

## How to design timber bridges



### Univ. Prof. Dipl. Ing. Dipl. Ing. Michael Flach

Timber Engineer and designer of more than 20 built timber bridges in France and Austria.

1978 diploma of civil engineering, University of Munich, D

1979 post diploma CHEBAP, Paris, France

1989-1998 manager at ICS-BOIS, leading timber design office, F

lecturer at the EPFL/CH, assistant professor at the school of architecture in Lyon and Grenoble, France

1997 invited professor at UBC/Canada

1998-2002 Manager of Arborescence, France

Since 2002 Univ. Prof. at the University of Innsbruck, Austria

### Abstract

Bridges are extreme constructions and therefore they have to be designed methodically. The methodical approach is based on boundary conditions and basic requirements in order to study the technical and financial feasibility. The choice of the structural system depends on a balanced combination of principal and secondary systems. Among a large number of solutions, a selection of approved, but also innovative systems will be presented to demonstrate modern design of timber bridges.

To ensure reliable and long-living timber bridges, the following basic criteria have to be observed:

- efficient protection of the structure against weather
- adequate connection design
- avoidance of bending moments for wide spanning elements
- Avoidance of tension perpendicular to fibre

Special attention is paid to certain types of construction which are not reliable and therefore represent unacceptable risks for timber constructions.