

Newsletter 003/2011 – Fatigue test, how unknown

To design efficiently a casting, one has to know the features of the material inside the piece.

When casings are small, such characteristics are easily measurable and enough known; but when castings get bigger in thickness, the issues get much more complicated and knowledge of cast iron behavior in such conditions is relatively weak.

For such reasons we are developing a demanding project to characterize our cast irons working directly on massive casings both from a metallurgical and a mechanical point of view.

Mechanical characteristics are studied not only through tensile tests but also developing fatigue curves, much heavier to do but much worthier for designers, because:

- 1- Most of breakages in operation are bounded to fatigue
- 2- The correlation between tensile strength and fatigue is not well defined and vary significantly with thickness
- 3- Cast irons with best performance in small castings may not be so good in big castings where it may be better to choose other criteria.

