Nuclear industry

Areva NP
Forging under scrutiny

The nuclear plant equipment manufacturer asked Cetim to track its forging process. The goal, within the context of an extensive programme, was to confirm the fitness-for-service of a number of parts installed in the equipment pool.

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Corporate name
Areva NP (Framatome since 1 January 2018)

Turnover
EUR 2.28 billion (in 2016)

Workforce
9,600 people

Business activity
Manufacturer of boilers and equipment for nuclear power plants. With 220 employees, its facility located in Creusot (Saône-et-Loire, France) can forge parts that may range up to 10 metres long and which weigh 160 tonnes, particularly with its 11,300-tonne press. The facility performs forging, heat treatment and machining prior to the assembly of the components.

As part of a programme to study the impact of carbon segregation on the quality of its forgings, Areva NP entrusted Cetim with a key step; the creation of a "sacrificial" part representative of all parts in terms of the carbon distribution in the steel and the forging process. This part was intended to validate the mechanical characteristics of the manufactured and in-service parts making up the current equipment pool of nuclear power plants. A "control" part was then dissected to perform mechanical tests and carbon rate measurements.

A multi-phased study

Amongst all the manufactured parts, Areva NP identified that some steam generator channel heads could represent a risk of significant carbon segregation. *"Therefore we created a carbon segregation task force at our Creusot facility and entrusted Cetim with the "segregation" component,"* explained Nicolas Gillet, Project Manager at Areva NP. A team of five metallurgists from Cetim studied all the manufacturing files for the steam generator channel heads in question and helped to freeze the parameters of the casting (chemical composition) and the successive forging operarations (manufacturing programme) in order to ultimately obtain a channel head representative of the population installed in the nuclear power units.

Last step : inspection

Cetim then monitored the production of this part throughout the forging process. All that remains now is to inspect it. *"If the results are successful, we will confirm the conclusions of existing studies by generating margins,"* added Nicolas Gillet.

Cetim's asset

Cetim can leverage on its multidisciplinary expertise to support industrial manufacturers in the development of their products and processes.

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