version for print media

**Certified Safety for the Food Industry**

**Freudenberg develops sealing solution for first EHEDG-compliant tubular heat exchanger according to the latest guideline**

**Weinheim (Germany), January 25, 2023. The technical components used in the packaging industry are subject to strict standards that include country and industry-specific hygiene requirements such as the EHEDG (European Hygienic Engineering and Design Group) guidelines. The tubular heat exchanger from Tetra Pak that features a specially developed seal from Freudenberg Sealing Technologies was the first and only device on the market to receive EHEDG approval.**

The objective of the development cooperation between Freudenberg and
Tetra Pak was to develop a cost-effective, hygienic sealing solution that would connect the stainless steel components of the new tubular heat exchanger. Tubular heat exchangers are used in food industry process lines wherever liquid products with different viscosities and solid contents are to be heated to achieve a longer shelf life. To prevent product contamination, all components of the new tubular heat exchanger that come into contact with the product must meet demanding industry-specific requirements. Besides Hygienic Design Standards, these include statutory regulations such as FDA, EG (Reg.) 1935/2004 and 3-A® Sanitary Standards.

Before the new sealing solution for this special application was ready for series production, Freudenberg Sealing Technologies and Tetra Pak also had to overcome other challenges: The sealing material not only had to be resistant to CIP/SIP media (Cleaning in Place / Sterilization in Place), but also had to accommodate a broad temperature range with particularly high temperatures and at the same time be designed for a long service life.

**From modeling to prototyping to production readiness**

In search of an appropriate, cost-effective sealing solution, Tetra Pak turned to Freudenberg, who was able to convince them thanks to its extensive research, development and production capacities. In addition, Tetra Pak had already gained positive experience working with Freudenberg in many development partnerships in the area of homogenizers. Once all the requirements for the sealing solution had been defined, the Freudenberg Sealing Technologies team began with development work in close cooperation with Tetra Pak’s technical team.

Thanks to own FEM models, it was possible to determine the service life of the new seal in advance and optimize the design of the seal. CNC machining of prototypes with the Freudenberg Xpress® service eliminated the need for tool production to save time and costs. Challenges such as high temperatures, which proved to be very complex in the FEM analysis, were mastered by the teams working closely together.

**High-performance materials for food-compliant applications**

Choosing the right sealing materials was a key factor in this regard. The two materials used, 70 EPDM 291 and 75 Fluoroprene® XP 40, meet the requirements of the FDA, EG (Reg.) 1935/2004, NSF 51 and the 3-A® Sanitary Standards. In addition, they are optimized especially for cleaning in CIP/SIP processes. Both materials cover a wide range of temperatures: 70 EPDM 291 between -40 °C and +150 °C, 75 Fluoroprene® XP 40 between -15 °C and +200 °C.

The developers further optimized the design and performance of the new product until all requirements could be met. As a result, the tube modules comply with the latest EHEDG guidelines and is currently the only solution on the market to have received the respective approval. Tetra Pak is now having the newly developed sealing system produced in series, with four more dimensions planned.

“We are proud to be able to help make food production safer with our sealing solution that is based on our extensive development and materials expertise,” explains Mats Harrysson, Key Account Manager Global Process Industry at Freudenberg Sealing Technologies.

version for online media

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Technical components used in the packaging industry are subject to strict standards. These include country and industry-specific hygiene requirements such as the EHEDG (European Hygienic Engineering and Design Group) guidelines. The tubular heat exchanger from Tetra Pak that features a specially developed seal from Freudenberg Sealing Technologies was the first and only device on the market to receive EHEDG approval according to the latest guideline.

The challenge was to develop a cost-effective, hygienic sealing solution that would connect the stainless steel components of the new tubular heat exchanger. Tubular heat exchangers are used in process lines in the food industry wherever liquid products with different viscosities and solid contents are to be heated to improve shelf life. In order not to contaminate the product, all components of the new tubular heat exchanger that come into contact with the product must meet demanding industry-specific requirements. Besides Hygienic Design Standards, these include statutory regulations such as FDA, EG (Reg.) 1935/2004 and 3-A® Sanitary Standards.

Before the new sealing solution was ready for series production, the developers at Freudenberg Sealing Technologies and Tetra Pak had to overcome further challenges: The sealing material had to be not only resistant to CIP/SIP media (Cleaning in Place / Sterilization in Place), but also cover a broad range of temperatures, including extremely high temperatures and at the same time be designed for a long service life

**From modeling to prototyping to production readiness**

Convinced of the company’s research, development and production capabilities, Tetra Pak turned to Freudenberg to develop a cost-effective sealing solution that would meet these requirements.

Thanks to own FEM models, it was possible to determine the service life of the new seal in advance and optimize the design of the seal. CNC machining of prototypes with the Freudenberg Xpress® service eliminated the need for tool production to save time and costs. Challenges such as high temperatures, which proved to be very complex in the FEM analysis, were mastered by the teams working closely together.

**High-performance materials for food-compliant applications**

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The developers continued to optimize the design and performance of the new product until all requirements had been met, so that the tube modules comply with EHEDG guidelines and is currently the only device on the market to have received the respective approval according to the latest guideline.

“We are proud to be able to help make food production safer with our sealing solution, which is based on our extensive development and materials expertise,” explains Mats Harrysson, Key Account Manager Global Process Industry at Freudenberg Sealing Technologies.

Metadescription

Freudenberg Sealing Technologies develops sealing solution for Tetra Pak –only EHEDG approval for tubular heat exchangers | Freudenberg Sealing Technologies

Hashtags/Keywords

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***Image:*** *FST\_TetraPak\_2023\_ENG / ©Freudenberg Sealing Technologies 2023*

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**About Freudenberg Sealing Technologies**

Freudenberg Sealing Technologies is a longstanding technology expert and market leader for sophisticated and novel applications in sealing technology and electric mobility solutions worldwide. With its unique materials and technology expertise, the company is a proven supplier for demanding products and applications, as well as a development and service partner to customers in the automotive industries and in general industries. In 2021, Freudenberg Sealing Technologies generated sales of about 2.2 billion euros and employed approximately 13,500 people. More information at [www.fst.com](http://www.fst.com).

The company is part of the global Freudenberg Group which has four business areas: Seals and Vibration Control Technology, Nonwovens and Filtration, Household Products as well as Specialties and Others. In 2021 the Group generated sales of more than 10 billion euros and employed more than 50,000 associates in around 60 countries. More information is available at [www.freudenberg.com](http://www.freudenberg.com).

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