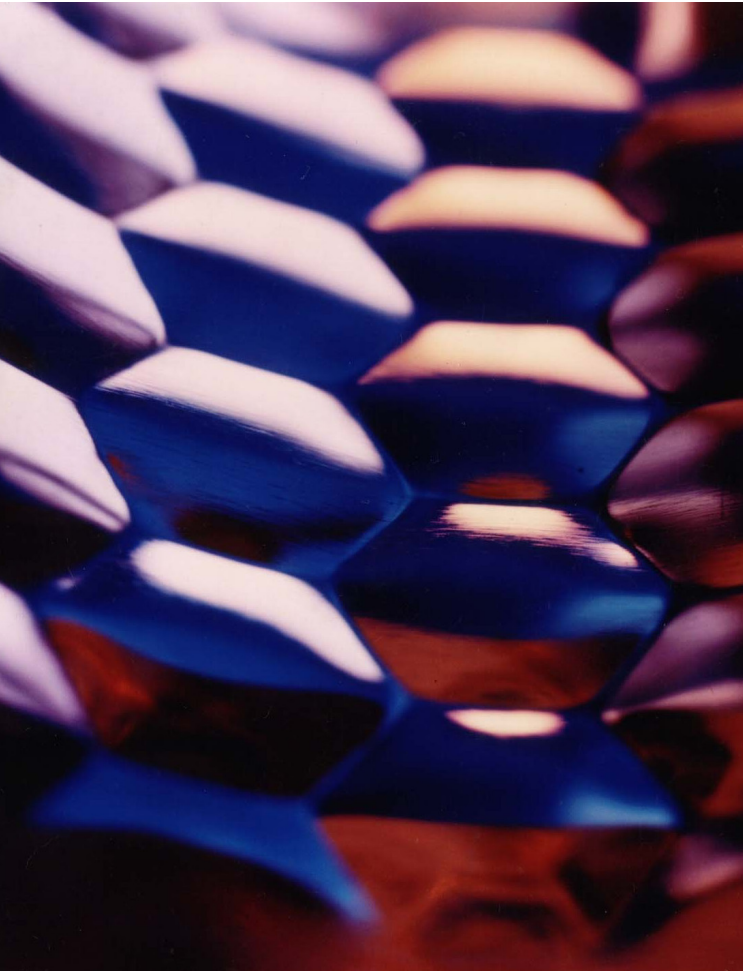


Vault Structures PowerStruct®

Rigid, bionic structures

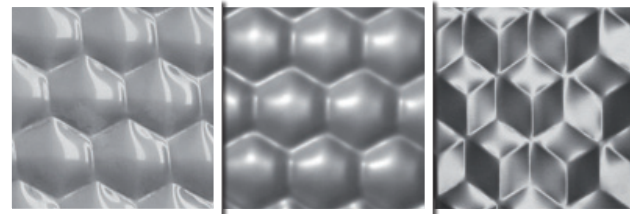


Dr. Mirtsch
Wölbstrukturierung GmbH

PowerStruct®: Bionic Vault Structures

Dr. Mirtsch Wölbstrukturierung GmbH develops and produces lightweight structures of thin-walled materials for innovative applications. The patented vault-structuring technique is based on an unique principle of bionic self-organization and is therefore particularly gentle to materials and surfaces. By using PowerStruct®, components can be built up to 40% lighter compared to unstructured materials. A pre-finished surface quality remains virtually unchanged during the forming process.

PowerStruct® offers several synergies for innovative solutions to improve the competitiveness of end-products while sustaining resources. Depending on the application and requirements, different variations are available. Therefore, the family of PowerStruct® has been developed:

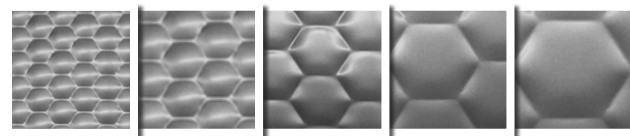


VaultHex

WaveHex®

MiCubix®

PowerStruct® can be manufactured as sheet or coil material, while the structure sizes and depths are adjustable. Due to the gentle forming process, a large variety of materials such as sheet metals of all kinds, paper and cardboard, and plastics can be enhanced with PowerStruct®. The maximum thicknesses of steel is approximate 1.0 mm and 1.2 mm for aluminium.



Structure sizes (17mm up to 50mm)

Benefits of PowerStruct®

The vault-structuring process is based on a natural, self-organized and therefore uniquely gentle forming process. With PowerStruct® the following beneficial, synergetic properties can be achieved:

Reduced weight

The increased rigidity offers up to 40% material and weight- savings depending on the stress situation.



Increased rigidity

Noise reduction

Disturbing droning (body noise) of vibrating components is highly reduced.

Full preservation of surface quality

During the gentle vault-structuring process pre-finished (e.g. painted) surfaces are completely preserved.



Refined surfaces

Thermal stability

With large temperature gradients (e.g. during welding or bright sunlight) thin materials tend to wrinkle. This undesirable wrinkling does not occur with PowerStruct® materials.

Virtually glare-free light reflection

PowerStruct® reflectors produce a glare-free light reflection which is based on the principle of light point resolution.

Better crash performance

PowerStruct® materials absorb impact energies more evenly than for example beaded materials.

Large secondary forming potential

PowerStruct® sheet metals and foils hold particularly high plastification reserves and are therefore particularly suitable for secondary forming processes (e.g. bending, pressing, etc.).

Innovative Products

Components with PowerStruct® are successfully applied in many areas.

Washing drum

The patented washing drum with honeycomb structures is an invention of Miele & Cie. KG and Dr. Mirtsch Wölbstrukturierung GmbH. It enables a fast and yet very gentle washing.



Picture: Miele

Automotive

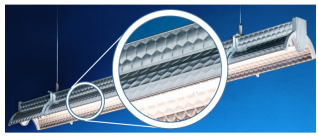
In the SLK model (Daimler), a PowerStruct® back panel is applied which saves material, reduces the noise-level and demands less construction space.



Picture: Daimler

Lighting

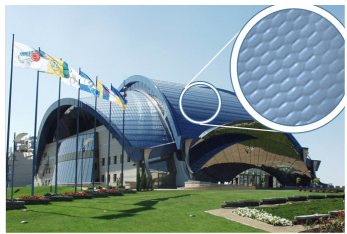
Lights of the series „Hexal“ of the company SiTECO have a PowerStruct® reflector which allows virtually glare-free light reflection with no additional housing due to the high rigidity.



Picture: SiTECO

Architecture

The sports palace in Odessa is equipped with a PowerStruct® roof which has been awarded with the “German material efficiency prize”.

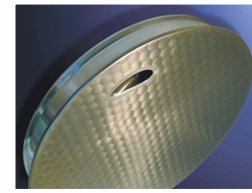


Picture: Böhme Haustechnik

Innovative Products

Process Engineering

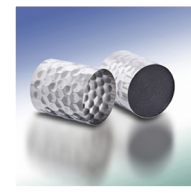
The vault-structured surface of CLEANcoil from Rieter results in reduction of friction factor for man-made fibers and greater pick up of the fiber impurities.



Picture: Rieter

Exhaust Treatment

Light-weight catalyst from Emitec with vault structures results in a great reduction of shell thickness and an improved thermal stability.



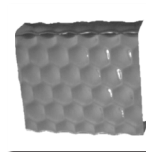
Picture: Emitec

Patented Secondary Forming

The integration of PowerStruct® into existing process chains usually requires no new machinery but special processing technologies and know-how. Since the gentle vault-structuring process causes only little strain hardening of the material, large reserves for secondary forming process steps are still available. A structure-conform processing technique ensures that the beneficial properties of the vault structures are obtained or even improved.



Joinable fine structures



Structure-conform bending

Your Contact

One of our strengths is the development of innovative solutions and the customer-specific industrial production of vault-structured semi-finished products and components made from various materials. If you have questions or consider a cooperation, please do not hesitate to contact us.

Awards and certification



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