

# HORIZON TGV

Outlines of a growing project



# Horizon TGV

The high-speed train, operative on our continent since 1981, has rapidly proved the ideal mode of transport to cover long distances. Besides substantial improvements in journey times, a considerable traffic capacity and its ability to reach the heart of urban areas, the TGV also offers the advantage to provide a high quality service while preserving the environment and consuming less energy.

The main objective of the high-speed train is to **forge closer links** among citizens of the European Community.

Because of the needs expressed by the community, this mode of transport of a new age will certainly know a sustained development in the wider Europe of tomorrow. That is the reason why Belgium has decided on the construction of railway lines specially designed for the running of high-speed trains. This prodigious engineering project will not involve additional costs for taxpayers : the major part of the capitals required for the achievement of high-speed lines will be refunded by profits obtained from the TGV traffic in the coming years.

Two kinds of TGV links will be commissioned in our country. The first one is Eurostar, linking Brussels with London through the Channel Tunnel. On the other hand, Thalys, linking Brussels, Antwerp and Liège with the major towns and cities of the neighbour states. By the year 2000, 10 million Belgians will have the opportunity to reap the full benefit of this high-tech train in a direct way or thanks to systematic connections with the trains of the modernised and adapted national service.

## Destination Europe

The railway of the 21st century nears completion. Countries like France, Germany, Italy, Spain, Sweden and Great-Britain have already paved the way for the future vast European network. These initiatives, which were firstly national, have been progressively integrated into a Community project. It must be emphasized that high-speed finds its true dimension within a European context. At the beginning of the next century, all the regions of our continent will be linked by some 35,000km of new or upgraded lines.

Thanks to its excellent situation in the heart of Europe, **Belgium** has taken an active part in the first TGV project on an international scale. This ambitious project includes the construction of the well-known Chunnel and the creation of TGV lines between London, Paris, Lille, Brussels, Antwerp, Amsterdam, Liège, Cologne and Frankfurt.

## The future of transportation

In the last twenty years, there has been an explosive growth in our mobility needs. Consequently, traffic jams have become a usual problem at the edge of most European major towns. Air travel has become more and more democratic but shows signs of acute congestion during peak hours.

**What about tomorrow ?** It is expected that the removal of borders in Europe and the opening up to the East will give rise to a substantial increase in travel. According to the experts, road traffic should increase by 20% before the turn of the century. As regards air travel, its volume will raise by 50% by the year 2000.

**What kind of solution should we adopt ?** The space available around cities is not sufficient to extend or to build new motorways and airports. On the other hand, the cost for the improvement of the existing infrastructure would be enormous and such a project would have far-reaching consequences on the environment.

Given that neither air transport nor road transport will be able to answer this challenge, there is an urgent need to examine other solutions which would be more compatible with the environment and with our future needs in terms of mobility. Such an alternative already exists in France where it has rapidly led to a radical change in travel habits.

This historic innovation is named TGV and has been chosen by 325 million people since 1981.

## Symbol for a new age

Besides being a symbol for the revival of rail transport, the TGV is above all the fastest train in the world. It has been designed to convey hundreds of people from one town to another and possesses the ability - depending on the different systems developed - to reach speeds varying from 250 to 300 and up to 350 kph. The combination of the different technologies brings substantial improvements in the journey times while providing a very high standard of comfort and a flawless safety.

The TGV, which runs on electrified lines, offers **various advantages** in comparison with air and road travel : no atmospheric pollution, less land-take, less waste of energy. A TGV running at a speed of 300 kph on a distance of 100 km only consumes 2,2 litres of fuel per passenger whereas a motor car running at 120 kph has an energy consumption of 8,8 litres for two passengers.

But the **major asset** of the high-speed train lies in its ability to serve the same stations and to use the same tracks as an ordinary train. It can be operated in a new site, that is to say on lines specially designed for high speed, as well as on conventional lines which can be used to continue its route or to convey passengers to the heart of cities.

At the approach of the 21st century, such a number of performances enable the TGV to be considered as the ideal mode of transport to cover distances up to 1,000 km, far beyond the borders of our country.

## The succes of speed

Currently, road travel has the lion's share for distances ranging from 300 to 600 km and the car remains the preferred way of travel of 8 Europeans out of 10 for journeys over short or medium distances. The others travel by air or by rail. But the situation should change with the advent of the TGV. It goes without saying that high-speed trains will never replace cars or planes. These two modes of transport have their specific and irreplaceable qualities. Railway has its own and a better exploitation of its advantages, namely through the TGV, would also benefit to air and road travel.

For more than 10 years now, the French TGV has been a remarkable alternative to air and road transport. The resounding success met by the SouthEast TGV linking Paris to Lyon in 2 hours has exceeded the most optimistic expectations. In four years the line has attracted 6 million additional customers, much more than it had been expected. Two million of them come from air transport, 1.1 million from road transport and 2.9 million would not have travelled hadn't the TGV existed. The successful experience of the SouthEast TGV resulted in the construction of other high-speed lines in France and in a vast European project in which our country is directly involved.

## The Belgian high-speed project

With its 3,200 trains and its 760,000 daily passengers, the Belgian network has above all been developed to meet local and regional needs. Its configuration does not allow the operation of trains running at very high speeds. Given that high speed is an essential factor for making international services more attractive, the SNCB has decided to commission a number of high-speed lines.

For reasons of exploitation and of profitability, the number of passengers justifies the construction of lines specially designed for TGV links at 300 kph.

### From the French border to Brussels

The SNCB is building a 71 km high-speed line (LGV) between the French border and Tubize. Beyond Tubize, the existing line will be extended to four tracks. The first two will make it possible for TGV to run at 220 kph to the Midi station, while the other two will enable to raise the running speed of IC/IR trains at 160 kph.

Near Antoing, the LGV will be connected to the Tournai-Mons line, which is a key link of the line crossing the Walloon region. This link will provide a direct connection between the existing network and the new line.

### From Brussels to the border of the Netherlands

As regards links with the Netherlands, the TGV will run at the speed of 160 kph on the present line Brussels-Antwerp, which will be modernised.

An underground north-south junction will be bored under Antwerp. Beyond Antwerp, a new line will be constructed. Its trajectory will be determined on the basis of a study made by Belgium and the Netherlands.

### From Brussels to the German border

TGVs will run towards Germany at 200 kph on the existing line, which will be extended to four tracks between Bruxelles-Nord and Louvain in order to allow a rapid flow of traffic for the national service.

The TGVs will then run at 300 kph on a new line constructed along the E40 motorway to Bierset, near Liège. This line will also be used for the national service. After having crossed the suburbs of Liège on the existing lines, the TGV will rejoin the E40 through a tunnel and run along it to reach Welkenraedt. Beyond that town, they will run to Aachen on upgraded lines. An alternative route through the Vesder valley is being studied.

**An unprecedented environment impact study** has been realised by independent experts prior to the definition of a route for the TGV and to the construction of the new transport infrastructure. An impressive number of solutions worked out in conjunction with local residents and the authorities concerned will be applied to preserve the quality of the environment in regions through which it runs and to reduce disruption to a minimum. The SNCB has created a special budget (the 'Fonds TGV') which will be devoted to environmental projects and local planning works. In total, the costs involved within the framework of the TGV Fund represent about 15% of the costs required for the construction of new lines.

## High-speed trains on the Belgian tracks

### The 'Eurostar' TGV

The Eurostar TGV is the result of a model co-operation between the French, British and Belgian railways. Its commercial career has begun in November 1994, which makes Eurostar the first high speed train to run in Belgium.

Eurostar ensures round trips between Brussels and London and between London and Paris through the Channel Tunnel.

It consists in 2 power cars and 18 coaches, has a length of about 400 metres and a seating capacity of up to 794 passengers (584 places in second class and 210 in first class coaches). Four of the thirty-eight trainsets ordered will belong to the SNCB.

### The 'Thalys' TGV

In 1997 the Thalys trainsets will be used for direct links between, on the one hand, Paris - Brussels - Antwerp - Amsterdam and, on the other hand, Paris - Brussels - Liège - Cologne. In the long term, they will have a frequency of one departure each hour and even every half hour during peak hours.

Each trainset will consist in 8 coaches with a power car at the front and one at the back, and will offer 377 seats (257 in second-class and 120 in first-class compartments). It will be possible to couple two trainsets together to provide a transport capacity of 754 passengers. The French, German, Dutch and Belgian railways have ordered a total of 17 Thalys trainsets. 7 of them will belong to the SNCB.

### The 'Réseau' TGV

The 'Réseau' TGV of the SNCF will ensure a large number of travels from our country to different regions of France. In the coming years and thanks to a line looping round Paris to the east, some TGVs will offer the opportunity to travel directly from Belgium to Brittany, the Alps or the Mediterranean regions without having to cross Paris. From 1996 onwards, some TGV will ensure a part of the Thalys traffic, namely on lines such as Paris - Brussels - Liège or Amsterdam.

During the first stage, those TGVs will run on a new line to Antoing, from where they will pursue the voyage on existing tracks.

### The InterCityExpress (ICE)

At a later stage, the ICE of the German railways will probably run in Belgium. By the year 2000, the international model of this new type of high-speed train should ensure daily round trips between Cologne, Liège and Brussels. Unlike the other TGVs, it has a varying number of coaches. It can convey up to 760 passengers.

## **15,5 million passengers to be expected**

In France, where high-speed has become an everyday reality, the enthusiasm of customers for the TGV has exceeded the rosiest expectations: indeed, 325 million passengers have been using it since 1981. That is the reason why Belgium hopes that the commissioning of the TGV will give rise to a tremendous increase in its international services. High-speed trains are expected to convey about 15.5 million passengers annually by the year 2000 instead of the 6 million currently registered on the international lines concerned.

## **State-of-the-art service**

On board a high speed train, the customer benefits from the highest level of comfort, in first as in second-class compartments. The high-speed trains is equipped with state-of-the-art air conditioning systems and suspensions. A number of customer services such as a bar-leisure, a newsstand, a buffet-bar and phone boxes are available on board to make the journey as enjoyable as possible. Each passenger is guaranteed to have a seat through the enforcement of the principle of compulsory reservation, as it is also the case in France. Eurostar opens for reservation 60 days in advance and the reservation list closes a few minutes before the departure of the train.

## The high-speed stations

To cope with the anticipated increase in traffic, the SNCB has decided to modernise the stations which will be served by the TGV.

The station of **Bruxelles-Midi**, which incorporates the TGV & Eurostar terminal into the existing facilities, is being completely renovated. After its thorough restyling, it will be possible to welcome the passengers from the national and from the international service under the best conditions. The TGV facilities in Bruxelles-Midi include six tracks.

If demand continues to increase in the long run, a second high speed terminal could be constructed in the **northern part of Brussels**.

The station of **Antwerp**, currently a dead-end, will see its capacity doubled through the upgrading of tracks on three different levels. The lower level will be used for TGVs and conventional trains to the Netherlands. These tracks will run through a tunnel built under the city.

In **Liège**, the Guillemins station will be modernised, extended, redecorated and made more accessible.

## A restyled national train-service

The TGV will not only transform the international service from Brussels, Antwerp and Liège. These three towns will provide quality connections aimed at time-savings on the whole national network.

Bruxelles-Midi, which will be a connecting station for Thalys and Eurostar trainsets, will also play a key role in the coordination of TGVs with trains of the national service and trains of the conventional international service. Bruxelles-Nord, Antwerp, Liège and even Lille - for inhabitants from Hainaut and Flanders - will function as connecting stations between the high-speed network and the adapted interurban services. In this view, the SNCB will modify the timetable of the IC/IR trains to ensure good connections with the high-speed network.



## A long term investment

In the last 30 years, considerable investments have been made to construct and develop new roads and airports while there has been no significant financial effort to modernize the railways. The TGV project seems to be a vital "updating".

The investments for the construction of a new high-speed infrastructure and the modernization of the national network are sizeable, all the more since the required works and the purchase of new rolling stock are the greatest undertaking the SNCB has ever carried out since the Second World War.

Besides the achievement of the high-speed lines and the upgrading of some route sections on the Belgian territory, the actual infrastructural investments include the costs resulting from the measures to be applied to preserve the environment. The financial plan also takes into account the purchase of the new rolling stock: 4 Eurostar and 7 Thalys trainsets.

In Belgium, the TGV project is mainly financed by means of loans undertaken by the SNCB. The remainder sum, that corresponds to the part of works aimed at improving the national network, is borne by the State. On the other hand, the European Union supports projects presenting an interest for Europe.

The achievement of the project, that weighs heavily on the financial situation of the SNCB, should have favorable effects in the long run.

**The TGV project is a vector for employment**, since the construction of new lines in Belgium provides 4,900 people with a job during ten years. The Belgian railway industry also participates to the design and construction of Thalys and Eurostar trainsets. It provides hundreds of jobs, as a large number of Belgian industries are and will be committed into the TGV project in Belgium.

## STAR 21

The SNCB attaches as much importance to the revaluation of its national network as to the achievement of the TGV project. That is the reason why it has drawn out the STAR 21 programme, which plans a modernisation of the national network over a period of thirty years to ensure a balanced and efficient coverage of the territory.

STAR 21 aims at:

### **Higher speeds**

The maximum speed will be raised on very busy routes.

### **An increased capacity**

The construction of additional tracks on certain lines leading towards Brussels will allow a reinforcement of the intercity service and an improvement of the links with peripheral areas.

### **Enhanced comfort and speed**

The SNCB intends to invest in a more comfortable and more efficient rolling stock.

### **Renovating stations**

Stations have to become more customer friendly, while their surroundings will be made more attractive.

**In 1994, Eurostar welcomed its first passengers and by the year 2000 or so, the project of a high-speed network in Belgium will be completely achieved.**

**Investments in the TGV project and in the STAR 21 programme allow the Belgian railways to contemplate the 21st century with optimism.**

**Fast and highly convenient journeys : that's the promise made by the SNCB to customers of today and tomorrow.**