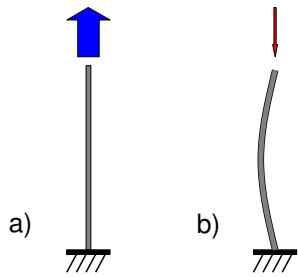


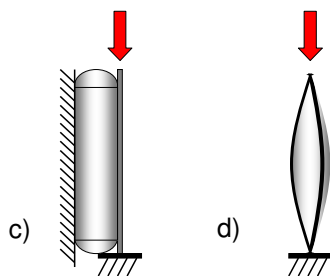
# Tensairity® - technology

## Tension and compression:



a) Slender structures can withstand much higher loads in tension than in compression.

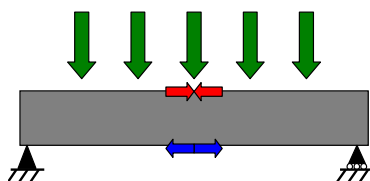
b) When loaded in compression, slender structures usually undergo buckling at a fraction of their tensile strength.



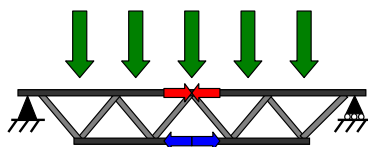
c) By stabilizing the compression bearing element with an attached low pressure inflated tube, the stiffness and the load bearing capacity can be substantially increased without adding much weight. The air tube acts as an elastic foundation for the compression element.

d) Combining at least three compression struts with an air tube results in a Tensairity® column.

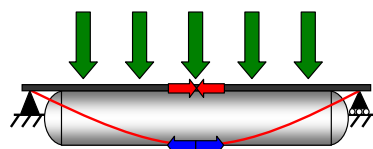
## Bending:



For a beam subjected to bending load, the top of the beam is in compression while the bottom is tensioned.



In order to reduce the weight of a beam, compression and tension are separated by diagonal struts in a truss structure.



By replacing the diagonal struts of the truss with an inflated tube a Tensairity® beam is obtained. The inflated tube stabilizes the compression element against buckling and enables the load transfer between compression element and tension element in the Tensairity® beam.

Tensairity® is a new structural concept with minimal weight, compact transport volume, fast set up and high load bearing capacity.

## Contact

[www.empa.ch/css](http://www.empa.ch/css)

[rolf.luchsinger@empa.ch](mailto:rolf.luchsinger@empa.ch)

+41 58 765 40 90

EMPA, Center for Synergetic Structures  
Überlandstrasse 129, CH-8600 Dübendorf



Materials Science & Technology



Center for  
Synergetic Structures