



→ EDITORIAL

Hello everyone,

NFM Technologies has always pursued a policy of developing its business and is constantly looking for ways to make improvements. We have therefore made the most of the first half of 2010 to get involved in several joint projects and develop new partnerships. I strongly believe that opening up to the outside world - through working with others on an industrial, scientific, commercial and even cultural level - is one of the keys to our success. The thought processes and actions we make by working with other players expand and develop our skills, thereby encouraging our growth.

NFM Technologies has decided to play an active role within the organisations and work groups to which it belongs. In particular, we are putting a lot of effort into the various workshops organised by the AFTES for the tunnelling industry; we are carrying on with "calculations, lifting and handling" works within the CETIM. We are placing increasing importance on our commercial and industrial partnerships in our markets, which are a source of enrichment for each of the parties involved.

NFM is also opening itself up to future employees, workers and engineers. Well aware of the technicality and the precise skills required by our industry, we are putting in place the relevant training opportunities. We offer specialised training in industrial welding in partnership with the AFPI, and we support young people with training schemes in key roles. NFM is also involved in setting up a Masters in "Tunnels and underground spaces" alongside the AFTES, the ENTPE and INSA. Research projects have been set up with Engineering schools and research laboratories in Lyon. Not only do we want to promote our business activities and encourage the interest of elite students, but we also want to contribute to their technical and professional training.

All of these activities are fundamental to allow us to head up present and future projects by combining efficiency, performance and reliability. They will allow NFM Technologies to extend its presence and improve its competitiveness on an international level, whilst reinforcing its integration at a local, regional and national level.

I hope you enjoy reading this newsletter.
Best wishes,
Luc Devaux, CEO.

→ SNAPSHOT



*BAUMA – 19 to 25 April 2010
NFM Technologies stand*

→ CONTENTS

- UNDERGROUND WORKS** p.2
NFM Technologies excavates a tunnel for diverting water in China
- NUCLEAR POWER** p.3
NFM Technologies, EPR partner.
- COMPANY LIFE** p.4
Patron of "Le petit Monde en Chantier"
NFM Technologies in brief



> **Underground works**

NFM TECHNOLOGIES EXCAVATES A TUNNEL FOR DIVERTING WATER IN CHINA

Two NFM Technologies tunnelling machines for the YINTAO project - a project for diverting water from a tributary of the Yellow River in China - began their excavation work in December 2009 and February 2010. This diversion is part of a number of government projects aimed at transporting water from the south to the north, which began more than ten years ago.

China has very uneven water resources. Regions in the north of the country only have 20% of the water reserves, even though half the population lives there and two thirds of the country's agriculture (the country's leading source of water consumption) is in the north. The north therefore has 3 times less water per inhabitant than the south. The demographic and economic growth of the 1990s, as well as severe droughts, led the government to become involved in supplying water to dry regions.

The Yintao project, which started in 2006, has the objective of transporting water to the Gansu region in the mountainous north-west of the country. The arrival of water in the area should provide a boost to the socio-economic development of this province, one of the poorest in China. It will fulfil the requirements of 31 million inhabitants, urban and industrial activities and the irrigation of land which is important for growing maize and cotton.

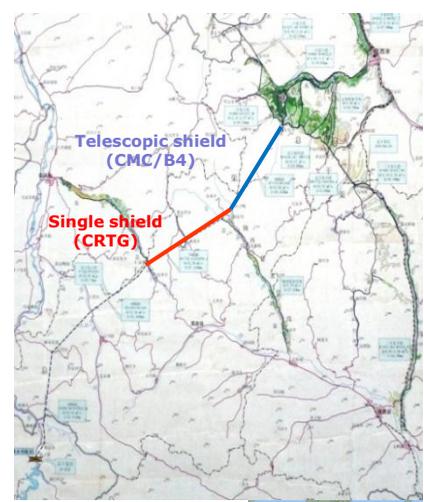
More than 110km of tunnel will be excavated through rock faces, mostly using the tunnelling machine apart from a few sections for which explosives will be used. The project also includes the construction of 3 main canals covering 150km and 12 water pipes over 113km.

NFM Technologies has supplied two hard rock TBMs with a diameter of 5.75m: The first is a single shield machine supplied for the Chinese client, CRTG. The second telescopic shield TBM was supplied to the Chinese-Italian group, CMC Ravenna and Synohydro Engineering Bureau 4. They will excavate respectively 17.25km and 18.25km in the direction of the town of Dingxi, through ground composed mainly of sandy clay with the presence of granite, gneiss and marble. The machines have been optimized for excavating through a variable geology, with the installation of a system for ground reconnaissance in progress (see box).

Tunnelling began in December 2009 and February 2010, with two specialist teams from NFM Technologies supervising the assembly and accompanying the client at the start of production. By the end of April, the machines had each bored through more than 2,500 metres.

→ Reconnaissance in progress system

This system, which involves electrodes installed on the tunnelling machine, provides a non-destructive method of reconnaissance in progress. The objective is to understand the geology of the terrain over a zone extending up to 30 metres ahead of the machine. In fact, this system allows the discovery of changes in rock type, the detection of potential faults or water pockets, the identification of the nature, thickness and hardness of materials present in the ground etc. In this way, operations for changing tools in the chamber can be anticipated and better managed, thereby aiding the availability of the machine.





NFM TECHNOLOGIES, EPR PARTNER

Called upon since 2005 to carry out in-depth studies or produce equipment for the 3 EPRs™ under construction, NFM Technologies has been increasing its business in this market since 2009 with several more orders.

The third generation EPR™ reactor (*European Pressurized Reactor*), developed by AREVA, is under construction in three countries - Finland (Olkiluoto), France (Flamanville) and China (2 units in Taishan). These new reactors work on the same principle as traditional pressurized water reactors, but they also include numerous technological innovations aimed at increasing their performance, profitability and safety and reducing the volume of waste produced. The equipment for the power stations must therefore respond to extremely high requirements in terms of performance, reliability and life expectancy (60 years). The EPR™ reactors are more powerful (1650 megawatts compared with 1450 megawatts for the previous generation), more complex (more safety circuits), larger and with a higher performance (technical constraints and exceptional dimensioning), and so the selected industrial partners must have the right level of expertise and production capacities.

Experience on previous phases in France, China and Korea - and in particular on the N4 benchmark stage - allows NFM Technologies to supply equipment with a high technical added value, located in reactor buildings. In fact, NFM was involved at a very early stage in the three projects that are currently underway. It provided all the calculations for the containment liners for the reactor buildings in all the EPR™ phases, as well as providing systems relating to the safety of the reactor building, such as anti-whipping and anti-displacement devices for the large pipes. NFM is also well known for its specialised mechanical welding, in particular for making cyclone separators and supports for steam generators and primary pumps.

The company sets itself apart due to its ability to follow projects through from the design stage to the delivery of equipment to the sites. Going beyond its expertise in the nuclear industry, the combination of a multidisciplinary Design Office and major industrial methods makes NFM one of the players that is capable of responding to the high demands of the EPR™. NFM was able to deal with all of the technical, mechanical and environmental constraints (dimensioning, seismic resistance, resistance to ultimate conditions etc.) and deliver Nuclear standard equipment, which fully conforms to safety and reliability standards.

> NFM Technologies will produce 4 personnel access airlocks for units 1 and 2 of the Taishan EPR™ in China.

A reactor building contains 2 identical airlocks, one for normal access and one for emergencies.

> Functions of the personnel access airlocks:

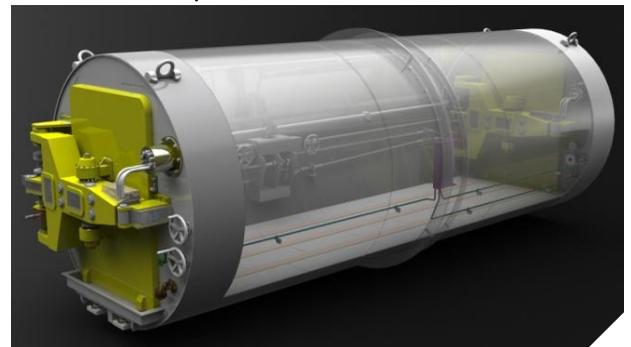
- To allow access to the reactor building for small items of equipment and personnel by managing differences in pressure (reactor building is depressurized)
- To guarantee that the exterior of the building is insulated against radiation (under normal and extreme conditions, in case of accidents and earthquakes)

> Specific features of the equipment supplied:

- Adjustable doors to ensure a smooth transition over the threshold and make it easier to bring small equipment in and out
- A single drive system, operated by an automaton associated with a frequency converter for the two doors (interior door and exterior door for the reactor building)



A single motor fulfils all of the functions: unlocking, balancing of pressure, rising/lowering of the door, rotation. As well as saving space, this single block simplifies the electrical control, reduces the number of mechanical components and increases the security of the interlocking of doors.



The airtightness and the resistance of the airlocks will be tested in a factory under test conditions with the same pressure as the reactor building. The delivery of the 4 complete airlocks will be staggered depending on the construction progress of the EPR™.



NFM TECHNOLOGIES, PATRON OF "LE PETIT MONDE EN CHANTIER"



"Le petit Monde en Chantier" ("The little world of the building site") will be set up at a site near Beaurepaire in the Isère region of France. It will be less than an hour away from Lyon, Saint-Etienne, Grenoble and Valence, in an exceptional natural setting and with easy access.

Initially due to open in 2012, those involved in the project anticipate that the involvement of the industry in the project via other partnerships will keep to all of its promises over the next few months and will enable the park to open as early as 2011.



To find out more on the project, visit www.lepetitmondeenchantier.fr

> **NFM TECHNOLOGIES IN BRIEF**

NFM Technologies is taking part in an ambitious and unprecedented project - the opening of an amusement park dedicated to the world of the construction industry. Let's go back and have a look at this original initiative, which combines education with fun...

The idea began in 2008 following a meeting between two enthusiasts who wanted to change the relationship between the general public and the construction industry, which is generally seen in a poor light : *"We wanted to create a link between the general public and the construction industry, with a site that would serve as a record of our industry as well as providing an overview of it. By drawing on the appeal of working machinery and some unusual work sites, this scheme will attempt to provoke, through a varied and imaginative interactive play environment, thoughts and ideas, perhaps even job opportunities!"* explain enthusiasts Guil Seban et Jean-Christophe Guinouvé.

The concept immediately appealed to NFM Technologies. As a national and international player in public works, we intend to participate actively in the setting up of the park, in the promotion of our profession and in the passing on of our industrial and technical expertise to a wide public. The site will be an opportunity for us to make our business activity known but also to help others understand the social purpose of our work by placing our machinery at the heart of everyone's day to day life.

NFM is already working on one of the major attractions of the site, which will respect the interactive, recreational and educational approach required by the creators. A 3D interactive terminal will allow visitors to make a virtual visit of a tunnel in the process of being excavated. A trackball will allow the visitor to explore the various parts of the work site and obtain explanations as to how the tunnelling machine is operated and how excavated earth is evacuated etc.

Underground work > NFM Technologies has just signed 2 contracts to supply two 14m diameter EPB tunnelling machines as part of the new SE-40 ring road project in Seville, Spain. The new 78km long road around the city will require a 2,180m long tunnel to be constructed under the Guadalquivir river. These contracts were signed with 2 Spanish groups - OHL/SANDO/AZVI and COPISA/ALDESA/BRUESA - for the company Sociedad Estatal de Infraestructuras del Transporte Terrestre (SEITT). The TBMs will each dig two 1,900m long tubes under the river, through terrain principally composed of sand, gravel and marl. To satisfy these geological conditions, the machines will be designed to withstand a pressure of 5 bars and make hyperbaric interventions easier.

Nuclear > NFM Technologies has received an order for 2 handling cranes as part of the ITER project. The contract, signed with SPIE Batignolles on behalf of the European joint venture "Fusion for Energy", includes the design, manufacture, testing and installation on site of the 2 cranes, which will be used on the building for manufacturing superconductor poloidal magnets for the TOKAMAK. The first crane with a capacity of 25 tons will allow the handling of primary material coils and tools. The second, a 50 ton crane, will be used to handle rings of magnets throughout all phases of manufacture. Delivery is scheduled for June 2011.

Underground work > The NFM Technologies tunnelling machine for line 8 of the Beijing subway in China made its breakthrough in March 2010. This 6.28m diameter EPB machine excavated the 1,300m between the stations of Xisanqi South and Xisanqi North, through ground made up of sand and clay. It will now excavate a parallel section going in the opposite direction. NFM Technologies supplied its Chinese client B1 with an adapted and reliable machine, achieving an availability rate of 95%. The client appears to be satisfied with their cooperation with NFM Technologies on this project.