

A Passion for Engineering and Speed

Pagani, Cima and Samputensili are three companies that have successfully blended skill in mechanical engineering with a passion for speed to help develop the kind of sports cars little boys (even the grown-up kind) dream about.



Cima S.p.A. was founded in 1942 to manufacture hobbing machines. To inspect and test the quality of these machines, the company also began manufacturing gears as a job shop. In the 1990s, however, Cima discontinued its production of hobbing machines to concentrate on and develop gear manufacturing as its core business. In 2005, the company realized revenues of 25 million euros with 130 employ-

ees. Cima primarily sells automotive and motorcycle gears, but it also has customers in aerospace and other industries that require high quality gears up to module 5 with a maximum outside diameter of 350 mm.

Whether it be prototype work and small batch production or volumes of around 50,000 parts per gear drawing, Cima puts technology at its customers' disposal: the latest-generation machinery, fully robotic automatic production lines and modern heat treatment equipment.

Among the modern machines at Cima are the Samputensili S 375 G and S 400 GT grinding machines. These machines are

designed for versatility and accuracy in grinding complex profiles.

Flexibility is also a key feature of these machines, which may equip any combination of ceramic or CBN electroplated worm or profile wheels and, in the case of the S 375 G, may perform internal or external grinding of spur or helical workpieces.

On these machines, Cima grinds the gears that are mounted in gearboxes for the most powerful engines. Because of the demands on these gears, nothing is left to chance. Strict classes of tolerance, surface roughness, lead and involute crowning, tip relief and root fillets are all realized with Samputensili single-profile wheels or CBN or ceramic worm wheels, depending on the application. That attention to detail means less strain on mechanical components, reduced noise levels and better performance in the sports cars.

The collaboration between Cima and Pagani began eight years ago, when the

Example of a Gear in the Cima Gearbox

M=1.25, Z=42, width 15.5 mm

Machine:

Samputensili S 400 GT

Tool:

Worm wheel 230 mm diameter, 104 mm face width, 5 threads

Cycle:

2 roughing passes with removal of 0.15 mm and 1 finishing pass with removal of 0.04 mm per flank at a speed of 60 m/s both during roughing and finishing

Cycle time:

1.25 minutes per piece

Wheel dressing is not performed after each workpiece. The dimensions of the wheel mean that it is possible to perform dressing every 55–60 pieces with a cycle time of around 5 minutes, which corresponds to a time per piece of 5 seconds.



Zonda F Technical Specifications

Engine:

Mercedes Benz 7.3 CC

Max. Power:

hp/rpm 602/6,150 (443 kW)

Speed:

345 km/h

Weight-to-power ratio:

2.04 kg/hp

Gearbox:

Mechanica I 6-speed + reverse

Structure:

Central—carbon-fiber chassis;
Front and Rear—CrMo space

Frames—

carbon fiber

"MD System" bodywork panels

