

More compact and improved: ETA-20/0028 for the XC1 expansion joint

Years of development work for the benefit of road traffic.

Munich. Innovation is quite big a word; however, the improvements are often in many small details. The MAURER XC1 expansion joint for road bridges sets a good example. Six improvements are the result of years of development, and the reward is the European Technical Assessment ETA-20/0028.

“Yes, you do need some stamina for obtaining a European Technical Assessment,” tells Dr.-Ing. Christiane Butz from the MAURER development department with a laugh. “However, when the ETA has been issued and you see the installed components in the bridges, it was worth the effort.” There is a whole range of installation examples for the innovative MAURER Expansion Joints in bridges: the Irbich viaduct (Clervaux, Luxembourg), bridges in Oosterhout and Ooijen-Wanssum (both Netherlands), the cable-stayed bridge at the A4 in Vienna, the Liesingau bridge at the A9 near Mautern (Styria), or the B. Thana Bridge in the Province of Sayaboury (Laos). This ETA serves as a documentation of the performance data, and the XC1 with its performance characteristics as indicated in the ETA is approved in the entire EU without further testing.

Improvements are in the details

The XC1 is a single-seal expansion joint for road bridges. Expansion joints are installed at the bridge ends to compensate for relative movements between bridge deck and abutment. They ensure that traffic can safely run over the structural gap at any time. The new expansion joint is capable of compensating bridge movements of up to 100mm and features low noise emission. In comparison to its proven predecessor XL1, it offers a longer service life of 50 years – at higher possible load impacts. The following details were optimized:

1. The XC1 is significantly more compact and thus more lightweight: it features half the weight of the XL1, which increases economic efficiency by 20% and enables faster installation.
2. The low-noise overhead M-Plates are forgings and thus considerably more robust and more durable at high dynamic loads.
3. The edge sealing profiles were optimized in shape to make them more durable and more robust.



XC1, lifted into position but not yet installed, in Ooijen-Wanssum in the southeast of the Netherlands.

Photo: MAURER



XC1 expansion joint embedded in concrete in Oosterhout in the south of the Netherlands. Visible at the upper side: the M-Plates.

Photo: MAURER

Press Contact

MAURER SE

Judith Klein

Head of Marketing & Communication

Frankfurter Ring 193, 80807 Munich

Telephone +49.89.323 94-159

Fax +49.89.323 94-306

j.klein@maurer.eu, www.maurer.eu

4. The M-Plates are bolted with pretension onto the edge sealing profile in such a manner that a clearly defined and thus improved force application is achieved. Professor Dr.-Ing. Natalie Stranghöner from Duisburg-Essen University and Stranghöner Ingenieure GmbH examined the bolting process. Now the reliability of the bolt connection is also proven with high dynamic traffic loads over the entire service life.
5. Due to the new bolting, exchanging the M-Plates is facilitated in case of unpredictable damages.
6. In addition, the profile was equipped with an impact protection to prevent damages caused by snowplows.

The XC1 is the first single-seal expansion joint with noise reduction for which a dynamic load increase by momentum and swing-back has been taken into consideration for the ETA. Since fall 2020, it has been mandatory for all single-seal expansion joints with noise reduction to meet this significantly more stringent requirement for obtaining an ETA. Therefore, MAURER conducted this assessment procedure foresightedly since the entire process took about five years.

The mere development time was about two years, followed by the ETA process: application, proof of performance characteristics, issuance of the ETA and first inspection of manufacture by a notified authority, in this case MPA Karlsruhe. Now the product is entitled to bear the CE marking.

Text: 3,599 characters



The new XC1, completely installed.

Photo: MAURER



Photo: MAURER

Press Contact

MAURER SE

Judith Klein

Head of Marketing & Communication

Frankfurter Ring 193, 80807 Munich

Telephone +49.89.323 94-159

Fax +49.89.323 94-306

j.klein@maurer.eu, www.maurer.eu

Quick facts about MAURER SE

The MAURER Group is a leading specialist in mechanical engineering and steel construction with over 1,000 employees worldwide. The company is market leader in the area of structural protection systems (bridge bearings, roadway expansion joints, seismic devices, tuned mass dampers, and monitoring systems). It also develops and produces vibration isolation of structures and machines, roller coasters and observation wheels as well as special structures in steel construction.

MAURER participates in many spectacular large-scale projects worldwide, like, for example, the world's biggest bridge bearings in Wazirabad, earthquake-resistant expansion joints for the Bosphorus bridges, tuned mass dampers in the Baku and Socar Tower, or uplift bearings for the Zenit Arena in St. Petersburg. Complete structural isolations range from the Acropolis Museum in Athens to the new major airport in Mexico. Spectacular amusement rides include, for example, umadum – the Munich observation wheel, the Rip Ride Rockit Roller Coaster in the Universal Studios Orlando, or the worldwide first duelling roller coaster at the Mirabilandia Park in Ravenna.

Press Contact**MAURER SE****Judith Klein**

Head of Marketing & Communication
Frankfurter Ring 193, 80807 Munich
Telephone + 49.89.323 94-159
Fax + 49.89.323 94-306
j.klein@maurer.eu, www.maurer.eu