Project Info

Ijssel Crossing, Kampen / Netherlands

Cable-stayed bridge

MAURER Adaptive Cable Damper (ACD)

Figures and Facts

Location:	N 50, Zwolle – Emmeloord, Kampen / Overijssel, NL
Owner:	Rijkswaterstaat
Contractor:	Hegeman Nijverdal, Strukton Betonbouw, Hollandia
Design:	Hans v. Heeswijk architecten Cable stayed bridge
Consultant:	Oranjewoud Infra
Total investment costs:	25 million Euros
Utilisation:	National Road N 50
Total Bridge Length:	420 m
Main span:	150 m
Width of superstructure:	13 m
Pylon height:	95 m
Cables:	DSI Dyna grip, 66,55 kg/m, length = 68–163m

Involvement of Maurer Söhne

Design, manufacture and installation of an **adaptive cable damper Maurer ACD** with a reponse force range of 1 to 40 kN.

This semi-active damping device allows an exact adaptation of the damping force to the really occurring oscillations of the excited cables.

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Since 1876

Involvement of Maurer Söhne

The small self-damping capacity of stay-cables allows a relatively quick excitement of the same by traffic loads, wind or combined effects of wind and rain. Conventional dampers allow a manual on-site fine-adjustment of the damping characteristics to the existing cable behaviour. Modifications at the structure as well as non-considered effects can be balanced that way. However, in case the stay-cable oscillates in another frequency band (e.g. due to temperature changes), the damper cannot perform its optimal damping – unless it is fine-tuned again. The MAURER Adaptive Cable Damper contains an electronic control mechanism which automatically adapts the dampers response force to the occurring cable frequency. The required wattage for the influence of the magneto-rheologic damping fluid is in the range of 0,5 to 3,5 watts and can be provided e.g. by a local solar panel.

Fig. 1, 2: Solar panel power supply, MAURER ACD

At the stay-cable bridge Ijssel / Kampen, the longest stay-cable has a length of 163,74 m and a diameter of 130 mm. Apart from the adaptation of the dampers response force to the required values by means of installed accelerometers and an integrated micro-controller, the dampers' output-force can be recorded and that way employed for a permanent stay-cable-monitoring including the control of the cable forces and –vibrations.

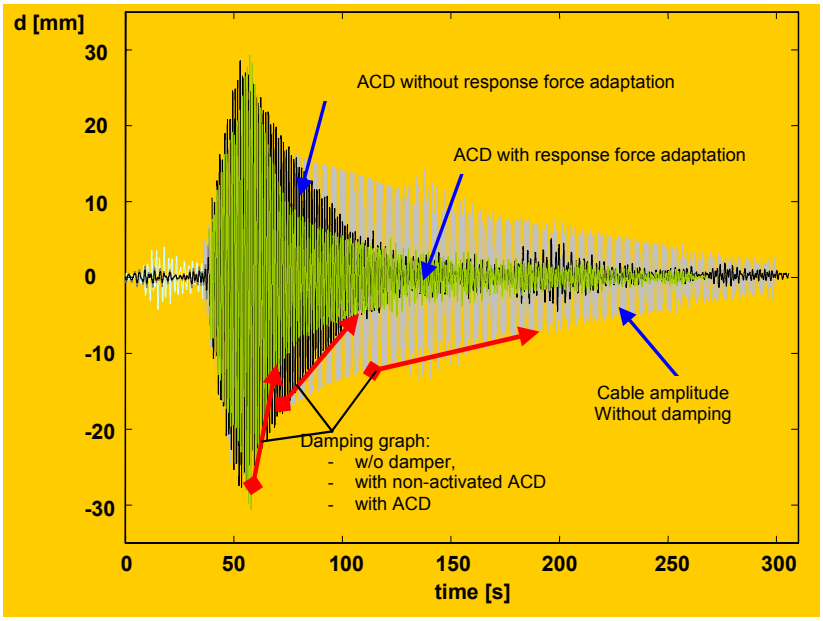

Fig. 3: Cable damping graph at different operating modes of the ACD