

Customer:

Pursuant to the King Abdullah Bin Abdullaziz approval number (M/26) dated 25/ 04 /1427H the Public Investment Fund established the Saudi Railway Company (SAR) to manage the Railway Project from North to South of Kingdom of Saudi Arabia.

SAR, as a new name in the domestic transport market seeks to satisfy market requirement by providing the best advanced railway services encompassing transport of passengers, freight, minerals and transit services between the neighboring countries. The Railway will link a number of cities, neighboring areas and villages which will lead to their development socially, economically, industrially, agriculturally and commercially. In the future this will help also to establish advanced industries in the north of the Kingdom of Saudi Arabia.

Project:

Under Royal Decree No. 56 of 04/ 13/ 1424H the Kingdom of Saudi Arabia through the Ministry of Finance, Public Investment Fund (PIF), is financing the construction of a new Saudi Railway (SAR Project) in the Kingdom. The SAR project, formerly known as the North-South Railway (NSR), is the largest railway construction project in the world today. The SAR Project consists of two main lines, one originating in Riyadh running approximately northwest to Al Haditha near the Jordan border, and a second main line running from approximately the mid-point of Riyadh. Both lines have a length of about 2400km.

Challenge:

Trains, carrying tons of minerals, never stop. They are loaded and unloaded, weighted, secured and checked during moving. Safety is very important, because these trains are driving very fast. Safety is also very important for passenger trains with a high speed up to 250km/h.

65 checkpoints where installed all around the track for safety checking for all kinds of trains on load, trailers, axles and breaks.

Selecting RFID:

Each train consists of several hundred axles and it is difficult to find the right axles, if the break temperature of e.g. axles 257 might be of range.

This project specified a system requirement, which maps axle numbers to trailers at a speed of 250km/h. That's why RFID technology was selected because video is very complex for such high speed.

RFID Solution:

Each trailer and locomotive is equipped with 2 passive UHF C1G2 transponders, one on each side, which are read when the train passes the checkpoint. Any error or system message can so be assigned to the unique trailer number, which is later easily found by the maintenance staff.

Every checkpoint system consists of 2 RFID readers with special 7iD firmware for high speed trailer tracking and a 7iD RFID Network Controller with special high speed data filtering software. Sensor data from temperature and weight sensors are combined with the RFID data thus providing complete train lists with trailer numbers for safety checking.

The solution is build for the dry climate of the Saudi Arabian dessert with temperatures of 50° Celsius and winds with 200km/h.

