the butterfly, giving the driver complete control over the power at any speed and preventing unwanted delays in disbursement. The two radiators on the sides of the mouth anterior ensure the best cooling efficiency of the intercooler located above the cylinder head. This cooling system at low temperature is designed to operate in adverse conditions of Death Valley with temperatures above 50 Å° C.



## 2011 Ariel Atom Mugen

A collaboration between Ariel and Mugen, the latest version of the original no screen, no roof, no doors, Atom celebrates 10 years of production and 1000 Atoms manufactured. Made in a Limited Edition of just 10 cars for each of the 10 years, each signed and numbered, the Atom Mugen has a special livery of red chassis, white bodywork and red graphics showing the number of the car to reflect the unique union of Ariel, Mugen and Honda. Featuring a tuned Mugen Honda engine and a high level specification, plus the opportunity to further option the car, this latest Atom gives further choice to the driver looking for the ultimate, normally aspirated trackday car



## 2011 Ariel Atom Mugen

Mugen (meaning unlimited in Japanese) engines have famously powered hundreds of race and championship winners, including Formula 1, since 1973 when Hirotoishi Honda, son of Soichiro Honda, founded the company.



Specification of the car includes many Ariel options as standard as well as additional parts unique to the Atom Mugen. High performance Alcon 4 pot lightweight callipers, finished in red, and ventilated discs are fitted front and rear. The 4 way adjustable damper/spring package is a modified version of that found on the Atom V8 with remote reservoir lightweight aluminium dampers which have two compression adjustments and one rebound adjustment with 2 piece dual rate springs fitted with rate adjusters.



## Types of Engines

### Different Types of Engine

The engine types are usually used in the following order, depending on the number of cylinders: I-4, V-6, V-8, V-10, V-12, W-16.

#### Flat

Flat engines are called flat because that is exactly what they are. The cylinders lie flat. Half of the cylinders are located on one side of the crank shaft and the other half on the other side. The advantage to having your cylinders horizontal is that the engine can be placed lower in the car. This makes the car more stable because of a lower center of gravity. Being lower in the also has a space advantage. The engine bay is far less crowded. They are found in porsches and subaru's. The are also known as boxer engines. Usually Flat-4 or Flat-6.

#### Inline

Inline engines have cylinders on top of the crank shaft. They stand inline at a vertical 90 degrees. Inline engines run smooth and can provide a lot of power. The engines, though, are longer then any other type. In cars today, most inline engines have small cylinders so length is not an issue. Above all, Honda's and many imports of today are known for their inline 4's today. Usually I-4 or I-6 for cars. Some marine engines have been made that use the I-Engine type with up to 14 cylinders.

## Types of Engines

### V-Type

V-8's and V-6's engine types exist today in many American cars and trucks. The cylinders are located on opposite sides of the crank shaft and are elevated up a varying amount of degrees depending on the manufacturer. The V-type engine is known for using a pushrod valve system. Usually V-6, V-8, V-10, and V-12.

### W-Type

W-Type engines are found in few cars. For example there is one in the Bugatti 16/4 Veyron, which has a quad-turbo W-16, and there was a limited number of Volkswagen Passat produced from 1998-2005 with a 4.0L W-8. The Bugatti 16/4 Veyron's "16/4" is there for the simple fact of representing its engine. W-engine types work well for a large number of cylinders because everything becomes more compact and shorter. Though, they are more compact, the disadvantage is that they are hard to fix and more expensive to repair. Not many models made though the engines produce go up in multiples of four. The Bugatti Veyron engine is pictured below.



## Types of Engines

### Wankel

Wankel engines are also known as rotary engines. Wankel engines are completely different from any other type of automotive engines. It does not have pistons. Rather a single triangular rotor spins around a peanut shaped chamber. The triangular rotor is a special type of triangle also known as a Reuleaux triangle. This triangle has an equal diameter relative to the center at all times. The shape it is based off of an equilateral triangle. The reason this type of triangle is necessary is to ensure a seal during the triangle's rotation at the center of the housing. There is a single straight shaft through the center of one of these engines that serves the purpose of a crankshaft in an Otto cycle engine, Otto cycle is the 4-stroke cycle in a regular piston engine. Wankel engines are found in Mazda RX-7's and RX-8's. Pictured below is a rotary engine.



Mazda I4 Engine



Mustang V-6 Engine



Audi V-10 Engine



## Types of Engines



Flat



Inline



BMW V-8 Engine



W-Type



V-Type



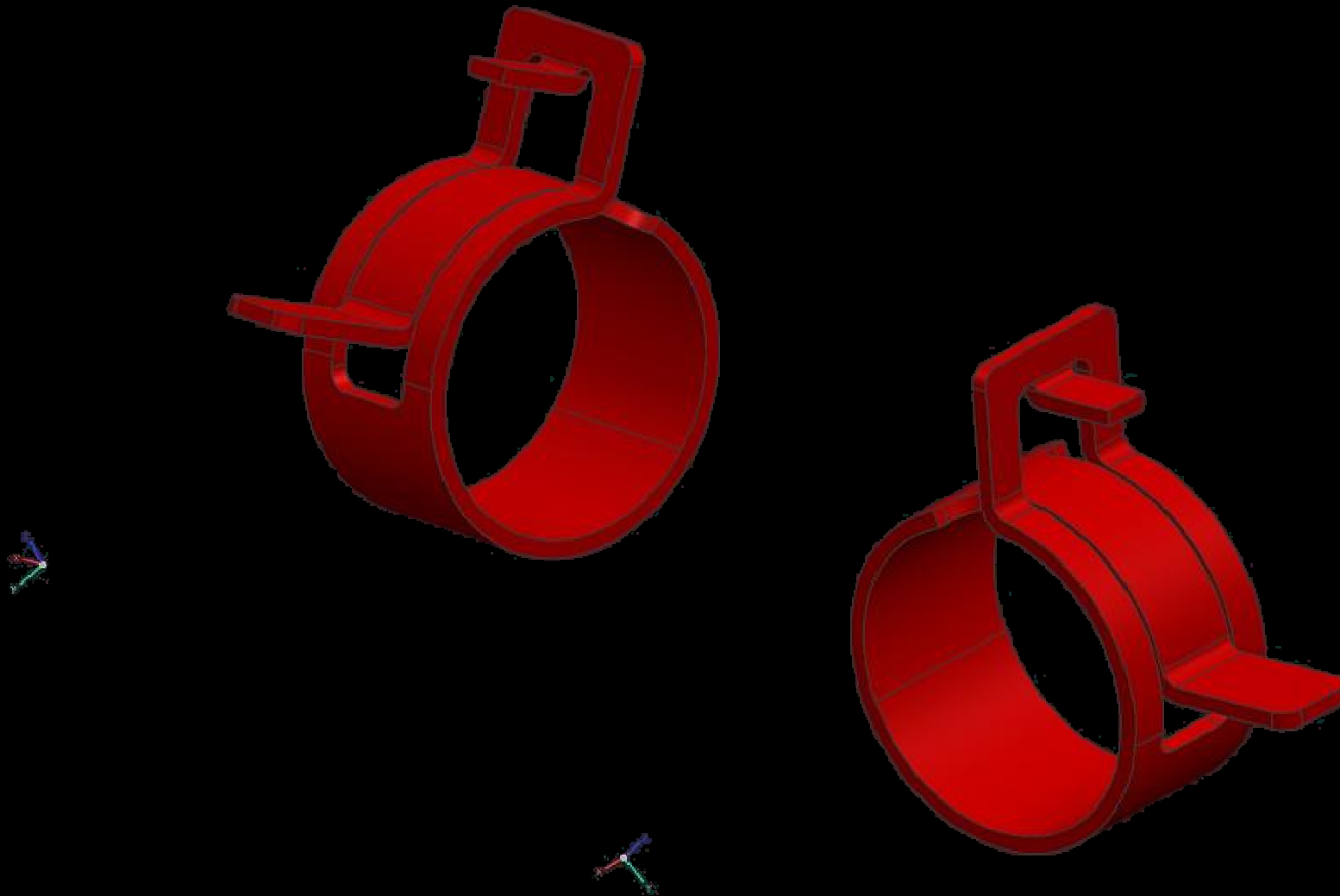
McLaren V-12 Engine



Wankel



Bugati W-16 Engine



This contrive has been prepared and envisioned by one of the DAuto CAD School student during the period of Software Training on CATIA V5.

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