

We THINK

We DO

We LIFT

**DIECI**  
Magazine

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# DIECI

## IN THE WORLD



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DIECI will be  
attending



Pavilion: 36  
Stand: A3



Supplying concrete at the bottom of the shaft



# DIECI



Crossrail in London has been called one of the largest railway infrastructure projects in Europe. The project was conceived in 1941 and drafted into the city's urban development plan in 1944 (during the Second World War!) by one of the world's greatest urban planners, Sir Patrick Abercrombie, who planned the major reconstruction and expansion of the English metropolis even while it was being pounded by German bombardments.

Essentially, Crossrail is a new, high-frequency and high-capacity rail network comprising 136 km of track that will supplement the London Underground (which is nearing the limit of its capacity). The network will connect Reading (63 km west of London) to Abbey Wood (a suburb in the southeast of the capital), delivering a higher frequency service of up to 24 trains per hour during peak periods. Crossrail will also connect Heathrow Airport to the Eurostar high-speed line, which travels to mainland Europe via the Channel Tunnel. After a protracted design process and numerous setbacks, construction work finally began in 2009. The eastern section entered operation in May 2015, while the western section is currently under construction.

With a total estimated cost of around 15 billion pounds, the initiative is confirmed to be Europe's largest and most ambitious public works project of all time. Despite some teething problems, the construction of the new network is well under way and the central section is expected to enter service by 2018, as per schedule.

In drafting the contract specifications, great consideration was given to the environment, especially as regards production machinery emissions and the recycling of excavated materials, which will be reused to re-profile the River Thames and create a wetland nature reserve.

Safety standards are also very high: access to work areas is permitted only when wearing one of six different sets of personal protective equipment sti-



# Crossrail



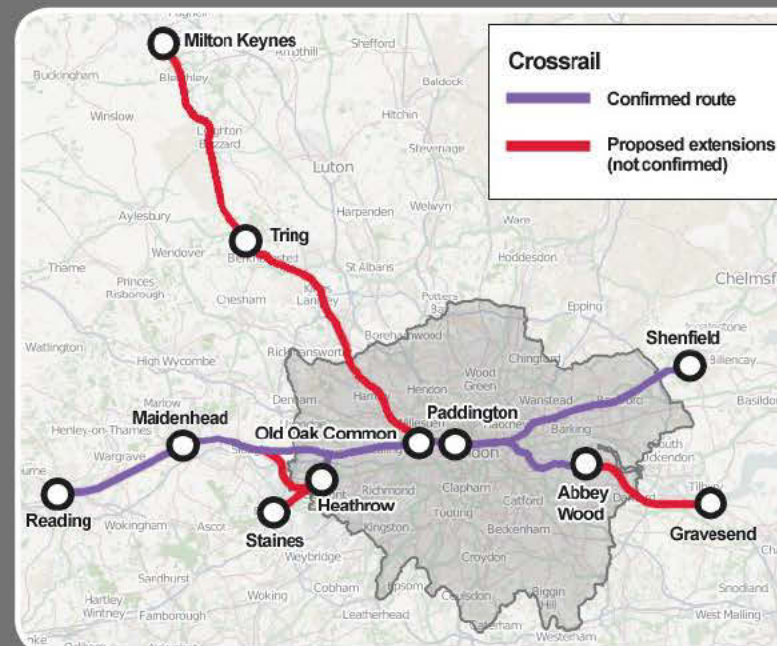
pulated in the specifications, and every action is governed by strictly observed regulations posted at each construction site. Around 8000 workers of 26 different nationalities are working around the clock in 12-hours shifts to ensure that the project is completed on schedule. The most crucial of the numerous facilities under construction (new stations, access ramps, shafts, service and emergency tunnels) is a series of tunnels that run 21 km under the heart of the city. Each tunnel comprises two parallel bores with a diameter of six metres, which are being excavated simultaneously by two tunnelling machines at a rate of 100 metres per week. As the excavation work progresses, the concrete walls are lined with concrete to strengthen them and prepare for the subsequent application of prefabricated coverings and the laying of rail tracks and service wiring.

Working away in this dark and cluttered complex of narrow, muddy tunnels up to 40 metres underground are a number of DIECI concrete mixers and dumpers, agile machines that are ideally suited to operating in such conditions.

The dumpers, with a load capacity up to 7 cubic metres, quickly transport excavated material to conveyor belts, preparing the tunnel for subsequent strengthening operations that involve lining the walls with sprayed concrete. The spraying nozzles are themselves fed by DIECI truck mixers with a production capacity of 5 cubic meters per hour, sufficient to keep pace with the eight giant cutterheads that dig 24 hours per day, 7 days per week. Thanks partly to DIECI machines, the Crossrail project is entering its final stages. Nevertheless, consultations are already underway for the construction of Crossrail 2, an additional rail link on a north-south axis which, if approved, will begin construction in 2019 and open in 2033!



a F7000 at work





# **DIECI** on the roof of the world

Cerro de Pasco is a Peruvian city with two striking characteristics. Not only is it the most elevated city on the planet, at 4360 metres above sea level, it also lies on the edge of one of the world's largest open-cast mines. The mine's official name is "Mina de la Volcan, Compañía Minera", but to the inhabitants of Cerro it is simply "El Tajo" (the Pit).

The area's mining traditions stretch back centuries. It is said that in the 16th century, the gold paid to Spanish conquistadors in ransom for the release of Inca emperor Atahualpa came from local mines. However, Cerro de Pasco remained a trading hub until the 1950s, when the Cerro de Pasco Copper Corporation decided to convert a small mine in the city centre into an open-cast mine in order to extract copper, lead, nickel and silver. Down the years the mine has expanded dramatically, engulfing entire districts of the city, and is now a huge crater measuring 1.8 km long, 1.6 km wide and 800 m deep.



Cerro de Pasco and "El Tajo" (the Pit)



Unfortunately, as is also true in other countries throughout the region, social development has not necessarily kept pace with industrial development. Exacerbated by the political instability that plagues a number of Latin American countries, as well as serious social inequalities, intense mining exploitation in Cerro de Pasco has caused widespread and heavy pollution that has contributed to a cancer incidence rate of 40%, compared with a global average of 9.5%.

It was not until the end of the Fujimori government in the late 1990s that things began to change, slowly but surely. From 2007, a series of government acts initiated the slow and painstaking process of environmental and social regeneration in the area.

The World Health Organisation has carried out a series of studies to limit the impact of pollution caused mainly by the use of heavy metals in mining processes, while the government and local municipalities have launched a series of measures to improve local infrastructure, supported by various international agencies.

These interventions include the reconstruction of some sections of Cerro's road network (initially using beaten earth), together with the construction of an efficient drainage system.

This major undertaking on the roof of the world, nearly 4,500 meters above sea level, involves a number of concrete L4700 mixers, one of the company's most successful products.

As is common throughout South America, road surfaces are made of concrete, which is cheaper, easier to maintain and more suited to heavy traffic than European roads. Before the road surface is laid, electricity and sewage ducts are built into the formwork.

Using this system it is possible to build long stretches of road in a short time. The L4700 is highly appreciated for its total self-sufficiency in preparing mixture and for its rotating drum, which is indispensable in the narrow mountain streets of Cerro.



Concrete surfacing on the city's streets





# **DIECI**

## in the pearl of the Baltic Sea

With its 494 km of coastline facing the Baltic Sea, Latvia has an ancient maritime tradition and a fishing fleet of over 700 vessels of all types. As well as being a deep-rooted tradition, the maritime industry is also a vital economic driver for this country of just over 2 million inhabitants, with 5.36% of the population employed in the maritime sector and exports of fish products amounting to 183 million euros in 2015. Products are derived not only from coastal fishing (consisting mostly of herring, sprats and cod), but also from deep-sea fishing in the Baltic Sea and the Atlantic Ocean.

The maritime sector encompasses much more than fishing vessels and their crews, extending to spin-off industries such as fish processing and transport, as well as shipyards, where vessels are built and maintained. Fishing is a vital industry for both the Latvian economy and those of other

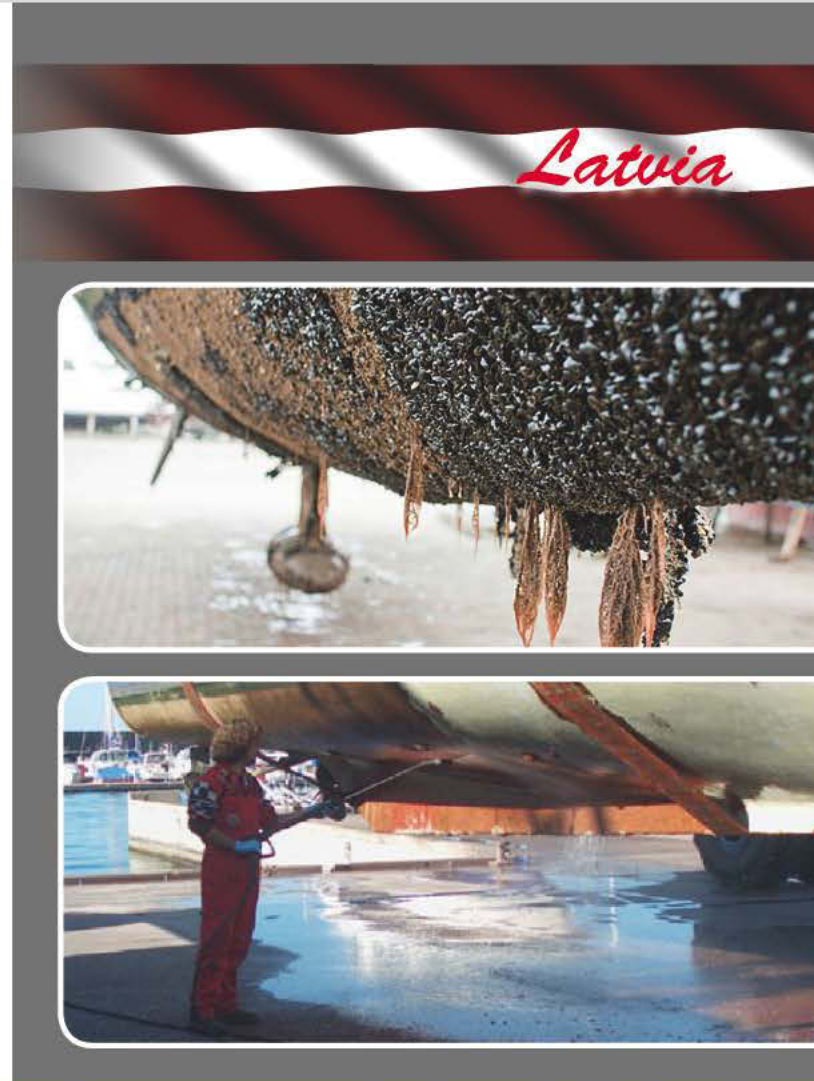


countries bordering the Baltic Sea. However, the effects of intensive fishing are beginning to take its toll on the fragile marine ecosystem, resulting in a considerable decrease in both the size and number of catches. For these reasons, the European Union has launched a series of policy actions to streamline the industry, considerably reducing the fishing fleet on the one hand, while also approving a sizeable aid package (worth around 183 million euros) for the technological innovation of the entire sector.

One of the biggest beneficiaries of these policies is Latvia's largest business consortium NZRO (Nacionāla zvejniecības ražotāju organizācija), which counts most of the country's fishing and seafood processing companies among its members. Thanks to a co-financing programme launched by the European Union, five PEGASUS telescopic handlers have been purchased by NZRO for the shipyards that build and maintain the nation's fishing fleet.

In addition to routine maintenance of the superstructures and engines, each vessel needs to be taken out of the water periodically for essential hull cleaning, to remove the algae and barnacles that accumulate on the keel, before being coated with anti-fouling paint to retard their growth. These encrustations not only significantly deteriorate the performance of a ship, but can also jeopardise safety by blocking water intake and discharge ports.

Until now, hull cleaning entailed long and costly periods of downtime due to the complex mobile scaffolding needed to carry out cleaning. Now, however, maintenance operations can be completed in a shorter time using the extensive range of accessories and aerial platforms supplied with the new Pegasus machines. As the saying goes, prevention is better than cure, and thanks to the Pegasus machines, this process is being carried out with precision, safety and speed.





CELEC technicians at work.



# Mission Ecuador

On 16 April, an earthquake measuring 7.8 on the Richter scale devastated the western provinces of Ecuador, killing over 660 people, injuring more than 5,000 and leaving 80,000 inhabitants homeless.

The earthquake that struck the South American state is the strongest on record after the 9.5 magnitude tremor that struck Chile in 1960. It was created by the movement of two tectonic plates that formed the Andes mountains, and which literally relocated an area of some 25,000 square km. The power of the quake also completely devastated the infrastructure of six provinces, leaving millions of people without essential services such as gas, electricity and drinking water. Several months since the disaster, the Ecuadorian government has been able to make a preliminary reconstruction estimate, declaring that over 3.5 billion dollars will be needed to restore normality in the affected regions. Of this total, 67% will be funded by the state, while the rest will come from the private sector, the World Bank and the International Monetary fund.

Even before debris is removed, the priority is to restore services such as electricity and water, which are needed by inhabitants and rescuers alike. State-owned electricity provider CELEC EP (Corporación Eléctrica of Ecuador) immediately mobilised to ensure that power was restored to most of the affected areas. Even now, four months after the earthquake, 111 CELEC technicians are still working in conjunction with other private companies to restore power throughout the rest of the country. They are assisted by Dieci machinery, which is ideal for negotiating rubble-strewn streets to reach tangled wiring. So far, 75% of power connections have already been restored in one of the worst-affected provinces, Manabi, where 95% of buildings were destroyed.

Nevertheless, the recovery will be a long and drawn-out process and President Correa has issued a decree renewing the state of emergency, due to the large number of homeless people and the size of the affected areas.



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