

# TRM PILING SYSTEMS FACTSHEET

Noise protection



## Noise barriers for the Brenner railway line, Italy

- + 30,000 m ductile driven piles
- + Pile type TRM 118, wall thickness 7.5 with grouted pile shoe TRM 220
- + Foundation depth 10 m
- + Pile group foundation under individual foundations with a distance of 0.75 m
- + Noise reduction by 5 dB through the construction of these noise protection measures
- + Implementation in 2008-2009

**Fast. Simple. Safe.**

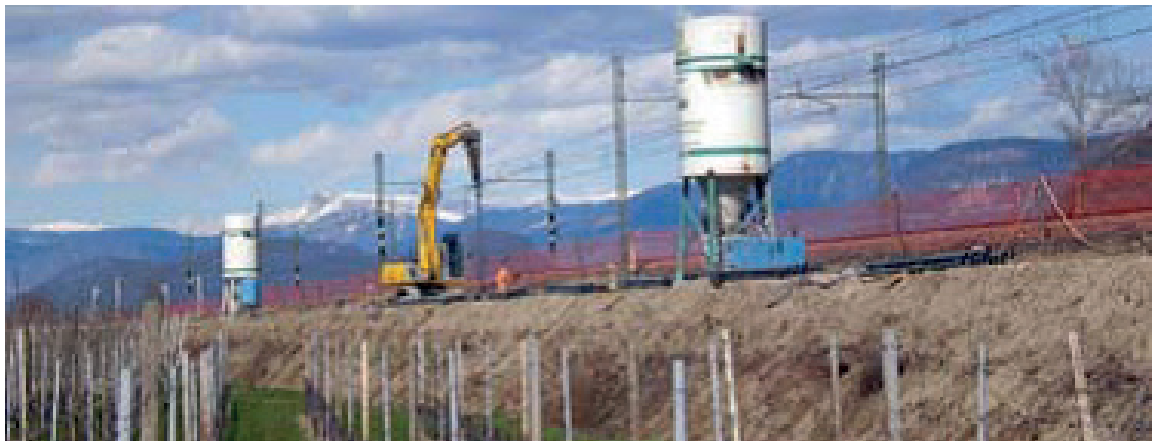
[www.trm.at](http://www.trm.at)

## Initial Situation

**Train noise has steadily increased** due to the continuous rise in traffic volume and is now **one of the biggest environmental problems in densely populated areas**. Noise measurements along the **Salurn-Brenner line** showed significant **limit violations, especially during the night hours**. The reason for this is that many freight trains run at night, which produces significantly more noise than passenger trains.

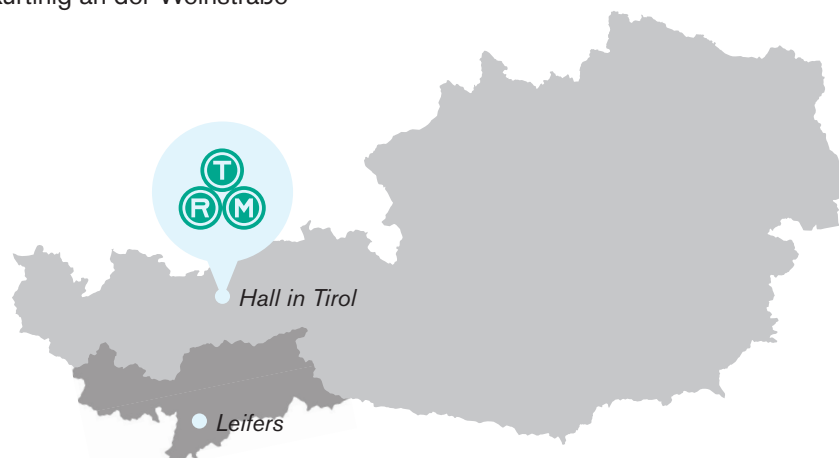
In 1998, a decree in Italy set the limit values for trains and prescribed the corresponding remediation plans.

The **3.0-metre-high walls** are an **essential building block for improving the quality of life** along the Brenner railway axis. They **shield about 160 houses** and with that more than **1,200 people from the railway noise**.



Foundation of piles for noise barriers in the village of Kurtinig an der Weinstrasse.

The **rehabilitation programme of the Province of South Tyrol** started in February 2008 in Laives. Within 1.5 years, **noise barriers with a total length of 4.6 km** were built in Kurtinig an der Weinstraße and Leifers.



# Factsheet **Noise protection**

## Deep foundation

A **pile group foundation** under single foundations with a 3.0 metre grid was preferred. The pile grids are alternately loaded in **compression and tension** (150 kN and 50 kN respectively) by the self-weight of the structure and wind loads.

The single foundations are connected to each other at the top by a retaining wall and form an **elongated structure** so that the vertically arranged piles absorb all forces without bending stress.

The pile distance of 0.75 metres ensures that bending **forces are absorbed directly** and that no significant interactions occur between the piles.

For this project, **grouted ductile iron piles with a length of 10 m** and a **pile shoe DN 220** were installed.



The pile grids with 3.0 metre distance consist of two grouted ductile iron piles which can be alternately loaded by wind loads in compression and tension.



Single foundations with pile distance of 0.75 m.



Retaining wall as substructure for the noise protection elements

**Do you have any questions?** Our experts will be happy to advise you.

