



# Investigation of the effect of microalloy elements in special steels on the durability of gears

## Motivation

For gears, increased fatigue life and lower raw material consumption require the development of special alloy steels that provide high mechanical strength as well as adequate tenacity. However, a gear manufacturing chain comprises manufacturing steps that impose thermal and mechanical loads on the structure of the material. The change of microstructure will certainly impact the surface integrity of gears and durability

## Objective

To investigate the evolution of microstructure and surface integrity of special steels with additions of niobium and titanium, along a manufacturing chain representative of the gear industry

## Approach

Phase 1: Characterization of a representative manufacturing chain and evaluation of the alloy at each step

Phase 2: Investigation the impact on the gear durability

