Terminal upgrade triples capacity

Video supervision of road and rail movements and aerodynamically sensitive crane design are among the technical developments now being deployed at the Wolfurt intermodal terminal, which operator TSA plans to deploy at other sites in Austria. Reinhard Christeller reports.

Photo: ÖBB/Lukas Haemmerle

Terminal Services Austria's €61m programme has tripled capacity at the Wolfurt intermodal terminal in western Austria.

In Austria, rail enjoys a comparatively high market share of around 30% of all tonne-km transported. This figure is currently falling, which suggests that the government's declared target of 40% by 2025 will be difficult to achieve, especially given increasingly fierce competition from road transport at a time when the number of EU and non-EU lorries on Austrian roads is rising.

Incumbent state-owned operator Rail Cargo Austria handles 66·8% of all rail freight in the country, operating the whole range of train types: block trains, single wagonloads, unaccompanied combined transport and rolling motorway trains. New open access entrants, in contrast, rely almost exclusively on cost-efficient block trains. Unaccompanied intermodal traffic accounts for nearly 20% of RCA's business, or about 14% of all rail freight in Austria.

There are 15 terminals located in different regions of Austria which handle unaccompanied intermodal traffic, transferring containers, semi-trailers and swap bodies mainly between road and rail but also to and from cargo vessels on the River Danube. Rail Cargo Austria and its international sister companies operate nine further terminals handling intermodal traffic in Hungary, Romania, Slovakia and the Czech Republic.

Five of the Austrian terminals are operated by Terminal Services Austria, which works with all rail freight operators. TSA is part of Rail Cargo Austria's sister company ÖBB Infra and handles about one-third of all intermodal transport units within the country. In 2019, as a result of the prevailing economic climate, it handled 497 000 ITUs, down by 1·5% compared with 504 600 in 2018.

More than container handling

TSA's role extends well beyond the handling of containers and semi-trailers. It also maintains and repairs the Austria-specific InnoFreight containers and has specialist equipment to deal with semi-trailers that cannot be loaded by crane. Known as Innovative Semi-Trailer Handling Unit for Non-craneable Semi-trailers, this uses a support frame and truss to lift

> ‘We have upgraded and strongly rationalised the transhipment terminal and will continue to do so’
>
> *Robert Steger, Manager, Wolfurt CCT terminal*

Photo: Reinhard Christeller

a semi-trailer; this service is already available at TSA's Wels terminal.

TSA plans to increase its current handling capacity of 750 000 ITUs to 855 000 by expanding its Wien Süd terminal. As a neutral provider, with locations all over Austria, TSA offers services to customers that go beyond those offered by normal transhipment centres. These include container stuffing, commissioning and temporary storage of goods and container repairs.

Wolfurt spearheads innovation

The Wolfurt CCT transhipment terminal is situated in the westernmost part of Austria, in Vorarlberg near the Bodensee, close to the Swiss and German borders. It was built in 1989 and has recently been completely modernised to improve performance, tripling capacity to more than 190 000 ITUs per year. At a cost of €61m, the work was part-funded by the TEN-T programme, which contributed €4m. Thanks to its connections to the rail and road networks, the site is destined to become the region's main freight hub.

Most trains using the terminal are no more than 550 m long as they have to travel over the steeply graded Arlberg pass to other parts of Austria and beyond. Most traffic consists of containers, but a small number of semi-trailers is also handled.

There are four 600 m through tracks and two gantry cranes. Most transhipment is carried out between trains and lorries, but a few containers are transferred between long-distance and local freight trains so as to serve local customers by rail.

All trains that operate in the region use electric traction. As the loading tracks have no catenary, arriving trains normally coast through the 600 m length of the loading tracks. When trains are ready to depart, brake tests are carried out using stationary equipment without the need for a locomotive.

Most road customers are located within a 50 km radius of the terminal; Swiss customers represent about one-quarter of the lorries using the site, and a Swiss customs office is available on the premises.

Environmentally friendly

TSA has striven to improve its environmental credentials. At the Wolfurt terminal energy-efficient gantry cranes built by nearby Künz GmbH had to fulfil several novel requirements. To reduce wind resistance in a region where strong *föhn* winds occur frequently, a small structural cross-section was requested. This led to the adoption of an oval rather than a square design for the transverse beams and vertical supports, a feature which reduced the mass of the crane by 10 tonnes, meaning less energy consumption as well as lower dynamic forces between the wheels and the crane track, even with fewer wheels.

Similarly, great importance was attached to reducing noise levels during loading activities. A novel 'silent touch' control system to move the containers at low speed over the last few centimetres before they are deposited not only avoids upsetting noise-sensitive neighbours but also helps to protect the cargo.

Video gates

Further development of the terminal management system will bring enhanced customer benefits through more automation. Video gate facilities will be used to enable the digital registration of arriving and departing lorries and trains, shortening throughput times and offering a user-friendly customer portal by sharing information online with customers.

It will also facilitate management of stockpiled empty containers by minimising the number of operations to store and retrieve them. Video gates and a 'fast lane' will be implemented in Wolfurt by the end of this year, and later at other TSA terminals.

The portal cranes have been designed for fully automatic operation, but the presence of lorry drivers in the handling area means that the cranes are manually controlled. In the meantime, software to improve the planning of crane movements and their partial automation is under development. According to Wolfurt officials, dispatch errors are currently at the extremely low level of less than one in a thousand.

Four trains can be loaded and unloaded simultaneously. Waiting time for lorries in the terminal is currently just 30 min, and once the system has been optimised, containers from arriving trains should be ready for collection within 2 h to 3 h.

Other services provided at Wolfurt include Safety of Life at Sea container weight verification as required by the International Maritime Organization to allow ship loads to be balanced for better safety and to reduce energy consumption. This is an important factor as more than 20% of containers loaded on trains in Wolfurt are destined for North Sea ports. Certified container repair and cleaning services are also available.

GPS localisation of containers is currently being deployed in Wolfurt, and this is to be extended to other terminals once it is fully operational and certified. There are further plans to upgrade the existing container workshops to provide enhanced and 'food-grade' services so that containers can be used for transporting foodstuffs.

Table I. Technical data of Wolfurt terminal gantry cranes

Capacity	41 tonnes
Track span	27 m
Lifting height	15 m
Length of crane track	630 m
Working speeds:	
Hoist with full rated load	0 to 18 m/min
Hoist with partial load	0 to 36 m/min
Gantry drive	0 to 120 m/min
Main hoist power	240 kW

61 €m

Cost of modernising the Wolfurt CCT transhipment terminal

One of the two aerodynamically designed lightweight high-tech gantry cranes at TSA's Wolfurt CCT terminal.