



microLab

Problem:

Advanced microstructure analysis and quantitative metallography is one of the key factor for both supporting the metallurgical design and to assess the achievements. Furthermore, a «sound» failure analysis and defect examination allow to identify the causes and the relevant countermeasures.

Solution:

CSM offers its Customers a complete set of advanced microstructure analysis laboratory.

microLab also supports process and automation engineers and Customers' quality departments in the selection of the correct setting of processing lines.

Main equipment are:

- A powerful 300KV Scanning / Transmission Microscope (**STEM**) for analysis of nanometer-sized precipitates, dislocation density, crystallography of matrices and second phases. Equipped with EDS it for chemical analysis;
- Scanning Electron Microscopes (**SEM**), equipped with EDS for qualitative and semiquantitative chemical analysis of specimens to directly analyse fracture surfaces, oxides, precipitates, etc., and with WDS or EBSD, for crystallographic structure also.
- Optical Microscopes (**OM**), with PC image acquisition and data elaboration to extract statistical values relating microstructures to mechanical features;
- Electron Spectroscopy for Chemical Analysis (**ESCA**) device allowing investigation of material surfaces and, when coupled with a sputtering gun, the first nanometers layers underneath;
- Glow Discharge Optical Emission Spectroscopy (**GDOES**) empowers the ESCA capabilities by going deeper onto the surface, from some nanometers to several hundreds of microns, to give concentration profiles of all elements;
- **XRD** devices for steels and other crystalline materials, microstructures and grain orientation identifications. These apparatus supply polar figures and calculate oriented distribution function (ODF).



Benefits:

- Worldwide accredited equipment and procedures
- Fully skilled technical personnel
- One time special test designing
- Tailor made reporting

Input & Output:

- Steel samples for microstructure of defect analyses
- Reports with images, chemical analyses, defect generation mechanisms etc.

