

TUM Certification
hereby declares that the product

**centrifugal pump type FP2, FP2+ and PHP, PHP2
with EPDM gaskets and mechanical seal Burgmann SHJ**

from

PACKO INOX NV, Belgium

has been evaluated for compliance with the Hygienic Equipment Design Criteria
of the EHEDG, Document No. 8, by:

TUM (Forschungszentrum für Brau- u. Lebensmittelqualität) at Weihenstephan, Germany
and meets the criteria of this document as demonstrated by:

Evaluation Report No. 141.1/22.08.2007

Signed J. Hofmann
Evaluation Officer

Date 12. March 2008

Signed [Signature]
Head of Department

Date 12. March 2008

Certificate No. 06/2008

TRK TUM FORSCHUNGSZENTRUM
WEIHENSTEPHAN
LEHRSTUHL FÜR MASCHINEN UND APPARATEKUNDE TECHNISCHE UNIVERSITÄT MÜNCHEN für Brau- und Lebensmittelqualität

85354 Freising-Weihenstephan, Germany
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Appendix 3

EHEDG CERTIFICATION - EQUIPMENT EVALUATION FORM
OFFICIAL ENGLISH VERSION
EQUIPMENT INTENDED FOR CLEANING WITH LIQUID, TYPE EL

Equipment:

Name: PACKO INOX NV
Type no.: FP2, FP2+ and PHP, PHP2
Other essential identification: centrifugal pump

Date: 12. March 2008
Number: 06/2008

Evaluated by:

Name: Jürgen Hofmann
EHEDG or EHEDG Authorized Organization: BLQ

Approved by:

Name: Jacques Kastelein
EHEDG or EHEDG Authorized Organization: TNO Quality of Life, Zeist, NL

| | |
|---|---|
| 1. Results of inspection for compliance with the EHEDG Hygienic Design Criteria. Conclusion : The equipment complies with the criteria. The use of the EHEDG Certification Type EL logo is justified : | YES <input type="checkbox"/> |
| | MAYBE <input checked="" type="checkbox"/> |
| | NO <input type="checkbox"/> |
| 2. Evidence of compliance with the EHEDG Hygienic Design Criteria provided and convincing. Conclusion : The equipment complies with the criteria. The use of the EHEDG Certification Type EL logo is justified : | YES <input type="checkbox"/> |
| | NO <input type="checkbox"/> |
| 3. Only unavoidable reasons for non-compliance present. Evidence for compensation provided and convincing for Certification.. Conclusion : The equipment complies with the criteria where possible. The use of the EHEDG Certification Type EL logo is justified : | YES <input checked="" type="checkbox"/> |
| | NO <input type="checkbox"/> |

Signature :

Date : 12. March 2008

The original of this form will be kept together by the EHEDG or the EHEDG Authorized Organisation with the application, the inspection report, the evidence provided and any other relevant documentation, as listed on the back.

| |
|---|
| Type EL Certification : Yes <input checked="" type="checkbox"/> No |
| <i>Cross out as appropriate.</i> |

| No. | Description |
|-----|--|
| 1. | EHEDG / TUM Certificate of Compliance |
| 2. | Contract to use the EHEDG Certification Logo for equipment |
| 3. | Appendix 1A: EHEDG authorized certification organisations |
| 4. | Appendix 1B: equipment intended for cleaning with liquids |
| 5. | Appendix 2: conditions for use of the EHEDG Certification Logo |
| 6. | Appendix 3: Equipment evaluation form |
| 7. | Evaluation report of the design of the centrifugal pump type FP2, FP2+ and PHP, PHP2 No. 141.1/22.08.2007 |
| 8. | Drawings of the centrifugal pump and the mechanical seal, original stamped |

**EHEDG Evaluation Report
no. 141.1/22.08.2007**

OFFICIAL ENGLISH VERSION

**centrifugal pump type FP2, FP2+ and PHP, PHP2
with EPDM gasket and mechanical seal Burgmann SHJ**

PACKO INOX NV, Belgium

The evaluation is based on an EHEDG in-line cleanability test report, no. V97.196 of TNO, The Netherlands, and the test report no. 141/22.08.2008 from TUM for the assessment of the mechanical seal, discussion with Dr.-Ing. Fritz Jacob, Dr.-Ing. Jürgen Hofmann and Ing. Jacques Kastelein, who was responsible for the tests.

Evaluation of the hygienic design criteria of EHEDG doc. 8

Materials of construction

All used materials fulfil the specific requirements. They are corrosion resistant, non-toxic, mechanically stable, and their surface finish is not adversely affected under the conditions of intended use. The centrifugal pump is made of stainless steel alloy 1.4404 / 316L, which has a good corrosion resistance. The gaskets are made of EPDM in line with FDA CFR21 for food contact.


Hygienic Design and construction

All product contact surfaces are free of imperfections. The design has no sharp corners. The inner surfaces are electro polished. The impeller is made of cast stainless steel and has a maximum of Ra 3.2 µm. All other surfaces are smoother than Ra = 0.8 µm. All joint designs are in line with the EHEDG criteria. For the shaft sealing a closed mechanical seal type SHJ from Burgmann Sealing Company, Germany, is used. For self draining a small seat valve is welded on the bottom side of the pump housing. This valve from Alfa-Laval is already EHEDG certified. The difference between type FP2 and FP2+ is the impeller. Within type FP2+ the surface roughness is less than 0.8 µm. Type PHP and PHP2 include all relevant documentation for the pharmaceutical industry.

Result

The conclusion is that the centrifugal pump type FP2, FP2+ and PHP, PHP2 with EPDM gaskets and mechanical seal Burgmann SHJ complies with the EHEDG Hygienic Design Criteria (doc. 8, 10, 17 and 25).

The in-place cleanability test method has proven that the version FP2 with process connections of 2" is easy to clean. There were no problems in cleaning the product contact surfaces and the gaskets. The cleanability was comparable to the reference pipe. The results of the cleanability test can be transferred to the version of type PHP and type FP2+ and PHP2 with a smoother impeller and other sizes of the pump itself.


Dr.-Ing. J. Hofmann
12. March 2008

