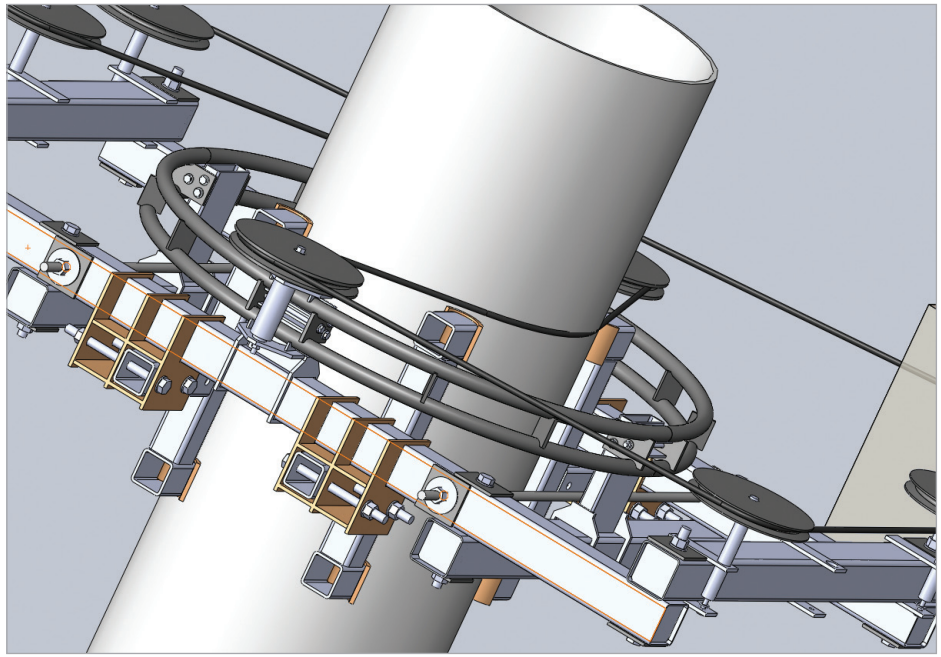
Nuvia Travaux Spéciaux

Contact Antoine Piroux, Micaël Connesson
Address 92 Cours Vitton
69006 Lyon, France
Phone +33 4 72144490
Email micael.connesson@nuvia-ts.com

Initially the nuclear division of Freyssinet, Nuvia Travaux Spéciaux became an entity within Nuvia in 2008 (Nuvia is the brand name for Soletanche Freyssinet's nuclear division). It is specialized in construction, maintenance, decommissioning and management of complex projects on nuclear sites.
NTS is the heiress of all the know-how and experience acquired over 50 years on construction projects of French EDF reactor buildings. Today NTS responds to all types of problems on the civil and military nuclear facility in design, engineering and structural works.

Nuvia Travaux Spéciaux has developed expertise in:

- Structural engineering and design.
- Structural accessories and Interfaces Civil / Mechanical engineering (earthquake resistant devices, prestressing devices, active or passive anchors, etc.)
- Structural repair and reinforcement (treatment of cracks, use of the Foreva® TFC, etc.)
- Structural cutting and decommissioning (cable saws, remotely-operated tools, etc.)



Software: Scia Engineer

Cable Cutting Tool in a Nuclear Environment - Creys-Malville, France

Superphénix or SPX was a nuclear power station on the Rhône River in the village of Creys-Malville in France, close to the border with Switzerland. It was a fast neutron reactor, it halted electricity production in 1996 and was closed as a commercial plant in 1997.

Nuvia Travaux Spéciaux, in the framework of the decommissioning of Superphénix, is in charge of the decommissioning of the halls between the reactor building and the steam generators.

Nuvia Travaux Spéciaux has its own in-house design office and thus develops special equipment dedicated to its sites.

Design of the cutting tools

One of the biggest operations in the decommissioning of these halls is the cutting of large steel pipes with the dimensions: diameter 700 and 1.000.

The problems are various.
As the pipes were used to carry sodium, it is forbidden to cut them with tools like plasma (high temperature) as it can lead to a sodium fire. Moreover, water cooling is prohibited: sodium explodes when it comes in contact with water. The technology chosen was the diamond cable cutting method.

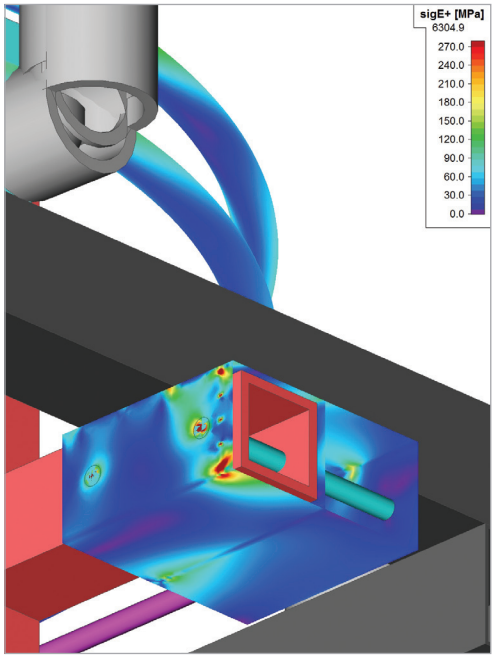
Another constraint is to adapt to the highly congested environment of the halls in order to perform vertical, horizontal and even slanted cuts. The design is thus centred on the cylindrical form of the pipes. Moreover, the equipment must be transportable by hand as no handling tool is available in the cutting area.

Cutting frame

The frame dimensions are 2.2 x 1.3 x 0.65 meter.
It is made of independent hollow beams which are prestrend around the pipe by means of two tie rods. A double ring is then set up on the frame.

The cutting process is run by a set of movable pulley blocks which enable to set up the diamond cable in the proper direction, according to the cutting configuration.

The tie rods are tightened up to 2.200 daN tension. The cable tension is about 180 daN, meaning a maximum force per pulley of 360 daN.



Scia Engineer

Scia Engineer allowed very accurate modelling of the frame thanks to beam and shell elements.

In this way it was possible to analyse the behaviour of the double ring and the interactions between the beam elements and the shell elements.

It helped us to design the structure submitted to the different external forces (maximum displacement, displacement area, most loaded elements).

It also enabled us to check that there wasn't any slippage of the frame on the pipe.

Thanks to Scia Engineer, different cutting configurations could be tested easily and rapidly and the influence of the position of pulleys on the structures could be observed.

Cable Cutting Tool in a Nuclear Environment

Creys-Malville, France

Project information

Owner	EDF / CIDEN
Architect	Nuvia Travaux Spéciaux
General Contractor	Nuvia (Nuvia Travaux Spéciaux / Essor)
Engineering Office	Nuvia Travaux Spéciaux
Construction Period	From January 2010 to January 2013
Location	Creys-Malville, France

Short project description

This project is a part of the decommissioning of Superphénix, a nuclear power station in Creys-Malville, France. It was closed as a commercial plant in 1997. Nuvia Travaux Spéciaux is in charge of the dismantling of the halls. One of the biggest operations in the decommissioning of these halls is the cutting of large steel pipes (diameter 700 and 1.000). The problems are various and the cutting is dangerous due to the congested environment (e.g. the pipes were used to carry sodium). The chosen technology is the diamond cable cutting method.