LESSMANN®
THE GERMAN BRUSH COMPANY

DBGM
protected utility model

A **European patent application** has been published for the innovative strand pack. In addition, numerous **utility models** have been granted.

Supported by:

Federal Ministry for Economic Affairs and Climate Action

on the basis of a decision by the German Bundestag

A joint project initiated by Lessmann GmbH and GEC in cooperation with the Technical University of Lappeenranta (Finland).

Further information is available at lessmann.com/en/anwendung/packing-structures/

Lessmann GmbH

Lucas-Schultes-Str. 2
86732 Oettingen
Germany

Tel. +49 9082 707-0
www.lessmann.com
adern-packung@lessmann.com

QUALITY MADE IN GERMANY

LESSMANN®
THE GERMAN BRUSH COMPANY

gec
engineering | consulting

INNOVATIVE STRAND PACKS

as a packed bed technology for use in separation columns

en



QUALITY MADE IN GERMANY

INNOVATIVE
STRAND PACKS
as a packed bed technology for use in separation columns

LESSMANN®
THE GERMAN BRUSH COMPANY

Packing materials in separation columns have been on the market for over 100 years. They are used to maximise the surface area whilst minimising the pressure drop across the flowing media during the exchange of substance components between a gas phase and a liquid phase.
To date, various types of rings have typically been used; these are inexpensive to purchase but operate with low efficiency.
For more demanding applications, structured packing is available; however, this is costly and impractical to install.

New: Highly efficient, structured strand packs
Following several years of research programmes, trials and extensive development work carried out in close collaboration with technical universities, a genuine alternative has now been developed.



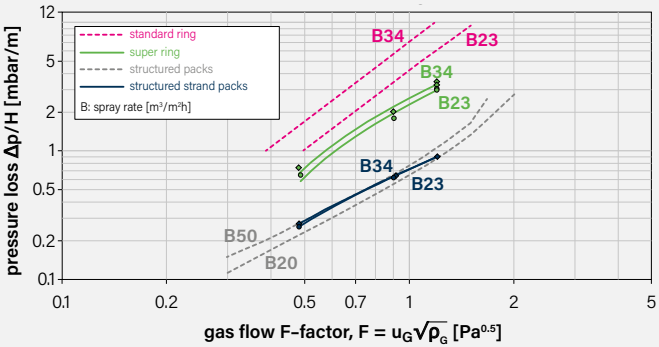
Simple standard ring | Efficient super ring | Highly efficient structured strand pack

Structured strand packs combine all the **advantages** of simple rings with those of complex structured packs:

- **Significantly lower pressure loss** compared to unstructured packs, comparable to structured packs
- **Lower cost**: only 60 % material usage compared to state of the art
- **Higher load** (spray and gas flow rate) possible
- **Easy to handle**: Through „cartridges" – solution easy to install and remove
- Very **homogeneous electrical heating** with low axial and radial temperature gradient
- At least comparable **phase boundary area**
- **Unrestricted scalability** in terms of geometric dimensions
- Further areas of application (**catalysis**) are possible

Pressure loss analysis

With the new structured strand packs, a significantly lower pressure drop was achieved across the entire operating range under investigation than with unstructured packing. The possibility of efficient electrical heating opens up further fields of application (catalysis).



Pressure drop at constant spray rate (B) as a function of gas flow rate (F) for various packing materials, each with a surface area of 360 m²/m³. Official manufacturer's figures were used for standard ring and structured packing. For Super-Ring and vein packing, the measured values from the experiments apply.



The structured strand packs represent a highly innovative and efficient advancement on everything currently available on the market. **Plant manufacturers** and **operators of chemical plants** stand to benefit significantly.
The range of potential applications extends far beyond separation columns: from **catalysis and methane pyrolysis** to process structures that can be heated directly by electricity, enabling the use of renewable electricity for process heat. Numerous other process engineering applications are possible.