



3-A Sanitary Standards, Inc. 2011 Education Program

Wyndham Milwaukee Airport Hotel, Milwaukee, Wisconsin

EHEDG Guideline Separators

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17. May 2011 **Chairman EHEDG Subgroup Separators**



GEA Mechanical Equipment / GEA Westfalia Separator

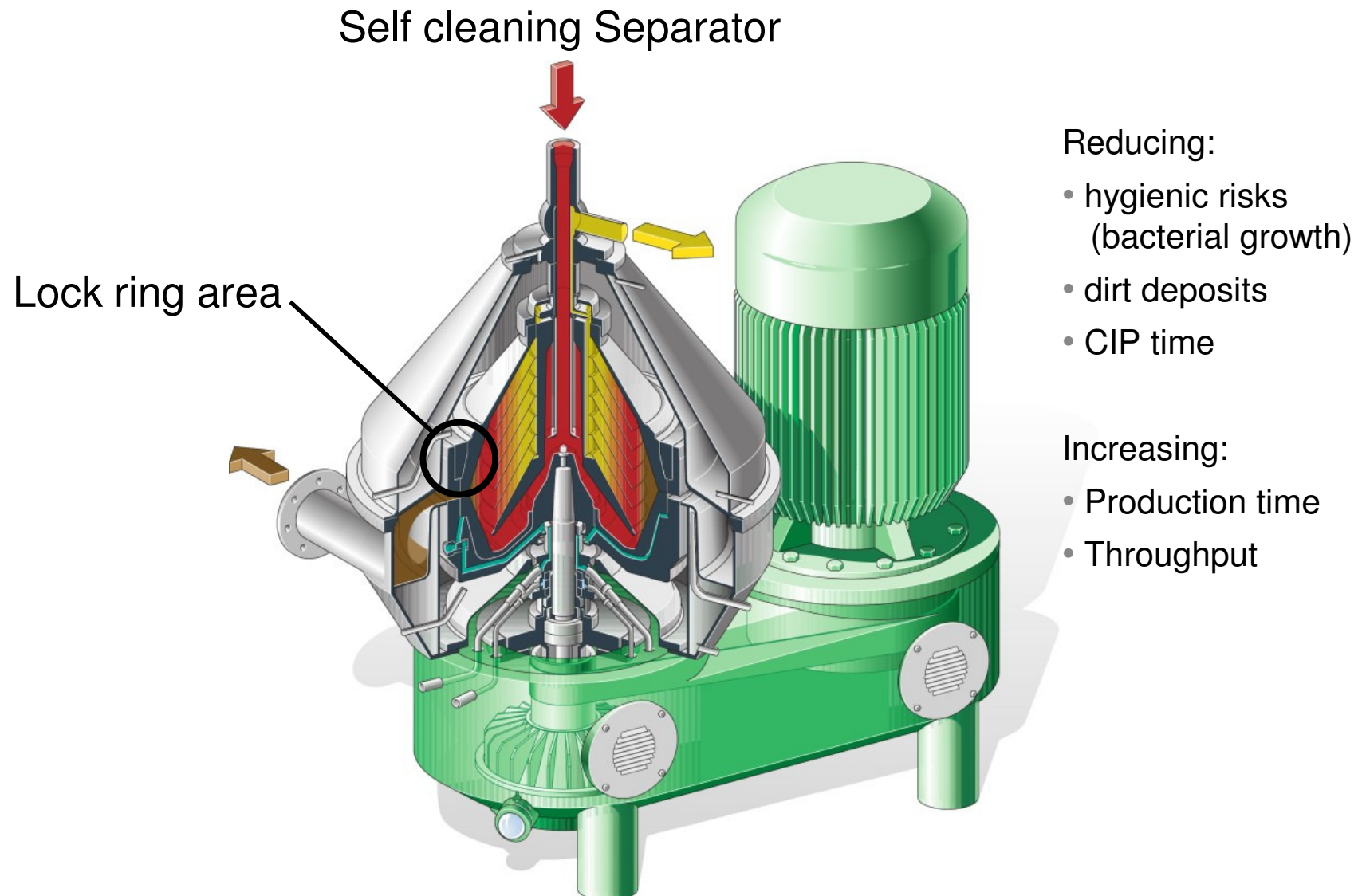
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Reasons for a Hygienic Design Guideline

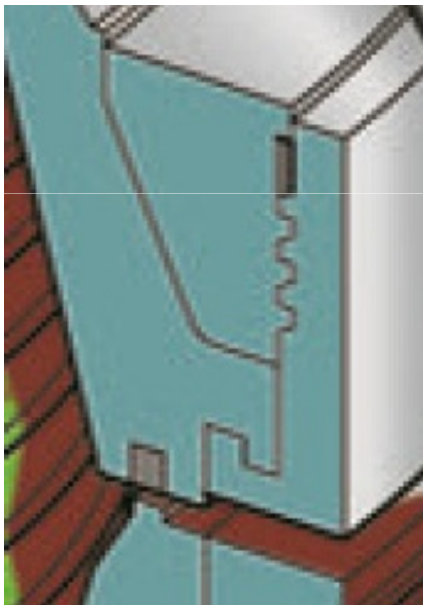


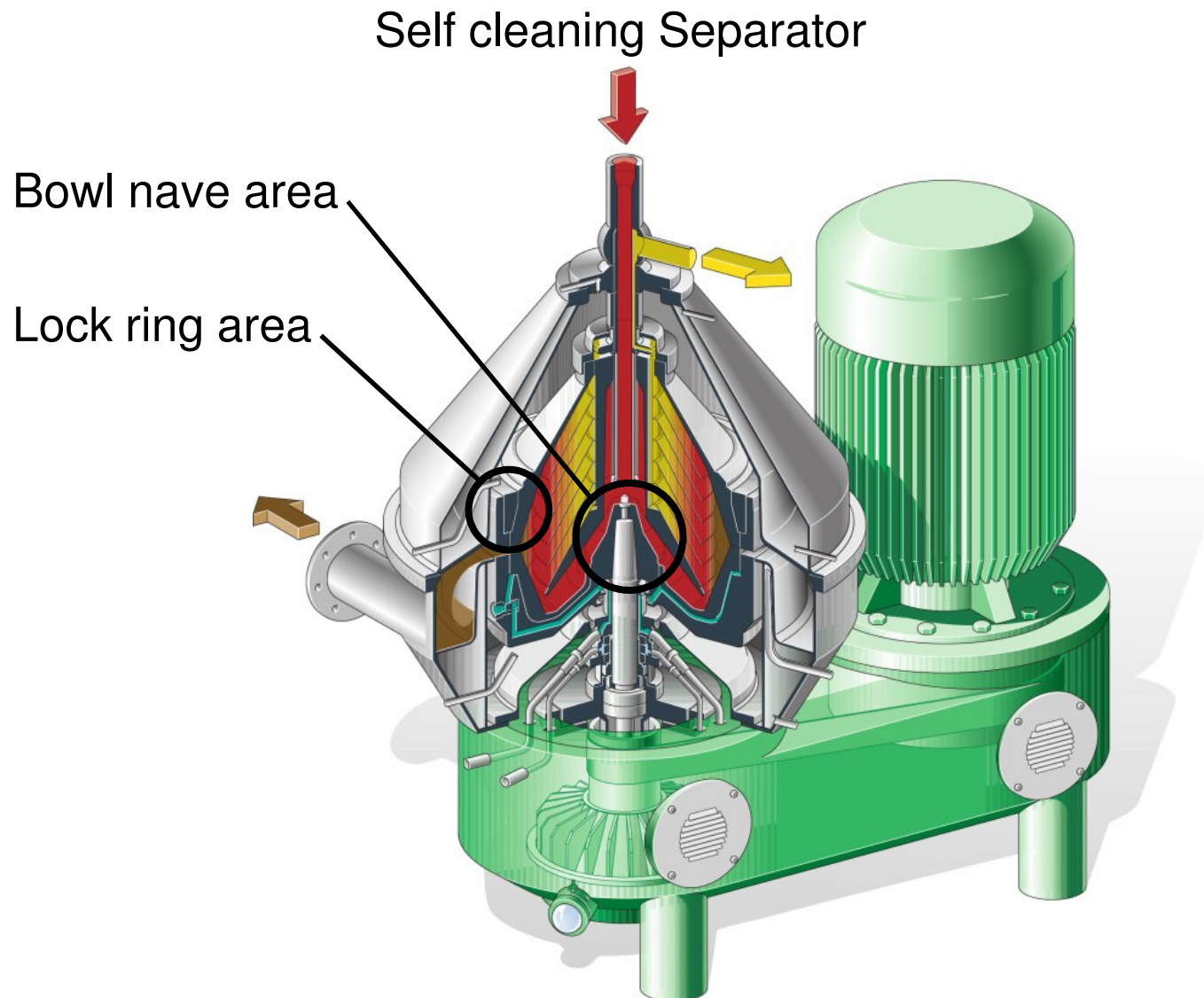
Liquids to Value

GEA Mechanical Equipment / GEA Westfalia Separator

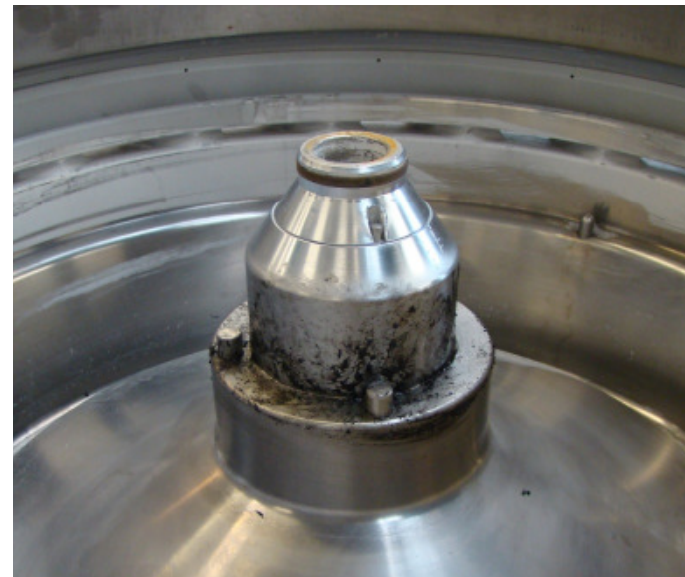
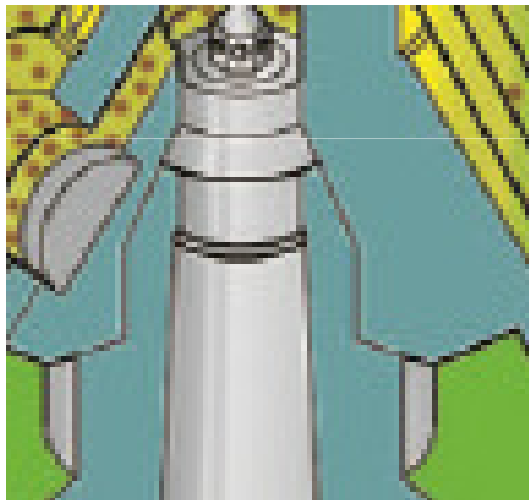


self cleaning Separator
lock ring area





self cleaning Separator
bowl nave area

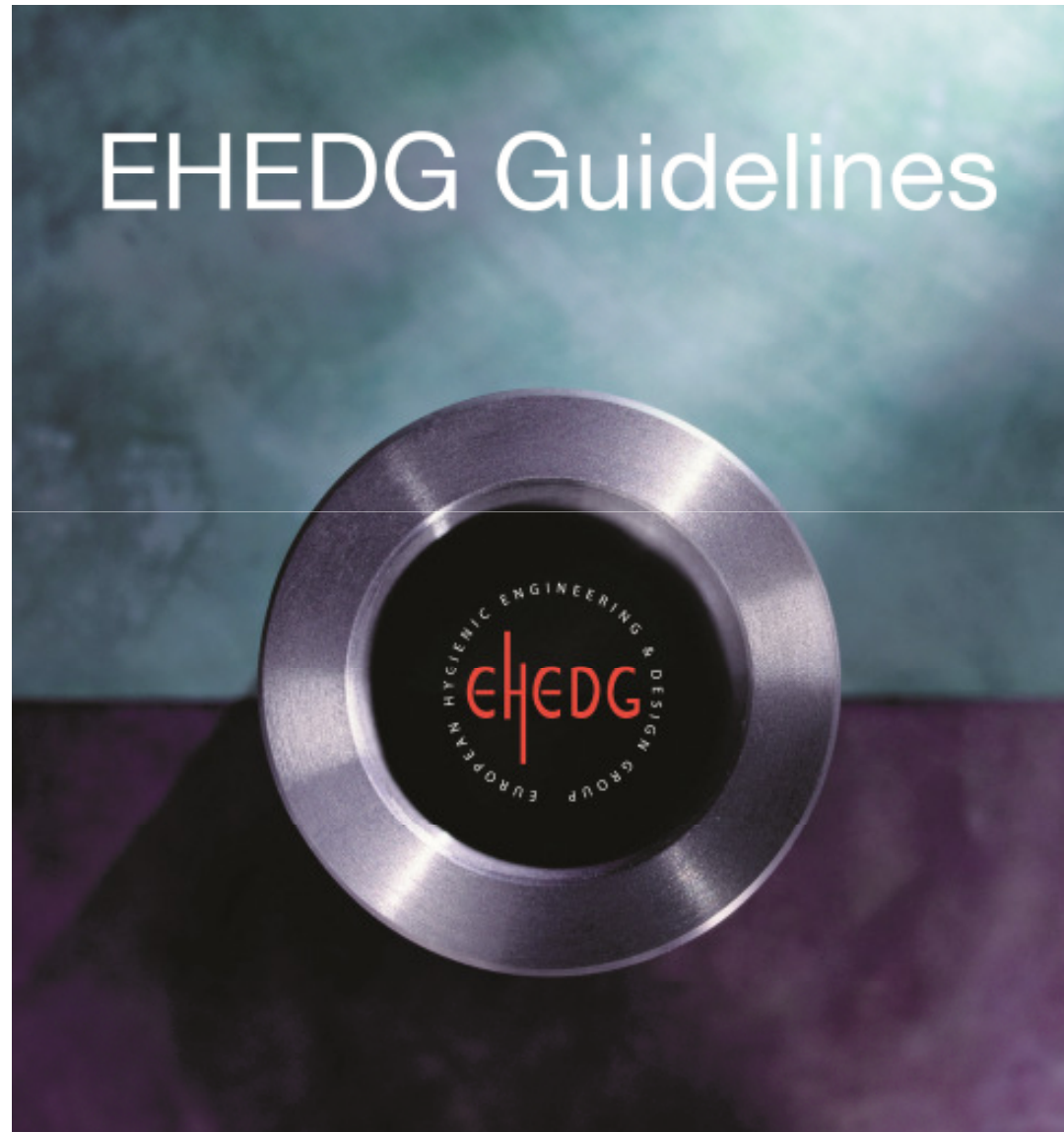


Content of the Guideline



Liquids to Value

GEA Mechanical Equipment / GEA Westfalia Separator



Main topics:

- Description of separators
- Released materials
- Surface finishes
- Hygienic design specialities for separators
- Requirements for the CIP regime
- Control and testing requirements to meet the guideline
- Certification

Content of the Guideline



Intermittent discharge disc stack centrifuge

The kind of centrifuge that expels accumulated sludge by complete, short time opening of the centrifuge bowl

Nozzle bowl machines

Disc stack centrifuges, which are continuously ejecting the solids via nozzles

Operating water

Water for closing the bowl between discharges (closing water) and for creating discharges (discharge water)

Sludge angles

The angles (half cone-angles) that the generatrices of the sedimentation surfaces in a centrifuge need to form in order for the sludge to slide along the surface during operation, discharge and CIP.

Solid wall machines

Disc stack centrifuges, for manual solids removal

Casing

The space, surrounding the disc bowl, where the sludge either continuously or intermittently is ejected

Examples of typical full views of centrifuges



Figure 1 — Typical 2 phase centrifuge with basic piping



Figure 2 — Typical centrifuge for clarifying

Examples of typical design principles of centrifuges

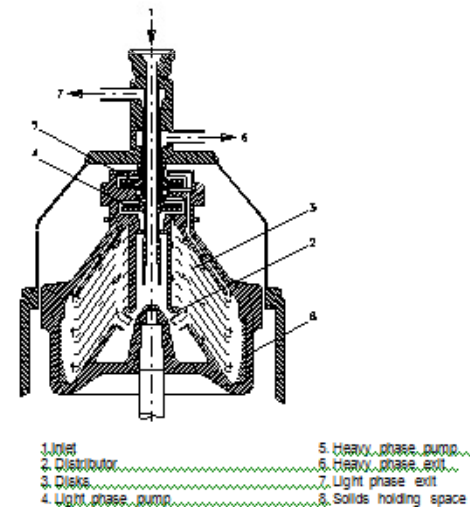


Figure 3 — Basic, solid bowl disc stack centrifuge

(figure 1).



Figure 3 — Radii at internal angles

In the event that a smaller radius exists in a product wetted area for functional reasons, it shall be adequately cleaned under CIP processes.

6.6 Threads, splines and keyways

Exposed threads, keyways or splines shall be avoided wherever possible. Where these are required to enter into the product area, then they must be suitably protected to prevent ingress of product. Due regard shall be taken that any protection shall be easily cleanable under CIP and COP processes.

Exposed threads for lifting tools etc. which are not fitted during operation have to be designed for easy cleaning. The following types (or similar) shall be used:

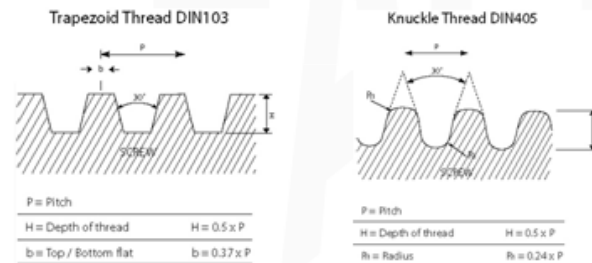


Figure 3 — Threads according to DIN 103 and DIN 405

Threads that are fitted during operation must be sealed off from product contact. For these thread specifications are designated by the manufacturer.

6.7 Permanent joints

All permanent joints in metallic product contact surfaces shall be continuously welded, except that:

In such cases where welding is impractical, press or shrink-fitting may be employed where necessary for essential functional reasons for sleeves on shafts or locating pins on bowl components.

When such shrink fits are used the dimensions should be according to the DIN 7157.

5.2.3 Evaluation of the fluorescence test

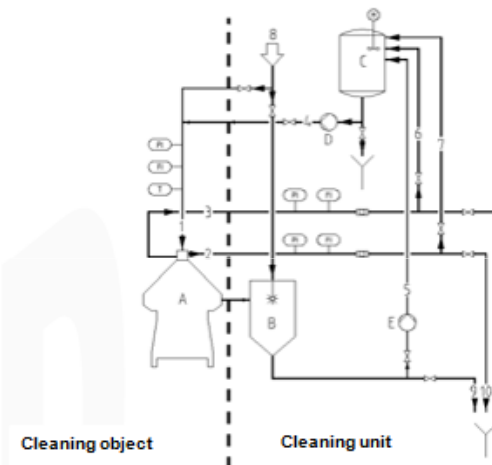
Surface of parts to be checked is illuminated by an indicator light (ultraviolet light) according to information sheet given by VDMA paper as already mentioned in chapter 1. Residues of riboflavin shine yellow-green. The distance from the lamp to the surface is approx. 30 – 50 cm.

5.2.4 Documentation

For documentation purposes it is necessary to document all single steps, the used equipment and times / measuring values.

The adjusted operating parameters have to be documented.

6.0 P&ID of an installation for carrying out a fluorescence test



- | | |
|------------------------------------|---|
| A Separator | 6 Return line, heavy phase, riboflavin solution |
| B Solids vessel | 7 Return line, light phase, riboflavin solution |
| C Tank, riboflavin solution | 8 Inlet line, flush water (potable water) |
| D Feed pump, riboflavin solution | 9 Drain line, solids vessel |
| E Return pump, riboflavin solution | 10 Drain line, light phase |
| 1 Inlet line | 11 Drain line, heavy phase |
| 2 Outlet line, light phase | T Temperature gauge |
| 3 Outlet line, heavy phase | PI Pressure gauge |
| 4 Inlet line, riboflavin solution | FI Flow meter |
| 5 Return line, riboflavin solution | M Motor |

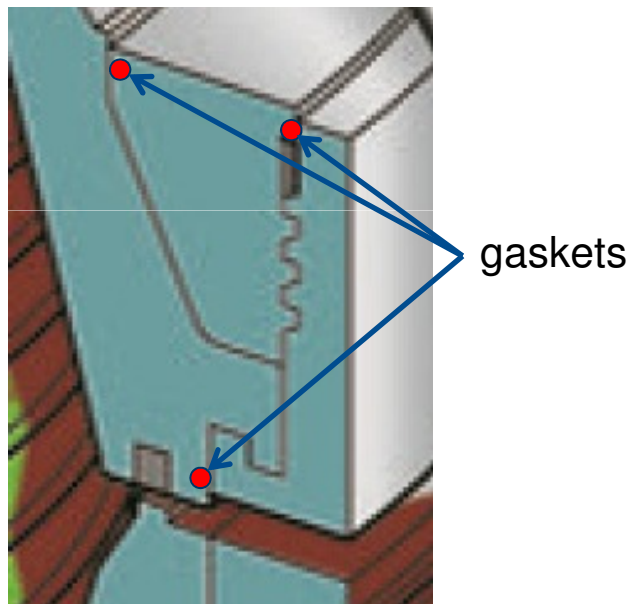
Separators in Hygienic Design



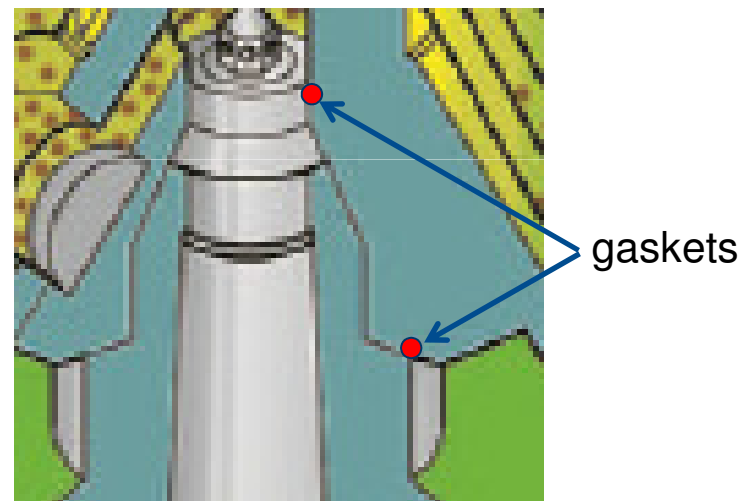
Liquids to Value

GEA Mechanical Equipment / GEA Westfalia Separator

lock ring area



bowl nabe area



Separators in Hygienic Design



Initially Issued: 10/13/2005

Authorization No.: 1395



This Is To Certify That

Westfalia Separator, Inc.
100 Fairway Court, Northvale, NJ 07647

Is hereby authorized to continue to apply the 3-A Symbol to the models of equipment, conforming to 3-A Sanitary Standards for:

Centrifugal Separators and Clarifiers, Number: 21-00, set forth below:

Model Designations: MSE XXX-01-XXX, MSE XXX-06-XXX, MSE XXX-07-XXX, MSE XXX-96-XXX, CSE XXX-01-XXX.

Valid through: December 31, 2006

Date of Issuance: October 13, 2005

Timothy R. Rugh
Executive Director, 3-A Sanitary Standards, Inc.

The issuance of this authorization for the use of the 3-A Symbol is based upon the voluntary certification, by the applicant for it, that the equipment listed above complies fully with the 3-A Sanitary Standards designated. Legal responsibility for compliance is solely that of the holder of this Certificate of Authorization, and 3-A Sanitary Standards, Inc. does not warrant that the holder of an authorization at all times complies with the provisions of the said 3-A Sanitary Standards. This in no way affects the responsibility of 3-A Sanitary Standards, Inc. to take appropriate action in cases in which evidence of nonconformance has been established.

Declaration of Conformity in accordance with the EU ordinance 2023/2006 Konformitätserklärung im Sinne der EU-Verordnung 2023/2006

We hereby declare that the machine specified in the following, in the version designed and delivered by us, is specifically intended for use in the production and processing of foodstuffs. This declaration will cease to be valid if any repair or modification is made to the machine which has not been agreed with us or if it is not operated in accordance with the intended use. Intended use also comprises the use of genuine spare parts.

Hiermit erklären wir, dass die nachfolgend bezeichnete Maschine aufgrund ihrer Konzipierung und Bauart in der von uns gelieferten Ausführung speziell für den Gebrauch bei der Herstellung und Verarbeitung von Lebensmitteln bestimmt ist. Bei einer nicht mit uns abgestimmten Reparatur oder Änderung der Maschine, sowie einem nicht bestimmungsgemäßen Betrieb verliert diese Erklärung ihre Gültigkeit. Als bestimmungsgemäßer Betrieb gilt auch der Einsatz originaler Ersatzteile.

Designation: Bezeichnung:	Separator	Serial-No.: Fabrikations-Nr.:
Type: Typ:		
Pertinent EC Ordinances / Declarations: Einschlägige EU-Verordnungen / Richtlinien:	(EG) Nr. 1935/2004 2023/2006	
Harmonised standards applied, in particular: Angewandte harmonisierte Normen, insbesondere:	EN ISO 12100-1, EN ISO 12100-2.	
National standards and technical specifications applied, in particular: Angewandte nationale Normen und technische Spezifikationen, insbesondere:		
Remarks:	The machine is made of stainless steel in the food contacting area which has no negative impact on the foodstuff provided the machine is operated in accordance with the intended use. Certificates of compliance are available for gaskets of plastic or elastomers delivered by us for use in food-contacting areas. Documentation and test certificates can be viewed on our premises if requested. However, we are not making them available out of competitive considerations. As an alternative, this declaration of conformity is being issued.	
Bemerkungen:	Die Maschine besteht im Lebensmittelkontaktbereich aus nichtrostenden Stählen, welche bei bestimmungsgemäßer Verwendung der Maschine keinen negativen Einfluss auf das Lebensmittel haben. Für von uns gelieferte Dichtungen aus Kunststoff bzw. Elastomeren, die für den Lebensmittelkontakt vorgesehen sind, liegen Unbedenklichkeitsbescheinigungen vor. Dokumentation und Prüfzertifikate können in unseren Geschäftsräumen auf Wunsch nach Vereinbarung eingesehen werden. Wir stellen sie jedoch aus Wettbewerbsgründen nicht zur Verfügung. Ersatzweise wird diese Konformitätserklärung erstellt und zur Verfügung gestellt.	
The safety precautions in the furnished documentation must be observed. Die Sicherheitshinweise in der mitgelieferten Dokumentation sind zu beachten.		
The intended use involves compliance with the instructions and specifications in the instruction manual. Die bestimmungsgemäße Verwendung bezieht die Einhaltung von Vorgaben der Betriebsanleitung mit ein.		
This declaration is issued for the responsibility of the following manufacturer / importer: Diese Erklärung wird verantwortlich für folgenden Hersteller / Importeur abgegeben:		GEA Westfalia Separator Process GmbH Werner-Habig-Straße 1 59302 Oelde

Date, signature (processed): Datum, Unterschrift (bearbeitet):	Information as to undersigned: Angaben zum Unterzeichner:	Head of Acceptance Leiter Abnahme
Date, manufacturer's signature: Datum, Hersteller-Unterschrift:	Information as to undersigned: Angaben zum Unterzeichner:	Managing Director Geschäftsführer

Separators in Hygienic Design



Separators in Hygienic Design



Westfalia Separators with 3 A Standard Acceptance

Bacteria Removers



Skimming Separators



Thank you for attention!



Liquids to Value

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