

## Alpine safety and aesthetics with perforated sheets

**Perforated sheet elements make the Limmern dam wall – at an altitude of 1860 metres above sea level – safe to walk on and also improve the view**

Neunkirchen, 23<sup>rd</sup> October 2023. In 1963, the Limmern arch dam, with a height of 146 metres, was completed in the Swiss canton of Glarus. In the crown area, the dam is 370 metres long and 9 metres wide. It dams the 92 million cubic metre Limmernsee lake, which forms the core of the power plant facility at Limmernsee. The operator is Kraftwerke Linth-Limmern AG (KLL). In the course of the renovation of the dam, 674 metres of special railings made of perforated sheets from SCHÄFER Perforated Metal were installed on the dam wall for permanent terrain stabilisation.

The original fall protection consisted of tubular railing that no longer met today's safety requirements for a place accessible to the public: Children could climb up or even climb through. In addition, the prescribed minimum height of 1.10 metres was not met. For this reason, REECH, the Swiss full-service provider for photovoltaic systems, storage systems and electric charging stations, was commissioned by KLL to plan and implement a standard-compliant fall protection system.

"When designing the fall protection, various design variants were evaluated, calculated and visualised. The perforated sheet variant was ultimately preferred to the alternative wire mesh solution because it meant that a more attractive appearance could be achieved at a manageable additional cost and, in addition, significantly less installation work was to be expected on-site," explains Tamás Szacs vay, Managing Partner at REECH AG, responsible for design and planning.

The existing posts and crossbars made of hot-dip galvanised steel could be refurbished on both the lake and valley sides in order to firmly anchor the individual perforated sheet elements to them. This solution variant has received the most support in advance as a sustainable and cost-effective measure.

First of all, KLL used outturn samples to check on-site whether the desired result was achieved, especially at points with different radii of curvature of the wall. As a result, the perforated sheet elements (perforation RV20-30) from SCHÄFER Perforated Metal could be produced, folded, packaged and cut to size with minor optimisations and the required manufacturing precision.

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The elements have a uniform height of 1150 millimetres when assembled. However, due to non-uniform post spacing, twelve different element lengths had to be considered in different quantities. Standard production was therefore out of the question.

"Due to the high alpine location and the requirements for corrosion protection, the manufactured individual elements are made of factory pre-anodised three millimetre thick aluminium sheet with a double layer thickness of 20 micrometres," says Eric Diehl, project manager in technical sales at SCHÄFER Perforated Metal.

The reinforced anodising process provides the surface of the aluminium with a protective oxide layer that protects it from corrosion. This increases the durability and service life of the aluminium perforated sheets, especially in environments with high humidity or aggressive chemicals.

"We have been searching for a long time for a suitable material that can permanently withstand the harsh conditions in winter during storms and rain. For this reason, we decided to use perforated sheets. As visitors tour the dam, the aesthetic appearance was also important to us. So far we have only received positive feedback," says Peter Schindler, Technical Assistant Mechanics at Kraftwerke Linth-Limmern AG.

Under the motto "Perforated sheets made to measure – individually and quickly", SCHÄFER Perforated Metal offers a wide range of high-quality perforated sheets for all industries and an extremely wide range of areas of application, with immediate availability. Customer proximity in the Swiss market and competent advice for perforated sheets is ensured thanks to the long-standing distribution partner TECmetall GmbH in Würenlos.

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## Images and captions:

1. Image: Limmern\_Bild-1\_(c)\_Schaefer-Werke-GmbH.jpg

Caption: Sea-side fall protection with durable perforated sheets at the Limmern dam from SCHÄFER Perforated Metal.

2. Image: Limmern\_Bild-2\_(c)\_Schaefer-Werke-GmbH.jpg

Caption: Fall protection on the valley side with virtually maintenance-free perforated sheets on the Limmern dam wall from SCHÄFER Perforated Metal.

3. Image: Limmern\_Bild-3\_(c)\_Schaefer-Werke-GmbH.jpg

Caption: Perforated sheets hold up permanently even under harsh conditions in winter storms and rain.

## About SCHÄFER Perforated Metal ([www.schaefer-lochbleche.de/en/](http://www.schaefer-lochbleche.de/en/)):

Under the motto "Perforated sheets made to measure – individually and quickly", SCHÄFER Perforated Metal offers a wide range of high-quality perforated sheets for all industries and areas of application, with immediate availability. With high-precision tools, the company can fulfil almost all of the customer's wishes with regard to material, hole pattern, dimensions, processing and delivery. SCHÄFER Perforated Metal is part of the internationally successful SCHÄFER WERKE.

The family-run SCHÄFER WERKE Group, whose headquarters are in Neunkirchen in the Siegerland region, is active worldwide with diversified business units: EMW Steel Service Centre, perforated sheets, container systems and industrial containers, infrastructure for data centres and equipment for offices and workshops. These business units work on the common basis of high-quality steel sheeting, the processing of which is one of the company's traditional core competencies.

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