

Japan

Kyushu Firm Develops Automated Underground Digging Machine

Kyoudou KK, a local civil engineering company, has developed automated machinery for digging underground channels for small diameter gas and tap water pipes. The computer-guided Curb Auto Drive cuts the length of time and cost of conventional manual operations by 20-30%. Although sales will begin in October, the company will start taking orders for the machine next month. The equipment's price will vary depending on the size of the underground channels it digs. A machine designed for digging routes for pipes with an inner diameter of 40 cm is expected to carry a price tag of around ¥50 million. To lease the equipment, it will cost about ¥40,000 for every metre of digging. Kyoudou aims for orders for 10-30 units a year.

Spain-Netherlands

Dragados Sells HBG

Only four months (read E-News Weekly # 6) after the announcement of its bid on Hollandsche Beton Groep (HBG), Grupo Dragados has surprisingly decided not to merge with the Dutch company and to sell it to Koninklijke BAM NBM (Royal BAM NBM), the sixth Dutch construction group. BAM will acquire all ordinary and privileged shares of HBG currently held by Dragados for €20.10 per share in cash. This implies a sale price of €715 million. The price per share may be increased by €1.15 to €21.25 if HBG's net profit from its construction and infrastructure activities exceeds €100 million for the year 2002. In that case, Dragados would get back the €756 million paid for HBG. With this transaction, Dragados reduces substantially its net debt. After completion of the transaction, BAM will acquire the remaining shares of HBG not held by Dragados (0.3%) through open market purchases or a minority buy-out procedure.

The new combination is one of the top 10 construction companies in Europe with a pro forma turnover of €8.5 billion for the year 2001. BAM's will be market leader in the Benelux and will strengthen its position in Germany, Ireland, the UK and the USA. HBG has extensive know-how and experience, for example in large infrastructure projects, tunnelling, private financing and facility management which are partly complementary to BAM's business. The acquisition of HBG by BAM will create a large construction group with a combined order portfolio of €10.7 billion as of 31st March, 2002. The new giant will employ approximately 32,000 people. Large, high profile projects of both companies include the High Speed Link, the Betuwe route, the Westerschelde tunnel, and the Channel Tunnel Rail Link.

Dragados acquired HBG in April (read E-News Weekly # 16) but soon after, ACS bought a 23.5% stake in Dragados gaining overall control (read E-News Weekly # 17 & 18). With the sale, Dragados will focus on services and infrastructure concessions, "allowing to increase the group's profitability on markets with higher margin and bigger growth potential." Dragados explained the sale of HBG by the "difficulties to penetrate European services markets and the negative reaction of financial markets to the acquisition of HBG." Analysts considered that synergies between ACS and Dragados were superior to those between Dragados and HBG. Visit www.bam.nl, www.dragados.com and www.hbg.nl

World Digest Of Tunnels Under Planning

Italy. In Rome, the preliminary project for the full alignment of Line C has been approved: section T1 - Tor di Quinto/Vigna

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Clara-Clodio/Mazzini, T2 - Clodio/Mazzini-Venezia, T3 - Venezia-San Giovanni, T4 - San Giovanni-Malatesta, T5 - Malatesta-Alessandrino, T6 - Alessandrino-bivio Torrenova-Tor Vergata. C1 branch: Teano-Ponte Mammolo. The financial planning for Line B1 Bologna-Conca d'Oro has also been approved. Visit www.tunnelbuilder.com, item it/14.

Portugal. Tenders for the second phase of road ER 101 connecting São Vicente with Porto Moniz on Madeira island are expected to be invited this month. Tender value will be €44.8 million. There will be seven new tunnels (see table) between Seixal and Porto Moniz, totalling 5.3 km. The new road will be open the last quarter of 2004 cutting travel time between Funchal and Porto Moniz to 35 minutes. The first phase of road ER 101, built at a cost of €31 million, was opened in September 2000. There are five tunnels in Água D'Alto (595 m), Ribeira do Inferno (425), Ladeira da Vinha (480), João Delgado (1,254) and Fajã de Barro (320).

<u>Tunnels</u>	<u>Length (m)</u>	<u>Section</u>
1	300	Seixal-Ribeira do Seixal
2	500	Ribeira do Seixal-Farrobo
3	1,350	Fajã da Parreira-Ribeira Funda
4	1,040	Fajã das Contreiras
5	1,140	Cova da Enseada
6	380	Ribeira da Janela-Fajã de Barro
7	580	Fajã Manuel
Total	5,290	

Spain. It has been announced that the high speed trains will finally cross Barcelona, between the Sants and Sagrera stations, through a new tunnel under Mallorca street and not the existing tunnel under Aragó street as previously planned. This has been decided to cut costs and lead times for the arrival of the high speed train to the Sagrera station and the French border. There will be an intermediate intermodal station in Paseo de Gràcia with connections to the suburban train service and to Lines 3 and 5 of the metro. The Renfe suburban train service will consequently continue to run through the Aragó street tunnel and not through the future Mallorca street tunnel. The overall project will cost €1 billion financed by the ministry of development (50%), the City of Barcelona (25%) and Generalitat de Catalunya (25%). The Sants station infrastructure will cost €182 million, of which €4.5 million to sink underground the tracks. The Mallorca tunnel will cost €217.5 million. Another €600 million will be spent for the Sagrera station. Visit www.gif.es. Promoters of the construction of Sagrada Familia cathedral recently expressed fears that suburban trains under Mallorca street would cause vibrations affecting the foundations of the cathedral. Visit front page on www.tunnelbuilder.com

United Kingdom. Plans for a new Tyne tunnel go on show in South Tyneside this month. A series of exhibitions will be held so people can inspect the plans and talk to experts about the £139 million crossing. Tyne Wear Passenger Transport Authority (PTA) has applied to new Transport Secretary, Alistair Darling, for the necessary powers to build a new tunnel between Jarrow and East Howdon to help ease traffic congestion and boost industry on both sides of the Tyne. A public inquiry about the tunnel may be held later this year. Visit www.tunnelbuilder.com, item uk/36.

World Digest Of Contract Awards

China. Leighton Asia has been awarded an HK\$426 million contract for the construction of a new sewerage system in Hong Kong for the Drainage Services Department. The project, to be undertaken in joint venture with Kumagai Gumi, involves the construction and commissioning of more than four kilometres of trenchless sewers of various diameters between Wanchai and North Point. Leighton Asia's share of the project is HK\$213 million. The project will commence immediately and is scheduled for completion in December 2005. Visit www.leightonasia.com

Spain. Five contracts have been awarded for equipment of the Metrosur line in Madrid. Contracts 1 and 5 deal with the installation of 1500 V DC electric substations. Contract 1, on the Getafe 2-Getafe 7

section, has been awarded to Crespo y Blasco for €4 million. Contract 5, on section Fuenlabrada 2-Getafe 2, has been secured by Semi for €6.5 million. Contract 2 is for the control of the stations on section Colonia Jardín-Puerta del Sur. It has been commissioned to Alstom Transporte for €3.1 million. Contracts 3 and 4 are for electrifying and power distribution, 1500 V DC. Contract 3 for section Getafe 2-Getafe 7 goes to Cymi for €4.7 million. Contract 4, Fuenlabrada 2-Getafe 2 section, has been scooped by Inabensa for €4.3 million. Visit www.inabensa.com. Also visit www.tunnelbuilder.com, item es/24. To read pdf files of Metrosur - Commuting in the 21st Century, visit the Sales section at www.tunnelbuilder.com and select Publications from the dropdown menu. Read E-News Weekly # 16.

World Digest Of Ongoing Tunnelling

Bhutan. The \$1 billion Tala hydro electric project in Bhutan is one of the biggest power projects being set up in the country. It is a joint effort between the governments of Bhutan and India to generate 1,020 MW of power. It consists of a 91 m-high gravity dam located on the Wanghchu river, 22.4 km of headrace tunnel, a huge underground power house, a tailrace tunnel and other related works. It is located at Chukha Dzongkhag in western Bhutan. Three of India's leading construction companies, Hindustan Construction Company, Larsen & Toubro and Jaiprakash Industries, are involved in the civil works of this challenging project in very difficult terrain. As part of package C-1, Hindustan Construction Company (HCC) has completed 6 km of headrace tunnel. The company has completed concrete lining in intake tunnels and lining of 2 km of headrace tunnel. Dam work has commenced. HCC also secured package C-4, involving 7.4 km of headrace tunnel. Tunnel work on Kalikhola upstream, which is part of this package, is held up due to adverse geological conditions. Meanwhile, 3.29 km of headrace tunnel at Mirchingchu and 2.3 km at Kalikhola have been completed. Also, concrete lining of more than 400 metres of tunnel has been completed. Visit www.hccindia.com



Picture 1: Headrace tunnel of Tala hydro scheme.



Picture 2: Rock bolting at Kalikhola Downstream.

Jaiprakash Industries Ltd has been awarded package C-2 which involves the construction of 5,130 m of headrace tunnel from Padechu adit. Completion is due for March 2004. The company also scooped package C-5 to construct a surge shaft, a pressure shaft, the underground powerhouse and a 2.2 km tailrace tunnel. The power house has been designed by Bharat Heavy Electricals Ltd (BHEL) in consultation with Kvaerner. Completion is planned for November 2004. Visit www.jilindia.com Larsen & Toubro has won package C-3, 4.4 km of headrace tunnel. Visit www.larsentoubro.com The project is funded by the Indian government who provides 60% of the cost as grants and 40% as loan to Bhutan. The project is scheduled for completion in 2006. For further info, visit www.tunnelbuilder.com, item bt/11.

Norway. NCC Norway has commenced for Statoil the construction of a 400 m landfall tunnel at Kollsnes near Bergen to receive the gas pipeline from the Kvitebjørn field in the North Sea. The 14 sq m tunnel will have an entrance point at 1 m above sea level and exit point at - 70 m. The area is located in Middle Precambrian rocks which consist mainly of granitic gneiss with some layers of dark amphibolitic gneiss. The tunnel is excavated using the drill/blast method. The drillrig is supplied by

Atlas Copco. Rockbolts and shotcrete will be implemented if required. Norconsult was in charge of the geological and civil engineering studies. ABB designed the pipeline and Statoil is responsible for construction supervision. Excavation started on 21st May for completion on 1st October, 2002 at a cost of NOK25 million. The pipeline will be pulled in through the wet tunnel from an offshore pipelaying vessel by an onshore winch. In the summer of 2003, a laying barge will lay the pipeline from the Kvitebjørn field to Kollsnes and pull it through the tunnel to the terminal in Storholmen, west of Kollsnes. The Kvitebjørn field will supply gas from 1st October, 2004. Visit www.statoil.com and www.nccnorge.no

Portugal. The second Herrenknecht TBM has started tunnelling north to south the tunnel Hospital de São João-Cedros/Santo Ovídio, in Gaia for Normetro, the consortium in charge of the construction of the Porto metro. A first TBM has been boring the tunnel between Campanhã and Trindade. Initially, only one machine was planned but Normetro ordered a second TBM in an attempt to avoid further cost and time overruns. Out of the 70 kilometres of the Porto metro, seven will be underground. Visit www.metro-porto.pt and www.tunnelbuilder.com, item pt/12.

World Digest Of Inaugurations

Colombia. On 29th May, President Andrés Pastrana Arango inaugurated the Vial de Rionegro interchange on the Medellin-Bogota highway. The interchange includes the Guarne parallel tunnel built by ConConcreto. The cost of the 280 m-long 8 m-wide tunnel reached Ps11 billion. Visit www.invias.gov.co

World Digest Of Tunnel Renovation & Maintenance

Portugal. Tenders will be invited soon further to the Madeira government's approval of a €3 million investment to renovate the Madalena do Mar tunnel on the island. The tunnel needs a new lining and the portals will also be rebuilt.

Switzerland. The 1,345 m-long Glion tunnel in Canton of Vaud will be completely renovated. Opened in November 1970, the twin tunnel is crossed by 35,000 to 45,000 vehicles a day. The tunnel is safe but needs upgrading to comply with the new Swiss safety rules. It is equipped with eight water outlet valves, 55 heat detectors and three sensors to measure carbon monoxide rates. The gas and smoke removal system will be replaced. Instead of blowing fresh air in the tubes with fans, the new system will pump polluted air out. Waterproofing works will also be done. The CHF40 million renovation scheme should begin at spring 2004 and last seven to nine months. Traffic will be bi-directional in one of the tunnels while renovation is underway in the other.



Picture 3: Portals of the Glion tunnels.

United States. Tunnel repairs at the US Coast Guard Loran Station in Port Clarence, Alaska have been awarded to Hansen Mining for \$24,649. Visit <http://www.eps.gov/spg/DOT/USCG/USCGCEUJ/Awards/DTCG87-02-N-643083Ln001.html>. Read E-News Weekly # 19.