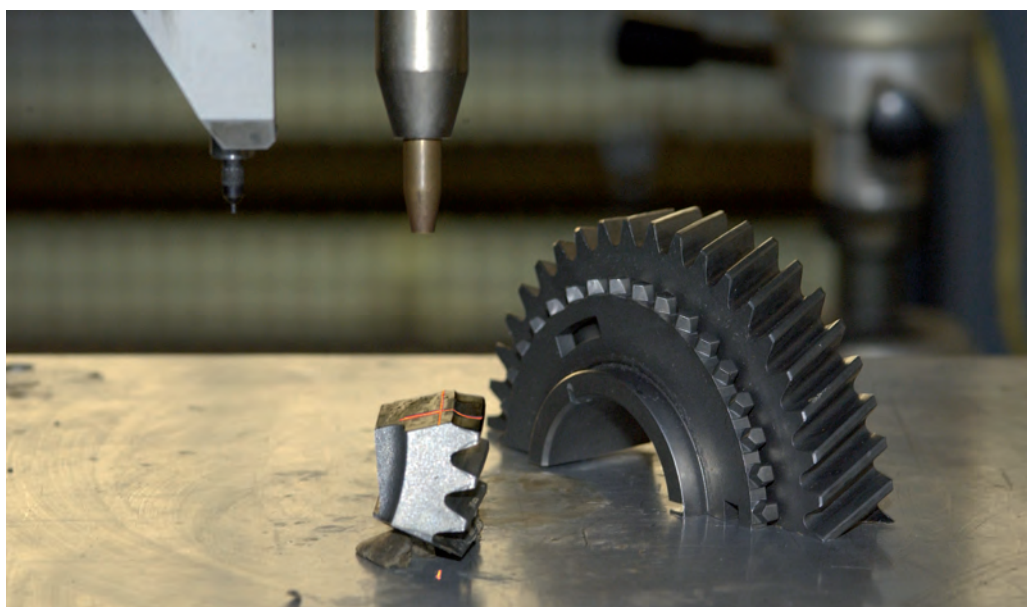


Renault - Fatigue

Expertises that complement each other

The car manufacturer Renault chose to entrust to Cetim the analysis of residual stresses introduced by a shot-peening process on the gearing components of its gear boxes. Control is carried out in a continuous way by taking samples from the production lines. A collaboration based on deadlines respect and service quality which allows Cetim to intervene for three european factories of the group.



OUR CUSTOMER

Corporate name
Renault

Activity
Car manufacturer

Workforce
128.893 people

Sales turnover in 2006
41.528 million euro

Manufactured in the unit of Cléon (Seine-Maritime) and also in Valladolid (Spain) and Bursa (Turkey), the gear box pinions for Renault's cars undergo at the end of the process an essential operation of shot-peening. Goal: improving their endurance behaviour. *"These operations answer precise specifications, explains David Hamel, in charge of the non destructive testing unit at Technocentre Renault in Guyancourt. The residual stresses profile on the tooth flank, introduced*

by the shot-peening process, must conform to the minimal values described in our specifications."

200 pinions examined each year

To take sure insurance of its pinions' quality, Renault asked Cetim to carry out the quality

control on samples taken at the end of the process. Nearly 200 pinions are thus analyzed every year. For each analysis, cuts are performed by sawing the pinion in order to reach the flank of one tooth.

Then, material is removed by local nitric dissolution, the removal being controlled using a profilometer. The stresses existing 10 µm below the material's surface are then evaluated in a nondestructive way by X-ray diffractometry. *"We chose and accredited Cetim considering its performance from the points of view of results quality and deadlines respect, says David Hamel. This excellent collaboration allowed us to initiate adjustment process regarding the matching law between Cetim's results and those obtained at Renault during controls."* Cetim intervenes thus on the whole of pinion production in three european factories of the group.



Cetim's asset

Cetim proposes its skill in residual stresses to the big companies of the mechanical industries. This work is performed observing standard XP A09-285.