

## + BIOMIMETIC

# CABLE ENTRY SYSTEMS

**One research project of the Plant Biomechanics Group Freiburg involves the development of novel cable entry systems which are based on the functional morphology of plants and animals.**

A frequently arising problem with conventional cable entry systems is that the cable and the connector plug cannot be fed through together, because the systems have too small an opening to closed ratio. The bionic cable entry systems make it possible to feed the cable through together with the plugs and then close them up dust-proof. This was made possible by research on a very wide range of organisms. Indeed the solution was finally found in worms and sea urchins as well as in flowers and leaves.

For the first cable entry system the feet of sea urchins were the inspiration. The feet are surrounded by collagenous fibres whose angle is decisive for the extension or contraction of the feet. This structure was translated onto bionic cable entry system (fig. 1A). With the aid of specially networked fibre tubes (fig. 1B) a high opening to closed ratio and a high tensile strength can be achieved, as well as good sealing against dust and water after coating.

A second model of the bionic cable guides has two natural prototypes: flowers and the trapping leaves of the Venus flytrap. The different closing principles were translated and led to the development of cable entry systems with a bistable clap-and-fold mechanism.

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### Mehr Informationen im Internet

[www.kompetenznetz-biomimetik.de](http://www.kompetenznetz-biomimetik.de)  
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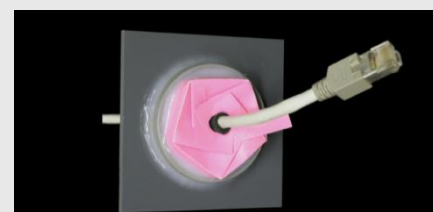
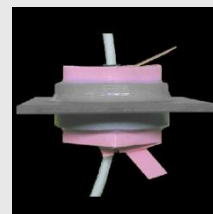
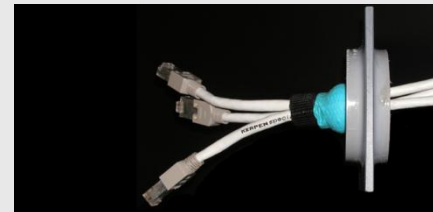
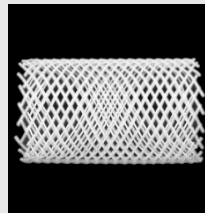


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