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High-impact tank cleaning for the pharmaceutical industry

Tank cleaning with impact



The specialist in rotary spray and jet head technologies

Toftejorg is a world leader in the design, manufacture and marketing of advanced tank cleaning machines. We specialize in rotary spray and jet head technologies and produce a wide range of products for the pharmaceutical industry. Our products for this sector conform with the strictest guidelines laid down by industry regulators (e.g. FDA, GMP, ICH Q7A).

Rotary spray heads clean vessels by spraying fans of cleaning media against the vessel walls. Rotary jet heads use jets of cleaning media and thereby add impact to the coverage. Both technologies provide the highest achievable coverage and impact with cleaning media, ensuring the best possible cleaning results. Our rotary spray and jet heads are self-washing and self-draining, and some have integrated self-washing down-pipes (patent pending).

Our jet heads are particularly effective in cleaning the surfaces of vessels and process equipment producing viscous, foaming or thixotropic products. In such applications, both coverage as well as impact is needed to achieve a scrubbing effect.

Rotary spray and jet heads are designed for permanent installation in the vessels. However, Toftejorg also offers retractable machines for use when vessel internals prevent the permanent installation of a tank cleaning machine. These retractable units are automatically withdrawn from the vessels in between cleaning operations and function essentially as permanent installations.

Our machines can be supplied in alternative materials of construction, such as hastelloy, or other component-specific materials, e.g., viton, PVDF, etc. We also offer various options for improved surface finishes, such as electropolishing and/or passivation. The operation of the rotary jet head machine can be verified using our Rotacheck System, for measuring the 360° impact coverage. See back page for more information on accessories and machines.



A rotary jet head, TJ 20G, in action



A rotary jet head, SaniJet 20, in action



A rotary spray head, SaniMidget, in action



Cleaning Program Compliance

Toftejorg has been involved in cleaning programs regulated by the FDA since 1980. Our equipment has repeatedly demonstrated its compliance with the basics of the GMP guidelines. Toftejorg remains committed to helping manufacturers comply with the complex and ever changing regulations of the GMP, GAMP, FDA and ICH Q7A programs.

Standard Support Services

All of our standard support is based on Toftejorg's proprietary TRAX® tank cleaning simulation software. This software allows us to evaluate the configuration and position of each tank cleaning machine before it is installed. We also address the need to document information on the equipment and cleaning design. The scope of our standard equipment information and documentation generally conforms with the design qualification standards of the GMP guidelines. Toftejorg is ISO 9001 certified, ensuring we follow high stan-

dards in all our operations. We place great emphasis on customer service and provide a fast and thorough response to all customer inquiries.

Complete Documentation

We can document information and data on the machine, the application analysis, or both. The product documentation we offer includes surface roughness data, material traceability, certificates of conformance, machine assembly drawings, and manuals. Documentation and data on the performance and function of our equipment, required by GMP for installation and performance qualification, are also available. We can deliver documentation on the installation design and specifications, detailed operating parameters, data sheets, initial results of TRAX® analyses, and installation drawings. The scope of the documentation of our standard support can be tailored to the customer's needs and is priced according to requirements.

Features and Benefits

- Significantly reduced cleaning time and increased up-time.
- More efficient distribution of cleaning liquids.
- Larger effective cleaning radius.
- Half the flow rate of traditional methods.
- Considerable savings in water and chemical consumption.

Validation Services

Additional data and documentation can be provided through testing or measuring programs such as:

- Comparative performance testing of our equipment in our test facilities.
- Riboflavin or other similar coverage tests.
- Certification or other confirmation tests on surface finish condition.
- Performance demonstration of our equipment in your tank.
- Final design of the TRAX® simulations and installation drawings to support cleaning validation.
- Validation package document.



The table gives examples of vessels and applications where Toftejorg equipment is used.

General Vessel Type	Product	Problem	GMP Solution
Primary Pharmaceuticals			
Fermenter	Bulk pharmaceutical Insulin API	Large tanks 100,000 US Gal. Multi-level agitators and heating coils. Heavy broth residues in upper 1/3 of tank	Residues removed TJ 20G
Transportation (Bulk and containerized)	Bulk pharmaceutical Fermented API	8,000 US Gal vessel, quick turnaround of validated cleaning. Fermentation broth residues in man-ways and top connections, settled products and heels	Residues removed TJ 20G
Solvent recovery	API powder separation	8,000 US Gal vessels. Infrequent cleaning, solid layer at bottom, explosion zone rated	Solid layer removed SaniJet 20
Intermediate and Finished Pharmaceuticals			
Mixing, holding and final formulation	Toothpaste, powders, vitamin supplements	1,300 US Gal vessel. Complex mixing equipment, counter rotating agitators, high-viscosity products, extremely low tolerance to batch-to-batch residues	Agitator free of clinging residues SaniJet 20
Mixing, holding and final formulation	Topical solutions, contact lens solutions	80,000 US Gal mixing vessel, ultra-high purity, low tolerance for batch-to-batch product carry-over	Residues removed SaniJet 20
Spray drying	Viscous intermediate/ adherent powder	Medium-sized drying chamber, powder chute, pipe work	Residues removed SaniJet 20
Reactor	Re-wetting/ re-constitution powder	500-800 US Gal vessels, internals, extended cycle times, solvents, agitators, elevated temperature	Agitator free of residues SaniJet 20



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