

Internal Stress from Organic Solvents

Some organic solvents (like Methanol) cause the phenolic resin used for impregnating the graphite to swell. The increased volume of the swollen resin results in „Internal Stress“ which can potentially make graphite components crack.

Further thermal or mechanical stress increases the risk of cracking. The characteristics of damage due to swelling are wide cracks with a noticeable smell of the organic solvent. Usually cracking wanes as the solvents volatilize.

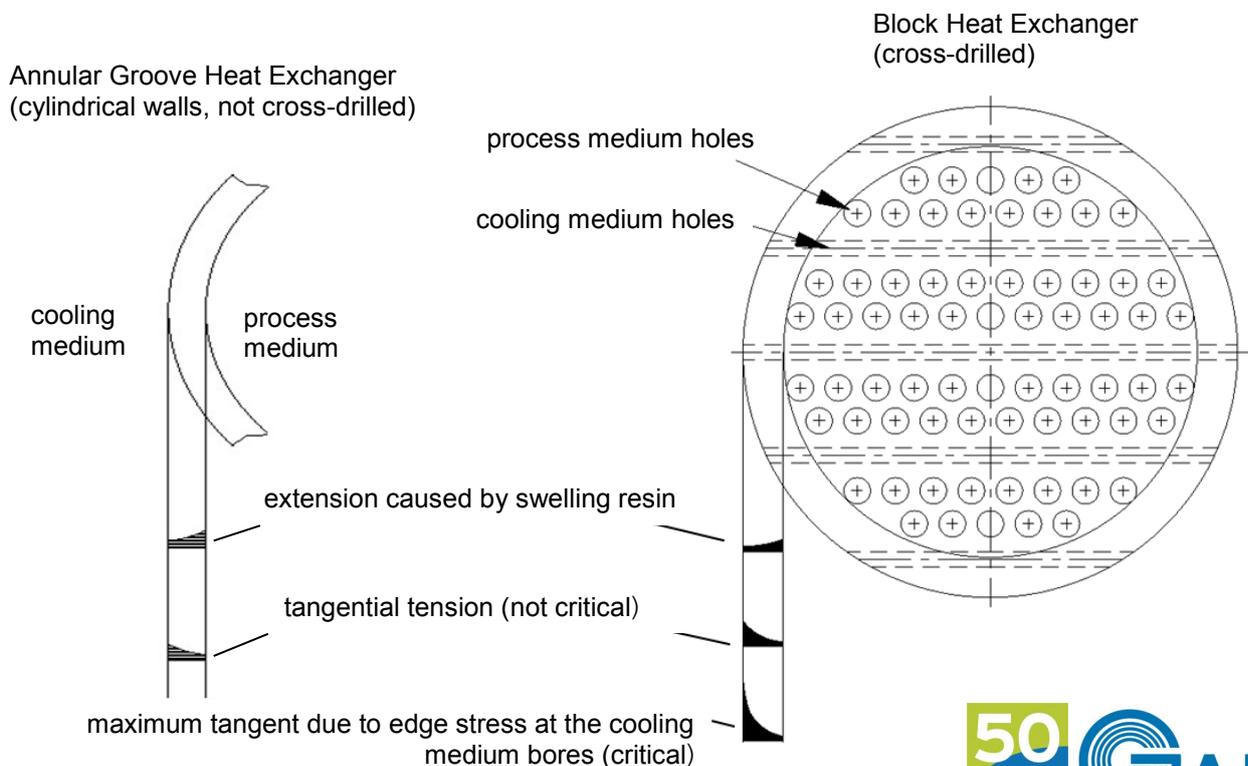
GAB Neumann avoid this risk through proper equipment design and by creating units with the adapted grade of graphite.

Material. The resin content decreases across the GAB GPX1 GPX2 range. Less resin means less swelling stress.

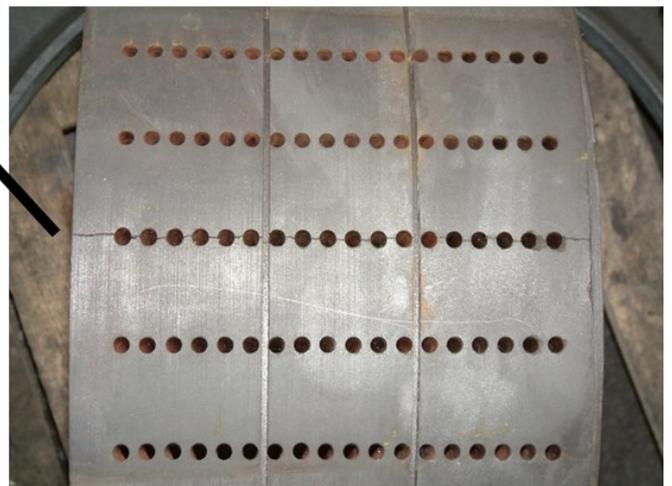
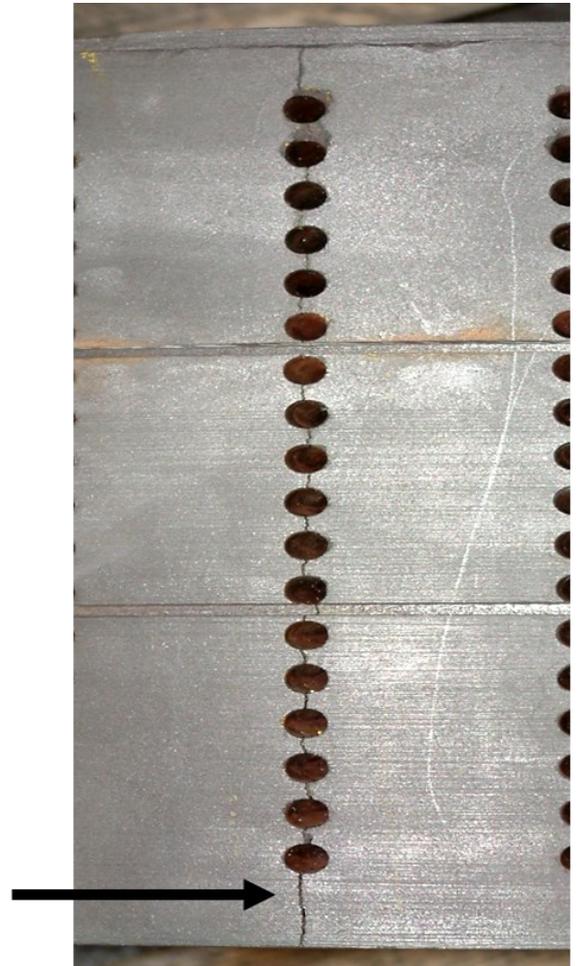
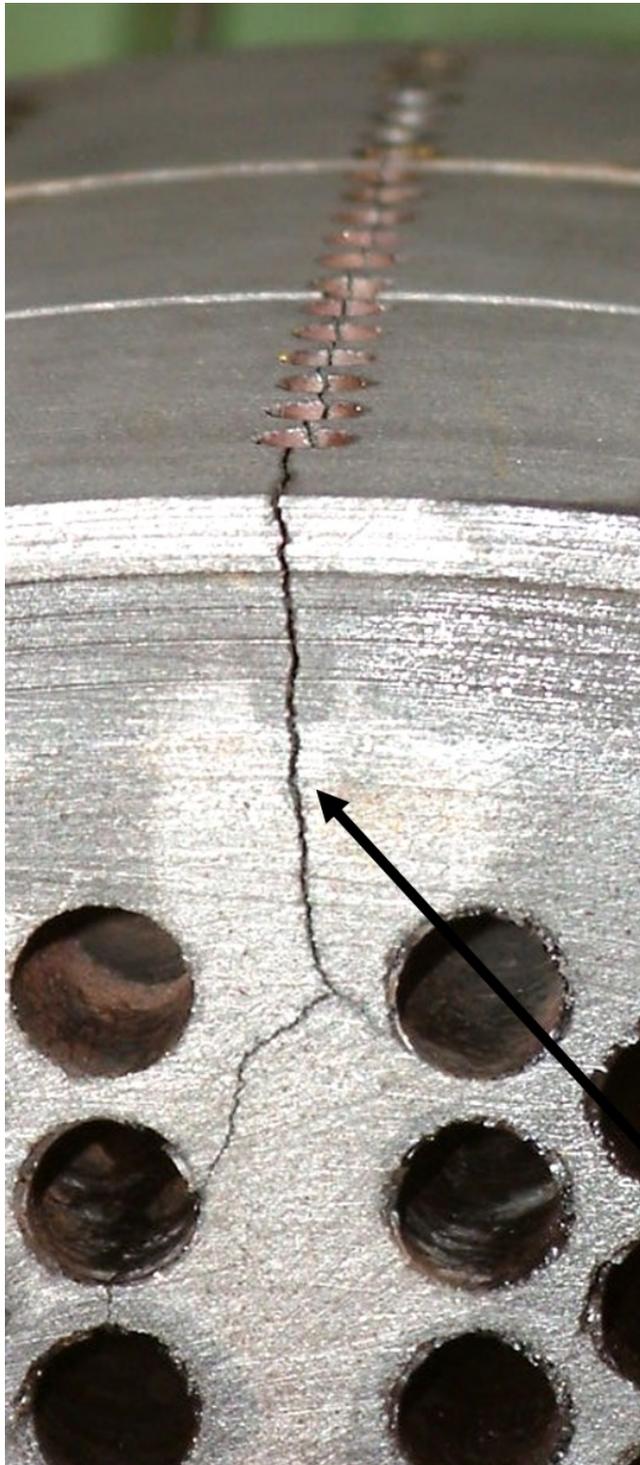
Design: GAB Neumann annular groove units are based on simple shapes with regular wall thickness between the process and service side grooves. Swelling stress tendencies are reduced.

Wherever there is a risk of stress due to resin swelling, GAB Neumann recommends annular groove condensers. The design ensures greater cooling efficiency, thereby reducing thermal stress. In annular groove units, resin causes no swelling damage. If customers prefer the block design, GAB Neumann recommends the GAB GPX2 (low resin content, higher price).

Condenser damage due to swelling resin can be avoided by the appropriate choice of design and materials.



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Typical crack - block condensers