

### BLASTING OF A 30 METRE DEEP AND 18 METRE WIDE WELL IN OULLINS CITY CENTRE



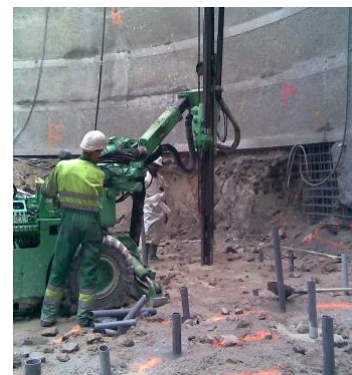
SITE	ORSEL Well, OULLINS, FRANCE
PROJECT OWNER	SYTRAL
PRIME CONTRACTOR	EGIS RAIL
ENTERPRISE GROUPING	CHANTIERS MODERNES RHONE ALPES (VINCI GROUP), DODIN CAMPENON BERNARD, SPIE B.
PERIOD	JUNE TO NOVEMBER 2010

#### GOALS & CONSTRAINTS

- From June to November 2010, on behalf of SPIE BATIGNOLLES, EPC-France undertook a blasting service in **Oullins city-centre** (69600) in order to build a well for the purpose of constructions on the B line of the Lyon metro.
- An underground gallery was built more than 15 metres under the riverbed by means of a tunneller. Our mission was to dig an **18 metre wide and 30 metre deep well from which the tunneller could be dismantled and evacuated.**
- Significant constraints associated with such an important work in an **urban environment**, without disturbing traffic or any activity. This represents a **major challenge in terms of safety but also noise and vibratory disturbances.**

#### KEY FACTS & FIGURES

- 18 metres** diameter
- 30 metres** deep
- 124** shots in total
- Up to **7 shots per day**
- 100% electronic shots
- 2647 detonators**
- Controlled shots, carried out under a bell, enabling the **respect of safety norms, the minimisation of disturbances** and the **maintenance of urban activity.**
- Constant communication with the neighbourhood** (information, metrology)





### THE CHALLENGE

- After digging 8 metres using the “lutecian” method, a harder granitic stone required the intervention of blasting operations.
- **Continued everyday urban activity:** the restaurants in the “rue d’Orsel” remained open, **the traffic was maintained. A true technical challenge.**

### MASTERED BLASTING OPERATIONS

- Concentric drilling on part of the bottom of the well for the loading of explosives.
- **Implementation of the explosive and coverage of the shots by means of a bell** in order to reduce noise disturbances, prevent projections and avoid dust (**safety, health & environment**).
- Following the explosion, disposal of the weakened granite with an excavator, then picked-up by truck.

### METHODS ADAPTED TO AN URBAN ENVIRONMENT

- In an **urban environment**, the blasting excavation methods were conducted with special care and attention, in particular the **control of nuisances** (vibrations generated by the shots).
- A series of trial shots allowed the calculation and the **minimisation** of the launched unit load. These trials were heavily instrumented by means of seismometers placed on the site’s neighbouring buildings.
- **The use of electronic priming for all of the shots** permitted the **optimisation of the sequences** of the shots and the respect of the constraints related to the unit load, thus enabling a **strict respect of environmental restrictions**. This technology was easily integrated by the teams thanks to its flexibility and reliability.
- In order **to avoid the surprise effect** for the neighbourhood and to **guarantee safety for all**, the exact time of each shot was announced and displayed in a 2-hour notice. **The populations were informed** by sound signals to alert the different phases of the blasting operations: 3 minutes before the shot, one minute before the shot and once the shot had ended and the area had been secured.
- In order to respond to **our absolute priority, safety, no explosive or detonator was stocked on site**. The necessary quantity of products and devices were transported on site before each shot.

