

*With its 700 million euro it is the flagship of TERNA's investments*

## **SAPEI: 420 km, the longest power line ever built in Italy**

**Special attention devoted to the submarine environment and to the Mediterranean whales also thanks to Australia's experience**

*It will connect Sardinia and Lazio 1,600 meters below sea level, the deepest in the world 420 km long, it will have a 1,000 MW capacity. The journey of the first kWh scheduled for mid-2009*

700 million euro of investments, 1,600 metres in depth, 420 km in length, 1,000 megawatt of power. These are the main figures for SA.PE.I., the double 500 kV DC submarine cable that will connect Sardinia and Lazio starting from mid-2009.

SA.PE.I. is one of the most important strategic works planned by Terna to strengthen the national electricity system. With its length and power, it will be included in the Guinness book with record-breaking numbers: 1,600 metres in depth: the greatest depth ever reached in the world for a submarine cable. 420 km: the longest power line ever built in Italy and the second longest connection in the world, after only the one between the Netherlands and Norway.

**Progress of activities:** Authorized in only 12 months (also a record), work began in October 2006 after geophysical and geotechnical surveys on the seafloor where the cable will be placed. During 2007, placement tests were successfully carried out for nearly 10 km of cable at 1,600 meters of depth. Last December, the first activity at sea was carried out both in Nettuno and in Sardinia, in the area between Fiumesanto and Punta Tramontana. Activity is also in progress for the placement of the first 150 km of cable at great depth. On the basis of the general work schedule, completion of the first cable, with the system operating on half power (500 MW), is expected within mid-2009, and completion of the second cable is expected for the end of 2010. Totally, up to now, 300 km of cable for the first segment have been built, while the remaining 120 km are being manufactured. Planning and development activity for the substations have been completed for which the main equipment is being manufactured and expected to be assembled starting from February 2008, in line with the established work schedule.

SAPEI's project will lead to the following benefits:

- Increased safety in Sardinia's electricity system (the 1,000 MW of SAPEI correspond to over 50% of the island's demand)
- Possibility of exporting more efficient thermoelectric production towards the continent (1/3 of power plants is fuelled by coal) and renewable source production, in particular wind-power which is significantly rising
- opportunity for Sardinia's electricity operators to participate in the Electricity Market dealings with fewer exchange obligations, guaranteeing at the same time greater flexibility and safety in the system's operation;
- possibility of facing the dismantling of the present 220kV DC connection between Sardinia, Corsica and Italy (SA.CO.I.) scheduled to take place within the next few years, owing to the cable obsolescence after having been in operation for over 40 years.

Obtaining authorization in only one year – a brief amount of time if compared to the 4 years required for the Italy-Greece cable – was possible thanks to an innovative coordination approach that Terna conducted with all the administrations involved. In this way, each technical and environmental aspect was faced in a preliminary phase prior to the project's implementation. In order to evaluate the effects of the project on the "Santuario dei Cetacei" marine park, in Western Mediterranean, Terna also used the results obtained from successful international experiences such as the Basslink, the DC connection between the state of Victoria in Australia and the island of Tasmania, based on the studies carried out by the Tethys Research Institute that demonstrated that the cables do not produce negative consequences on the marine mammals. In order to reduce the visual impact of the works, highly technological architectural solutions were adopted.



With regard to the environmental aspect, a monitoring plan was conducted on the condition of the “Posidonia oceanica”, a sea grass representing the most important ecosystem of the Mediterranean sea. Recently, Terna also planned environmental redevelopment initiatives in the Parco del Foglino. The two cables that form the connection will be manufactured by Prysmian Cable & Systems. The switching stations on both sides of the Tyrrhenian sea will be built by the ABB group. Civil works will be implemented by ATI (Associazione Temporanea di Imprese) Pellegrini Acmar.

## All Sapei's numbers

2	submarine cables, land cables, switching stations
12	centimeters of cable diameter
22	meters in height of the switching stations
50	tons of bollard pull of the cable-laying vessel
70	technical and environmental regulations
90	total resources involved in the project
420	km in length
500	kV of voltage
1,000	MW of power
1,600	maximum laying depth
5,000	project
7,000	tonnage of the cable-laying vessel
35,000	sq. m. the area of the Latina station
48,000	sq. m the area of the Fiumesanto station (SS)
50,000	cubic meters of land removed
700,000,000	investments in euro planned

## SAPEI, the submarine segment

