TECHNISCHE UNIVERSITÄT WIEN

technology offer

Deep sea bridge with large span

Pontoon bridge | under-water tensioning cables | axial stiffness | stability against side drift

Pontoon bridges offer a solution where deep water or poor subsoil are impeding the construction of bridge piers. The challenge in the construction of a pontoon bridge with a large span is to stabilize it against wind and waves. The stabilizing tension member system of Vienna University of Technology consists in parabolic guided and interconnected cables that are stabilizing the bridge from side drift. The tensioning cables are arranged under water to permit ships to pass under the bridge. Floating bodies are keeping the tensioning cables in position. The prevention from sagging improves axial stiffness of the tensioning cable system.

Background

It is known to stabilize a pontoon bridge by under-water parabolic guided ropes anchored on the shores. Stability is not given for bridges with large spans as long ropes have a high net weight and are sagging, causing detrimental high tensile forces at the anchor points and impairing axial stiffness.

Technology

The new stability system for pontoon bridges comprises:

- A system of parabolic guided and interconnected tensioning cables down to 20 m under water level
- Floating bodies preventing the cables from sagging or lifting

Advantages

- Functional deep sea pontoon bridges with large span
- High axial stiffness and stability against side drift
- Reduced tensile forces in the tensioning cables allow smaller dimensions and cost reduction
- Reduced tensile forces at anchor points
- Reduced construction costs of anchor points

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Fig. 1

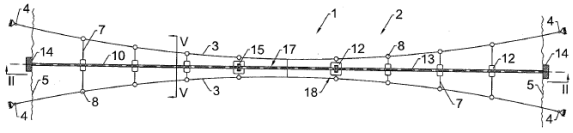


Fig. 2

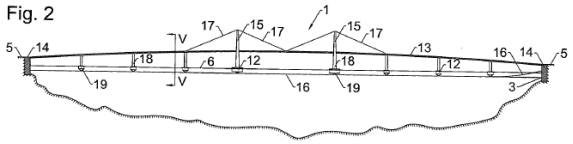
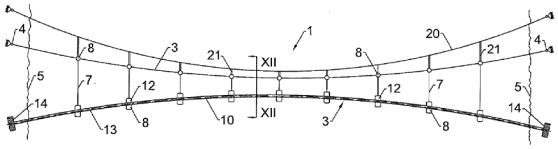


Fig. 3



Figs.: deep sea pontoon bridge design

State of development

Proof of concept

IPR

Patent pending

Options

License agreement, sale, R&D cooperation

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