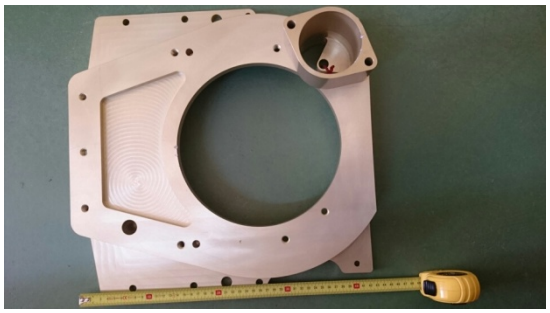
# Application Story - 3D scanning helps in creating the first Polish supercar

**The project of the first Polish supercar named Arrinera is one of the most exciting topics in the Polish automotive market. From the very beginning it has been raising high hopes that the Polish automotive industry might return to its former glory.**

**The racing car that firstly appeared in 2008 is a manually assembled vehicle. All of its parts were conceived in the minds of experienced engineers. The production of individual, fully functional prototypes – that have to achieve a racing car level – requires the highest precision and durability,** A SMARTTECH 3D scanner is used by Arrinera engineers in their workshop and significantly helps them in the complicated design process. In this article we are going to present two case studies that will show the capabilities of the SMARTTECH technology in a medium-sized engineering company in the automotive sector.

Reverse engineering is a term that appears when we design a new part on the basis of already existing solutions. The task of the Arrinera engineering team was to design a new clutch housing that would accurately fit with the designed car body and gearbox.

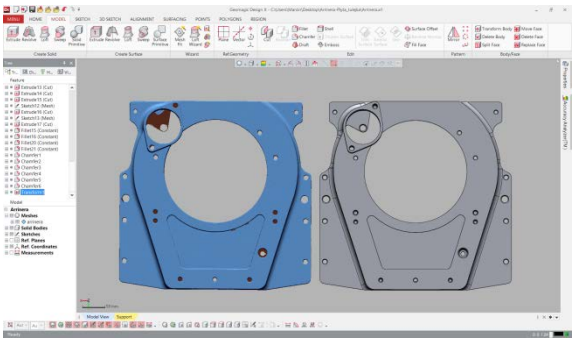
The clutch housing from a supplier, including shipping and taxes, would cost much above estimated budget. By using the SMARTTECH 3D scanner Arrinera was able to obtain the geometry of a similar product and redesign it in the CAD modelling software - SolidWorks.



The SMARTTECH 3D scanner was used to accurately obtain the complete geometry of the object and to use it to design the desired component.

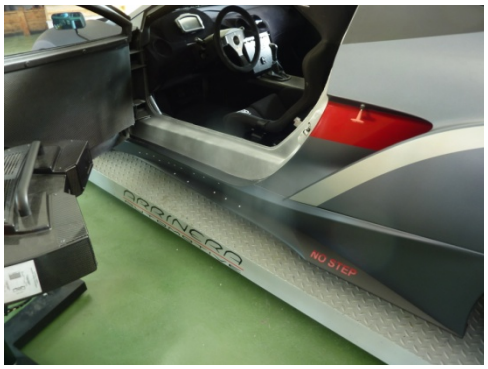






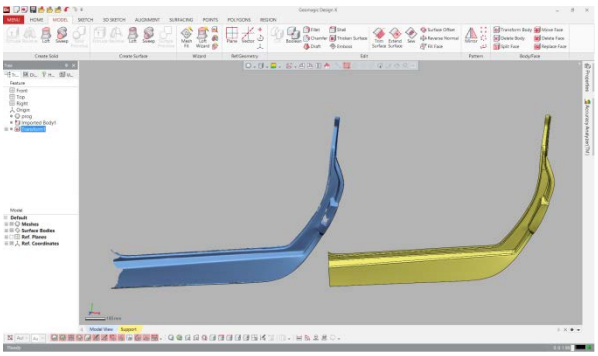
The clutch housing, weighing 12 kg and half-metre in length, was covered with an easily removable antiglare agent due to its glossy surface. The measurement was taken using the rotary stage and a MICRON3D scanner with an accuracy of 0.1 mm. It means that the virtual model might be different from the original not more than 0.1 mm, which was within the Arrinera's specified requirements.

The CAD model was virtually fitted to the existing space and after some small modifications exported to the software of a CNC machine that milled the part. The total cost of this part, excluding the work of an engineer, was equal to EUR 1000, which significantly reduced the total cost. The 3D scanning solution not only had a positive impact on expenses but also allowed for the production of a very precise part specifically dedicated to this car.




The parts for the Arrinera supercar are created in CAD software according to the previously assembled virtual model – nevertheless, the produced parts might be different from the virtual models. This might happen because of small production errors or changes applied at different design or production stages. In the case of Arrinera it is very important to produce parts that are almost identical on both sides of the vehicle.

A problem appeared during the creation of the second doorsill. During the remodelling process of the car cabin, the original part was manually bent and fixed using a different method. Therefore it was important to recreate that part after manual adjustment in exactly the same way.



The SMARTTECH 3D scanner was used to obtain the geometry of the existing part, after it was fixed, to create an accurate CAD model. Thanks to the sharp angle between the camera and the projector SMARTTECH 3D scanners were able to scan the desired surface as it was installed on the car body with all limitations of the surrounding space.

Obtaining the geometry using a 3D scanner was much easier and more precise than using traditional methods. It allowed for the capture of the smallest of details. Just as in the previous case the collected documentation was used for a production process that fitted perfectly with the already existing details.





Arrinera is using a MICRON 3D scanner with the field of view of 800 x 600 mm and the resolution of 5 MPix. This cost effective 3D scanner helps them in designing, adjusting and inspecting their prototypes.

The accuracy of the 3D scanner is 0.1mm. That accuracy matched their requirements and allows them to rapidly scan bigger parts.

Building the first prototype of a racing car is not only a technological challenge, it's also a big financial investment. Because the product does not generate income by itself it has to rely on the private funds. The use of a 3D scanner helps in the cost reduction during the prototyping process and allows for a faster production.

ABOUT SMARTTECH :

The company SMARTTECH is a well-known expert in the 3D measurement industry. After being founded in 2000 we gained the leading position in our region, becoming one of the most famous Polish innovative brands and gaining the award the Polish Product of the Future. Our ScanBright and scan3D systems, have won many international awards like the gold medal in the 36th International Exhibition of Inventions, NewTechnic and Products in Geneva in 2008 and a gold medal in the 55th World Exhibition of Innovation, Research and New Technology in Brussels EUREKA'2006 as well as recently awarded with Laurel of Innovation of Polish science Institute and Forbes Diamond 2016

ABOUT ARRINERA:

Arrinera Hussarya – a supercar constructed by the Polish company Arrinera Automotive. The name Hussarya refers to the seventeenth-century Polish cavalry. The design work on the first Polish supercar was launched in 2008. The prototype vehicle was presented to the shareholders and investors of the company on the June 9th 2011, while the first test drive took place less than a month earlier - on May 17, 2011.