HIGH SPEED LINE IN MOROCCO

November 27, 2019 - Jean-Christophe Rouja
Jeanchristophe.rouja@sncf.fr
HSL TANGER - CASABLANCA

- The line connects the major economic hubs of the Kingdom of Morocco with a travelling time reduced from 4h45min to 2h10min from Tangier to Casablanca, and 1h20min instead of 3h45min between Rabat and Tangier.

1st African HSL

- A complex project, integrated and technically complex
- 200 km of double track line designed for 350km/h, commercial speed of 320km/h. Includes:
  - The entire Studies, Design and works for infrastructure (earthworks and civil engineering)
  - The entire Studies, Design and works for the railway equipment's (tracks, signalling, catenaries, electric traction, GSMR)
  - The entire supply chain (Ballast, Rails, switches)
- Purchase of 12 Alstom 2N2 type trainsets specially fitted for Morocco named RGV (HS Rolling Stock for Morocco)
- A depot dedicated to the maintenance of RGV trainsets
- Adaptation of terminal installations to enter the stations of Tangier and Kenitra
- Building 4 HS stations: Tangier, Kenitra, Rabat Agdal and Casa Voyageurs
- Support to prepare the launch of the operational service

1st phase Commissioning on the 26 of November 2018
ONCF’S NETWORK
HSL TANGIER KENITRA

Application of the Technical Specification for Interoperability
A reference system: The East-European HSL

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lands</td>
<td>1 800 Ha</td>
</tr>
<tr>
<td>Cuttings and embankments (earthwork)</td>
<td>67 Millions m³</td>
</tr>
<tr>
<td>Viaducts</td>
<td>13 units (9800 ml)</td>
</tr>
<tr>
<td>Railway and road bridges</td>
<td>169 units</td>
</tr>
<tr>
<td>Hydraulic structure</td>
<td>117 units</td>
</tr>
<tr>
<td>Tracks</td>
<td>800km of rail</td>
</tr>
<tr>
<td>25KV catenaries</td>
<td>400 km</td>
</tr>
<tr>
<td>Switches and crossings</td>
<td>100 units</td>
</tr>
<tr>
<td>Reinforced concrete sleepers</td>
<td>700 000 units</td>
</tr>
<tr>
<td>Ballast</td>
<td>1,6 millions Tones</td>
</tr>
<tr>
<td>Substations</td>
<td>2 units</td>
</tr>
<tr>
<td>Substation command centre</td>
<td>1 unit in Rabat</td>
</tr>
<tr>
<td>Remote control station</td>
<td>1 unit in Rabat</td>
</tr>
</tbody>
</table>

Maintenance workshop
Tnine Sidi El Yamani Technical works site
Kenitra Technical works site
Sleeper factory
Les composantes du Projet

Integration in the Moroccan railways industry

- High Speel Line is 10% of the railway network of the Morocco kingdom
- High technology in disruption with the rest of the network;
- The need for local actors to evolve:
  - Adaptation of the construction companies and local design Consultants to the size, the high technicity of the project and to the level of high expectation of quality and methods to realize the works of a HSL;
  - The volume of interfacing with administrations of the Morocco Kingdom;

The environment of the Moroccan HLS is the same as the most complex HSL built in France:

- Major geotechnical constraints
  - Poor quality of the ground on most of the route
  - Setting standards criteria targets for HSL (less than 1 cm of soil compaction during the first year and less than 10 cm during 25 years)
« HIGH-SPEED»: A COMPLEX SYSTEM

A real Know-How to help change management

- Rules and regulatory framework
- Climatic environment
- Business model
- Feedback
- Social-economic environment
- Existing network

- Infra TOC
- Rolling stock
- Commercial offer
- Operation
- Maintenance
- Safety Security
- Infra Manager
- High-Speed

« HIGH-SPEED»: A COMPLEX SYSTEM
A PARTNERSHIP ORGANIZATION

Project Management Assistance
- SNCF
  - Project Management
  - Civil Works
  - Railway equipment's
  - Rolling Stock
  - Operation
  - Commercial Offer
  - Safety - System
  - GSMR - ERTMS

HSL Direction
- ONCF
  - Project Management
  - Civil Works
  - Railway equipment's
  - Rolling Stock
  - Operation
  - Commercial Offer
  - Safety - System
  - GSMR - ERTMS

Ad-Hoc Expertises
Studies done in France
A PARTNERSHIP TO SHARE THE KNOW-HOW

• After cooperation during construction phase, creation of two joint ventures

| A training railway institute | A company for maintaining high-speed trainsets |
A 8 YEARS PROJECT
THANK YOU !!