

TEMPLATE

Output factsheet: Trainings

Version 1

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Summary description of the implemented training measure(s), explaining the specific goal(s) and target groups

Training of interoperable train driver (Austria-Italy):

Formal and practical training of five interoperable train drivers was finished within the project lifetime. The start of commercial operations had to be postponed due to Covid 19-restrictions and then executed in September 2020 on the corridor Kufstein - Brenner - Verona and Villach - Tauern/Tarvisio - Trieste (NAPA).

When training interoperable train drivers, the main focus is primarily on the infrastructure-related specialist knowledge for Austrian infrastructure manager ÖBB Infra AG. While the Italian rail vehicle-related specialist knowledge is largely accepted, the operational regulations for the Austrian rail infrastructure must be fully trained. The EU has issued RI 2007/59 / EG for the TEN network, in which the learning objectives and skills for train drivers are described. On the basis of this guideline, an expert examiner can derive the skills acquired abroad and determine the amount of training required.

The main features of training to become an interoperable train driver in Austria can be found in the following learning objectives. The overview is based on the training agenda of our supporting company LogServ (Training Center) in Austria:

- Determination of the speed limits based on the local conditions or the signaling
- Route-related timetable documents
- Block system and related regulations
- Detection of protective routes in the energy supply system
- Speed limits for non-passenger trains
- Topographical route profiles with regard to safe traction and energy-saving driving style

- Special brake controls on steep stretches
- Employee protection

The face-to-face lessons are accompanied by simulator exercises, exercises on model layouts and practical drives. The training of the trainees in the different types of locomotives was also part of the competence of Lokomotion.

Update at project closure (August 2020):

Since September there have been five active Italian interoperable train drivers on the NAPA route. This cooperation is accompanied by the participating of stakeholder Rail Traction Company.

Training of energy-efficiency:

A further aim of the training is to save energy consumption on train drives. Lokomotion drivers have to be educated to energy efficient driving of 3 countries (Germany, Austria and Northern Italy). In the project lifetime, another eleven trainees in railway operations began their training for energy efficient driving in the company's training center.

The learning content for energy-saving driving is as follows:

- Interplay between timetable, driving dynamics, route topography and vehicle technology and adapt behavior accordingly
- Understand the connection between competition and energy costs / climate protection
- Secure train journeys, carry them out according to plan and save energy
- Recognize need to communicate with others involved and actively communicate
- park vehicles in an energy-saving way

The practical part of the exercise takes place on the simulator. Driving is usually on a fictitious simulator route (timetable), which can show good savings opportunities between a tight and energy-saving driving style.

The training plan is as follows:

- Group training with 2-3 simulator drives each
- The first trip is used to get to know the simulator and the route.
- The second trip is based on the knowledge of the theoretical lesson and the knowledge of the first trip.
- At the end there is another trip in which the findings of the previous trips are compared with a reference trip.

The individual journeys are logged by the system and the corresponding energy consumption is calculated and graphically displayed. These values are then compared with one another.

- A coaching trip can take place on a real train with a certain time lag. The trainee's individual energetic driving style is evaluated and recommendations for action are derived as required.

This content is included in the theoretical and practical part of the education program of Lokomotion's training center which is also part of the services against other interested groups like railway undertakings in Austria and Germany. This program especially the part of the digital test runs by a simulator is offering to Munich's vocational school in exchange.

NUTS region(s) where training(s) have been conducted (relevant NUTS level)

Germany, Austria (NAPA and Danube region), Northern Italy

Expected impact and benefits of the trainings for the concerned territories and target groups

As a consequence of appropriate training the following advantages are expected for the railway undertakings Lokomotion and stakeholder Rail Traction Company:

- The railway companies will benefit from efficient train driving education on short.
- The successful eco-driving program results in energy conscious driving behavior which can become a general habit for the companies. This also means that by time the majority of the personnel will feel it a natural behavior and thus propagate this among both companies and other European RU's in Central Europe.
- Upgrade of the job profile to gain more applicants for the job of driving locomotives.
- The energy conscious behavior of train drivers and the so achieved environment friendliness will clearly distinguish the railway sector in this market. Hence, the marketing effect (green transports) is also significant.
- The position as railway undertakings in the hard price competition against road transport will be better due to cost savings.

Update after the project closure (February 2021):

As part of a "Climate Protection 2020" action program of the German Federal Government, railway undertakings has the option of 50% funding for energy-saving investments. A prerequisite is a continuous, energy-saving driving style and an optimal use of locomotives in order to meet the target quota of energy efficiency. However, the funding guidelines make it more difficult for SMUs to become involved. Accordingly, it makes sense to implement and to extend the training content (e.g. ZMS/TMS; Pilot action 3.2.11) on energy-saving driving as far as possible in order to achieve the required efficiency rates for a funding claim.

This funding program has already been successfully used by other railway undertakings. In addition to extensive training, a bonus program was set up for the employees. The aim of this was to motivate the staff involved towards the common goal. Individual energy consumption reports served as the most important feedback instrument. This example serves as best practice, which stimulates Lokomotion to take similar projects.

Lokomotion is considering to invest of approx. 8,000,000 € (funding approx. 4,000,000 €) to be made by 2023.

Furthermore, as a private railway undertaking, Lokomotion intends also to train up to own eight interoperable train drivers (German/Austria-Italy) with a budget of approx. € 80,000 to be made in the coming years.

And in a parallel UIC International union of railways project called Translate4Rail T4R, Lokomotion is involved as a best practices partner for interoperable train driver. Technical applications for the automatic translation of communication between the train driver and infrastructure managers (IMs) are tested. The budget for this is € 248,000 (grant agreement no. 881779). The shared experiences from the projects could serve as guidelines for training programs in the future.

Sustainability of the training(s) and developed training material(s) and their transferability to other territories and stakeholders

The use of interoperable train drivers on the Austria - Italy border sections will gain in importance. Thus, the logical step follows to train German/Austrian-speaking train drivers for use on Italian infrastructure. This is especially true because the bottlenecks at the border stations and certain transport hubs have to be overcome. The completion of the Brenner Base Tunnel BBT (between Austria and Italy) can also help to establish interoperability as a leading operational operating program. The prerequisite is that national regulations and the technical parameters of the BBT do not restrict this by the infrastructure managers (IMs).

The expansion of the transnational infrastructure (Germany, Austria, Italy) for the purpose of the Brenner Base Tunnel BBT will have an impact on the energy balance of the modal split. This makes technical support for an energy-saving driving style all the more important. These include driver assistance systems and energy management systems which must be included in the respective training programs as well as in the operational management of all railway undertakings and IMs involved in the future.

Overall, it should be noted that the strengths of rail freight transport - as an energy-saving mode of transport - can only be achieved in the overall context with all parties involved (customers, terminals, IM's).

The training of Italian interoperable train drivers was implemented at an external training facility (LogServ Austria). The challenges here were overcoming the language barriers (effectively C1 level, appropriation of the special national regulations and the switch to the one-man operation (instead of two-man operation in Italy).

Overall, there is an increasing interest in this type of training, which also extends to the operational areas (at the same time Interreg CE program area) to the Czech Republic and Slovakia.

In the energy-saving driving training module, each training facility develops its own individual training program based on the generally applicable physical mechanisms. Lokomotion also integrates simulator exercises into the theoretical training modules, while other educational institutions do not have a simulator. To this end, Lokomotion supports the Munich vocational school in the conception and implementation of a simulator through mutual exchange of experiences on digital exercise routes. Lokomotion also has access to various types of locomotives, which they use in practical training in operations across the Alps.

Lessons learned from the development and implementation of training measures and added value of transnational cooperation

Implementation was successful.

Integration of all IMs. Uniform approaches to technical parameters for predictive, energy-saving driving. Consideration of model projects from other European regions (e.g. France TGV) and adaptation of best practices (funded project Translate4Rail T4R).

The requirement of a cross-border deployment of locomotive staff has meanwhile also been taken up by other actors. One example is the Translate 4 Rail T4R project. UIC International union of railways and RNE RailNetEurope are involved in this. The IM's RFI, ÖBB Infra and the RU's Merctitalia, DB Cargo, Lokomotion, Rail Traction Company also provide support. Outcome 9 stakeholders

Involvement of educational institutions for the new development of technical training portals. Continuation of training at Lokomotion's training center and stakeholder Rail Traction Company planned. Concept of the German-speaking train driver on Italian infrastructure is being examined.

With regard to the new construction of the Brenner Basis Tunnel BBT, it can be assumed that every partial IM would like to store its own technical parameters. However, in terms of a more efficient corridor between Germany, Austria and Italy, a uniform regime should be able to take place in terms of communication between the train drivers and IM. Here, political decision-makers should demand the European idea of a uniform language or cross acceptance of train driver qualifications.

Continuation of cooperation with e.g. Educational institutions. Lokomotion and the Munich University of Applied Sciences are developing an e-learning platform for the training of train drivers: The findings in the area of the D.T. 3.2.11 Eco solutions should be conveyed via e-learning. Building on this platform, all further training content could be conveyed. This would also help new trainees and experienced train drivers to refresh their knowledge.

References to relevant deliverables and web-links If applicable, pictures or images to be provided as annex

D.T 3.2.11 - PA for ECO-innovations on energy efficiency deployment: tests on transport operations

D.T 3.2.13 - Testing of training pathways for energy efficiency deployment in the rail sector - Lokomotion