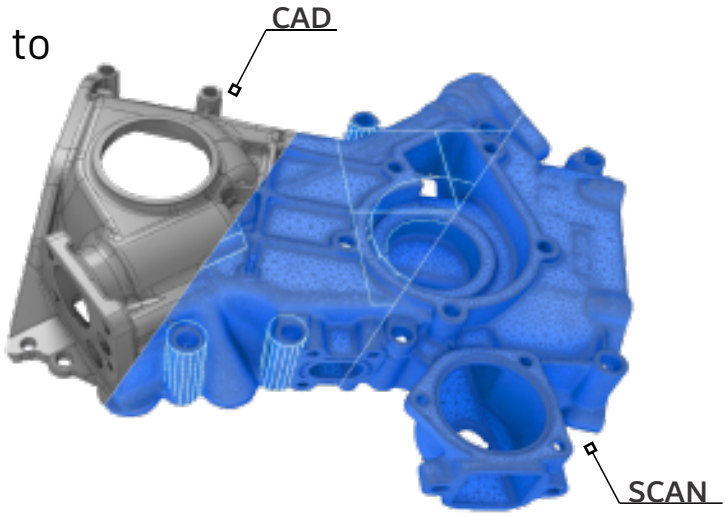
cadSURFER

Reverse Engineering

WHAT'S IT?

The deconstruction of a physical object to get information in CAD format of how it was designed.



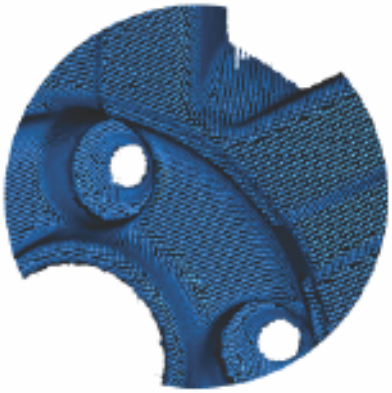
GOAL

Obtain geometry from an object in CAD format like surfaces and solids, also in parametric format

APPLICATIONS

- REMANUFACTURING AND MAINTENANCE
  Scanning complex or expensive components hard to find spare parts.
- DIGITAL DATA BASES
  Protect key parts of the company to reduce risks and wharehouse costs.
- SCANNING OF MOLDS AND DIES
- DIGITALIZE PARTS FOR CNC
- ADDITIVE MANUFACTURING
- PRODUCT DESIGN

PROCESS



PHASE 1

Scanning 3D
Point cloud
generation

Point minimum
distance 0.2mm

PHASE 2

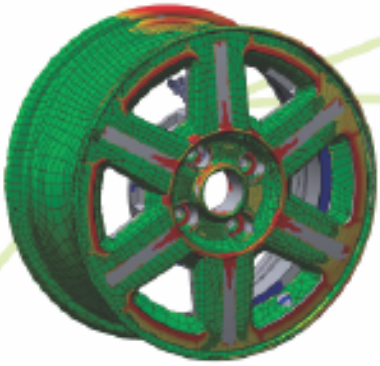
Mesh model
calculation

Compute all points cloud model to convert into a watertight or unwatertight model

PHASE 3

Reverse engineering

Using specialized software creates editable surfaces and solids into a compatible CAD model.



PHASE 4

Quality control

Get an analisys report between the scan data dimensions and the reconstructed solid body.

SCANNING FEAUTURES

Scanning Type: Structural light

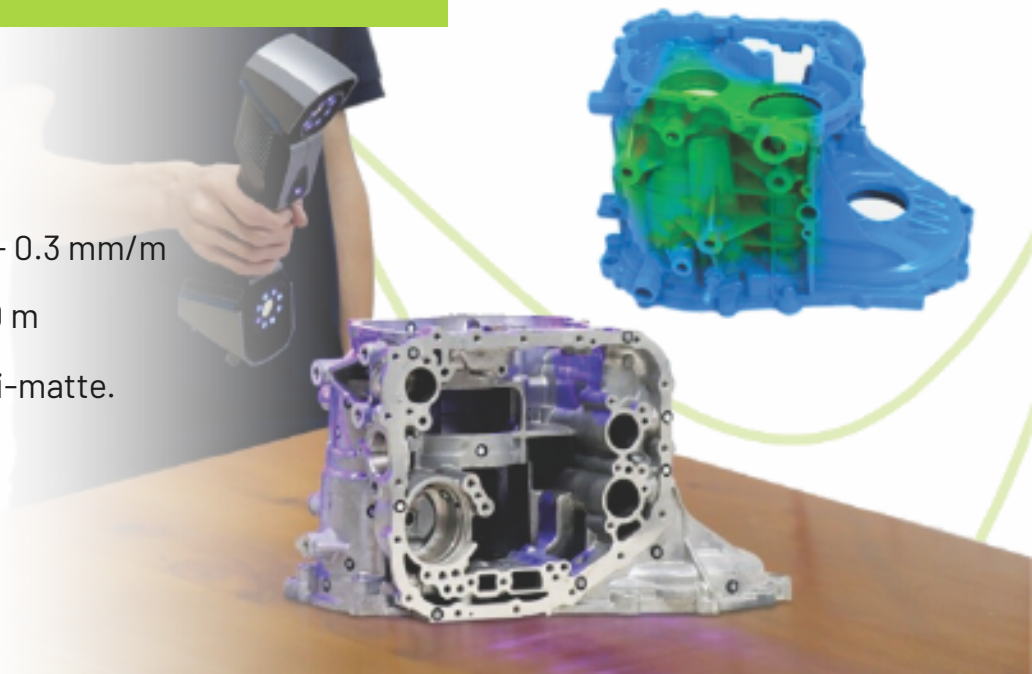
Precision fix mode: 0.04 mm

Precision manual mode: 0.045mm + 0.3 mm/m

Maximum scanning size: 6.0 m x 6.0 m

Scanning surfaces: Matte and semi-matte.
Gloss with "scanningspray"

Scanning speed: 10 a 30 FPS

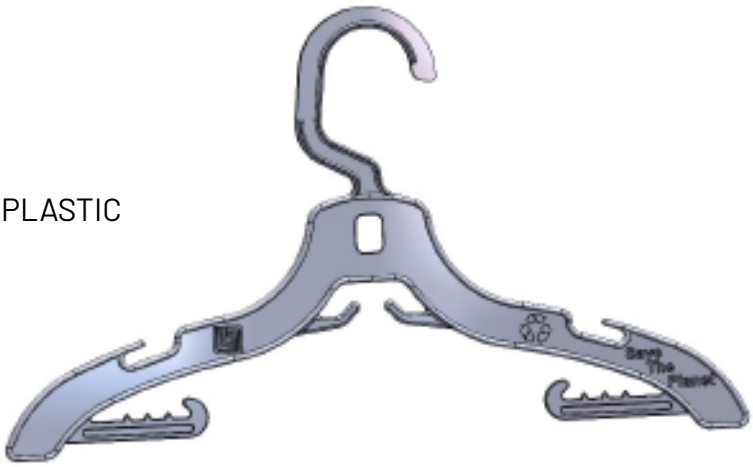


PROJECTS

Clothes hook

Client: GIMG PLASTIC

The retail clothing store Liverpool, commissioned GIMG PLASTIC (an injection plastic company) to create a new injection mold for 1 millon production hooks but the last injection company lost the original CAD files so GIMG Plastic turned to us to reverse engineering the physical hook into a CAD model for injection mold



Damaged Gears

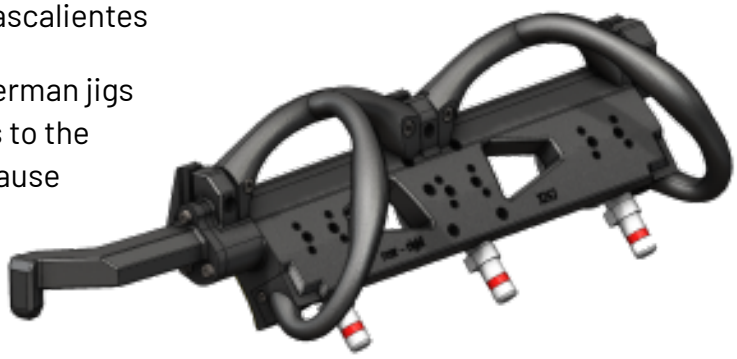
Client: MSE (MAQUINADOS Y SERVICIOS ESPECIALIZADOS)

Our client send us industrial gears with wear and damage in teeth. We need to scan and convert in solid bodies the information to rebuild the shape of the original gear.
With the scan input data our team could design the tooth and model all the shapes of the mechanical parts.
At the end the CAD model was sent to a CNC shop to remanufacture the parts in metal.

Automotive assembly Jigs

Client: COMPAS Cooperation Manufacturing Plant Aguascalientes

In the last years COMPAS began to adapt the original german jigs to a mexican manufacturing but they did'n have access to the original CAD models to manufacture the new ones because were made for a third part company in Germany.
The solution was digitalize the physical models to create CAD models to manufacture each jig part and create a digital backup of the different jigs models.
The next image shows a sunroof assembly jig for a Mercedez Benz vehicle.



Military and defense

Client: IBN INDUSTRIAS MILITARES

IBN INDUSTRIAS MILITARES is an mexican armor and military company based in Aguascalientes. CAD SURFER colaborate in many projects for IBN, manufacturing parts and scanning vehicles for re design process and improve mechanical engineer of the vehicles.

Formula 1 steering wheel

Client: CARBONEUM (Innovación y Alto desempeño en Composites)

CARBONEUM is a Mexican company focused in the manufacture of products made of carbon fiber and other advanced composites.
We work in many projects in collaboration with CARBONEUM to scan metal or plastic products to turn them in carbon fiber versions. For that we scan and reverse engineering several parts.
The last one is a Formula 1 steering wheel which was redesigned from plastic to carbon fiber composite. The part was first scanned and then applied a reverse engineering to the mesh model to get solids that can be read in CAD programs.

Automotive Interior lining jigs

Sub client: Kotobuyika Treves de México

We work as a third part company in automotive related projects in Kotobuyika Treves de México. Jigs for testing textil body lining for the interior of the vehicles are essential to quality control tolerances in the next asseble process.
We continuously scan tooling to check tolerances between CAD models and physical tooling.