

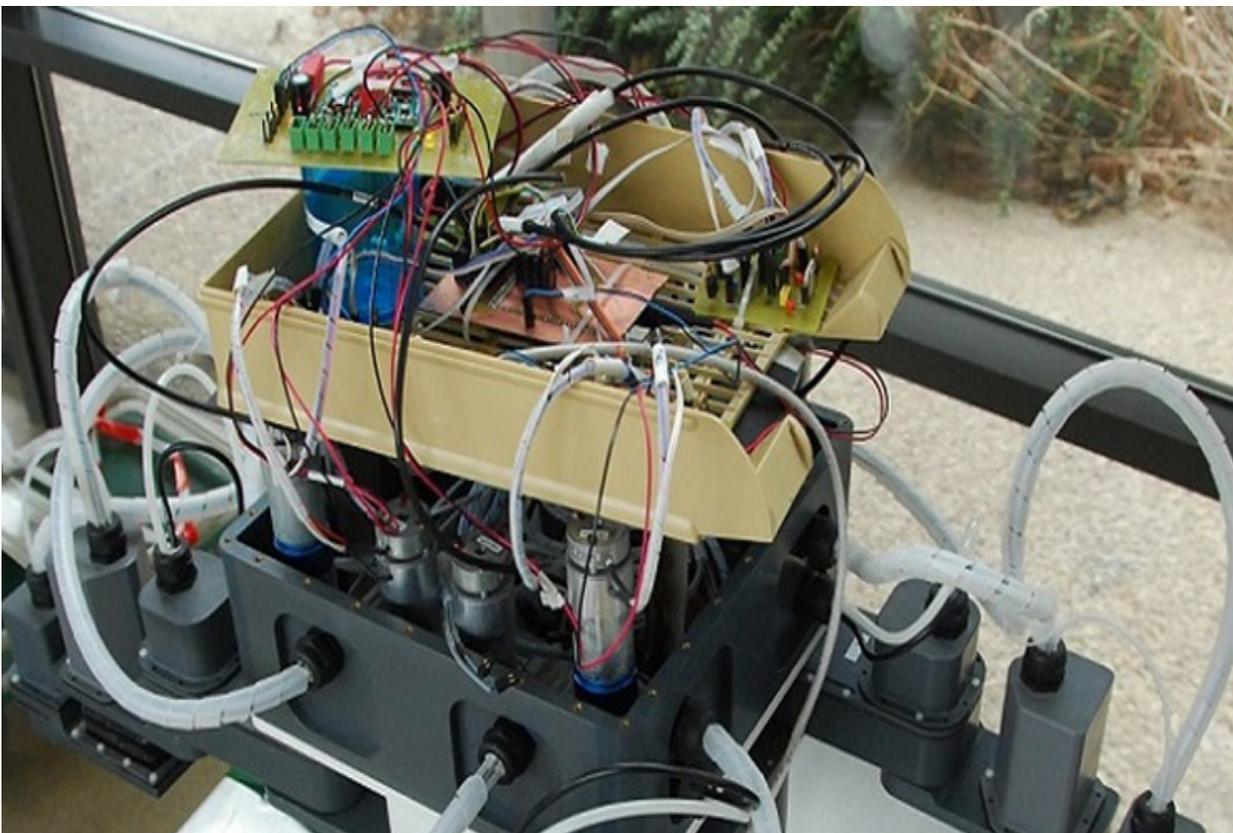
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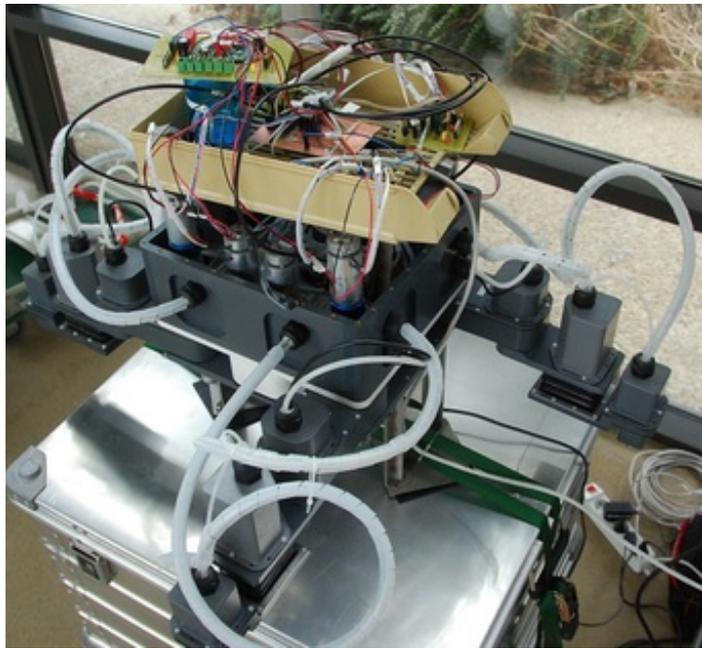
Now is the time to throw some light on a highly rewarding collaborative project PETALE [acronym in French for “EDF-UTC Automatic Helium Underwater Testing”]. The pioneer on the EDF side is a certain Patrick LEFEBVRE, an environmental engineering specialist is about to retire.

22 May 2013



The original idea behind PETALE project was to optimise electricity production at one of France's nuclear power stations (Gravelines, on the English Channel coast). The current practice - when an inspection is launched on the sea-water coolant circuit - calls for a reactor power-down and outage. This circuit is used to cool the secondary circuit which in turn cools the primary circuit that draws heat from the reactor core. Outage can last for up to a week!

The question arose – can we avoid this period of loss of production? Engineer Patrick LEFEBVRE raised this question with some UTC students in 2005. Once they had examined the circuits, there were no secrets left to discover – the interface between the sea-water and the secondary circuit is in fact a large 'box' condenser device, measuring 4m x 6m and containing over 1 100 tubes. The leakage-test consists of injecting helium into each tube and detecting possible leaks of this gas in the condenser vessel.



The process can now be carried out during production using a robot designed and developed by 26 student engineers (mechanical engineering systems) between 2005 and 2007. *“You can imagine this robot as a sort of 4-legged spider, which tests each condenser tube for leakage without having to stop production”* says Emmanuel DORE, the research scientist heading the project work with his students. *“And it was a real challenge – we had to design a remotely controlled system in the severely controlled environment of a nuclear power station, co-ordinating knowhow of three UTC Departments. It turned out to be an excellent case study for UTC, managed by the EDF engineers in the framework of a teaching contract between the institutions.”*

Since 2007, when the PETALE Unit was set up at Gravelines Power Station by Patrick LEFEBVRE, EDF has had 35 student engineers working there on placement from UTC. *“I just love working with young people, who share a very high level of motivation and a desire to move things forward. This project offers them a rare opportunity to co-ordinate their individual skills. Their robot will be commissioned in a couple of years”*.

On March 25, Patrick will come to Compiègne to give an overview lecture on PETALE, it being noteworthy and commendable that 6 of these students were recruited by EDF when they graduated.