factsheet # 21

ERTMS DEPLOYMENT IN THE MIDDLE EAST

ERTMS THE GATEWAY TO ASIA

The importance of the Middle East as a crossroads between Europe, Asia and Africa is being emphasized by the relocation of and the rapid development of major business and transport hubs in the region which are providing better and faster links than ever before for their people and their produce – and the latest developments in railway technology are set to accelerate this process.

What is the status and future plans of rail deployment in the Middle East?

The Gulf Railway (GCC railway), is the biggest railway project in plan in the Middle East. The railway would like to connect the six Gulf Cooperation Council (GCC) members. When implemented the GCC railway will have a length of 2177km, with a budget of over EUR 200 billion will connect Kuwait, Saudi Arabia, Bahrain, Qatar, UAE and Oman.

GCC railway will be connected to the actual railway already implemented and in plan in Saudi Arabia. As benefits its key geographical position, Saudi Arabia is one of the main drivers of rail expansion in the region. It currently operates a 1,380km network comprising a 449km passenger railway from Riyadh to Dammam, a 556km freight route from Riyadh to Dammam and around 373km of industrial branches. This existing network is set to grow extensively with one of the most ambitious rail expansion plans in the world – an expansion plan which will have impacts far beyond the Kingdom's borders. The 300km/h Haramain railway began his revenue service at the end of 2018, proves how a well-planned and considered passenger route can help provide a massive boost to capacity in response to growing demand. The holy cities of Makkah and Madinah attract millions of pilgrims every year and neither currently have good public transport systems. With visitor numbers to Makkah forecast to rise by almost 10 million over the next 25 years, improvements are considered vital. This high-speed railway is cutting journey times between Jeddah and Makkah to 30 minutes and between Makkah and Madinah to two hours. New trains are offering a modern passenger experience and transform the ease of travel to some of the holiest sites in the world.

Etihad Rail network (part of GCC) in UAE is another project already in partially implemented. UAE plan to have a railway network long 1200km. The project is being developed in 3 stages. The first stage long 266km between Al Ruwais and Shah opened in 2016. The second stage that will connect Abu Dhabi with Dubai long 605 Km has been awarded by 2019. Etihad Rail network at the moment works for freight operations, but it will offer passenger services in the future.

Oman Railway has a plan to build 2135km of line (some sections belongs to the GCC railway). No sections has been awarded yet for the implementation, but are in place contracts to design the line. As Etihad Rail, Oman Rail will first implement Freight services and then Passenger services.

Are freight rail services important in the Middle East?

All GCC countries have interest in deploying railways to be used for Freight purposes. GCC railway in principle will start operating Freight Services. The first section deployed by Etihad Rail is already in operation with this scope.

The 950km, approx. EUR 5.5 billion Land Bridge project linking the Red Sea port of Jeddah with Riyadh will allow onward journeys on existing routes to the Arabian Gulf Port of Dammam avoiding the need for goods to make lengthy sea voyages around the Arabian Peninsula or arduous journeys by road across the desert. Journey time savings for freight could be significant compared with the alternatives, thereby opening new markets for high value and perishable goods.

Independent of the line that will connect with GCC network, Oman Railway has a plan in the future to build a dedicated Freight railway line to transport minerals in order to diversify their economy.

Can rail passenger transport be an option in the Middle East?

Passenger services are in plan for the future for the GCC countries. So far there are railway passenger services only in Saudi Arabia.

With journey times from Jeddah to Riyadh of six hours becoming half of the current bus journey. Perhaps most impressive of all is the 2,400km North-South Railway from Riyadh to the Al Haditha in the North West of Saudi Arabia, with extensions to Hazm Al-Jalamid for bauxite, Al-Zubayrah for phosphate and the port of Ras Al-Zour on the Persian Gulf. Around 4 million tonnes of minerals per year are expected to be carried, helping to make Saudi Arabia the world's second largest exporter of such minerals: it is hardly surprising that it has been given priority status. Although primarily envisaged for heavy haul freight operation, passenger services are planned too, and given Al-Haditha's location near the Jordanian border, it would be surprising if in time trains did not run across national borders and with important demand expected, it is clearly a genuinely mixed-use railway.

What are the benefits of ERTMS?

After the successful implementation of ETCS Level 1, Saudi Railways decision to deploy ERTMS in its most advanced Level 2 version is a compelling statement of its intent to strengthen connections across the Middle East by deploying the most advanced and capable technology available. Etihad Rail Stage 2 was already deployed with ETCS Level 2, the plan is all GCC railway projects use ETCS Level 2 in order the GCC sections can be interoperable among them.

The projects are impressive individually, but it is only when they are connected that the true scale of the opportunities emerges. It is doubtful whether the interoperability and capacity optimization required would be possible without ERTMS.

Is ERTMS the preferred solution also outside Europe due to its interoperability capabilities?

As explained before, other countries in the Middle East are investing in rail too and planning to use ERTMS in their railway plans. After Saudi Arabia, the first project in Operation was Etihad Rail Stage 1, the 266 km Stage 1 was completed in 2015 and in operation in 2016. It is being used to carry sulphur from the Shah and Habshan gas fields in the Al Dhafra region of Abu Dhabi to the Gulf port of Ruwais. Stage 2 has been awarded back in October 2019 and planned to run 605 km across the UAE from Ghuweifat on the western border with Saudi Arabia to Fujairah on the east coast, via Mussafah, Khalifa Port and Jebel Ali Port. It is expected to increase the volume of freight carried from 7 million tonnes/year to more than 50 million. Etihad rail foresees mixed traffic (freight and passengers) and also be equipped with ERTMS Level 2 allowing for seamless cross-border services.

With a straight-line distance from Al Haditha to Turkey less than that from Jeddah to Riyadh, the obstacles to a through route from Arabia to Europe becomes political and financial rather than technical. The strategic, social and economic gains to be made from rail improvements in the Middle East have been unlocked by the capability of ERTMS to lower development, installation and operating costs of signaling systems in the longer term, allowing a massively capable traffic management system on routes in which conventional track circuit block signaling would have been prohibitively expensive and difficult to deploy.

Can ERTMS be a facilitator to increase the rail traffic between Europe and Asia?

ERTMS has opened the prospect of genuinely efficient mixed mode operation in Saudi Arabia, enhancing their economic and social viability. Furthermore, route upgrades - already provided for by the decision to build formations suitable for double tracks in the future - are made simpler, cheaper and less disruptive should traffic volumes increase ahead of expectations.

It all adds up to an exciting future for railways in the Middle East. The potential for increased traffic, seamless cross-border connections, greatly improved safety and economic growth is vast. And ERTMS is a fundamental building block in this process.

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