Test report on the Hygienic Suitability of the XTS Hygienic Design System Solution

Data provided by Beckhoff Automation

Machine	XTS Hygienic Design system solution for pharmaceutical and food applications
Manufacturer	Beckhoff Automation GmbH & Co. KG
Model	System solution XTS Hygienic Design
Machine	Partially completed machine for product transport in food and aseptic environments
Declaration of hygiene suitability	The XTS Hygienic Design system solution was developed by Beckhoff Automation in accordance with the guidelines of the European Hygienic Engineering & Design Group (EHEDG) and meets protection class IP69K
Materials used	• Motor modules: Stainless steel 1.4404 (AISI 316L) • Slide system: Stainless steel 1.4404 (AISI 316L) • Magnetic plate set: Stainless steel 1.4404 (AISI 316L) • Cover magnetic plate set: Stainless steel 1.404 (AISI 316L) • Mover body: Stainless steel 1.4404 (AISI 316L) • Mover rollers: PK (Polyketone) • Ball bearings rotary shaft sealed: PTFE (white wiper ring), FKM (seal) • Baseplate: Stainless steel 1.4404 (AISI 316L) • Gaskets baseplate and slide system: VMQ-Silicone • Motor module gasket: VMQ-Silicone • Wiring embedded in a media-resistant hose: PVC • Conduit gland: Stainless steel 1.4404 (AISI 316L) • Threaded insert sleeve: Nickel-plated brass • Gaskets conduit gland: Polyamide and Elastomer • Stator tooth: Electroless nickel-plated • Screws: Stainless steel 1.4404 (AISI 316L) • Head gaskets of the screws: VMQ-Silicone • Sticker: Highly media-resistant polyester film
IP-Class	IP69K

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IL SENTIERO INTERNATIONAL CAMPUS

Test report

Laboratory	Il Sentiero International Campus s.r.l.
Test report code	TE02125
Test request	The XTS Hygienic Design system solution was to be extensively tested by the test laboratory for hygiene suitability and cleanability in a corrosive environment. The test procedure was based on experience.
Test objective	Analysis of the chemical impact and resistance of the XTS Hygienic Design system solution extremizing typical conditions found in the food and pharmaceutical industry. The test was over a simulated period of 5 years, during which time a combination of chemical and mechanical stress was performed.
Test	Chemical stress tests were carried out under aseptic conditions. The machine has been disinfected with H_2O_2 sterilization steam, cleaned with an alkaline product, and subjected to a salt spray test.

Test parameter	• H_2O_2:
	  ○ Concentration 35%
	  ○ Ambient temperature 50°C
	• Alkali foaming cleaner:
	  ○ Manufacturer: Diversey
	  ○ Product: Safe foam VF9
	  ○ Concentration 3%
	  ○ pH 10-11
	  ○ Ambient temperature 30°C to 50°C
	• NaCl:
	  ○ Concentration 2%
	  ○ Ambient temperature 30°C to 50°C

Test duration	The test covered a total of 60 cycles, equivalent to a simulated period of 5 years. Of these, 24 cycles were conducted using only H_2O_2 and alkaline cleaner, and 36 cycles with H_2O_2, alkaline cleaner, and NaCl.
Test procedure 24 cycles	• 77 minutes at 50°C starting from room temperature • 12 minutes of alkaline cleaning • 77 minutes of H_2O_2 aging at 50°C • 12 minutes of alkaline cleaning • 77 minutes of H_2O_2 aging at 50°C • 12 minutes of alkaline cleaning

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Test procedure 36 cycles	• 77 minutes at 50°C starting from room temperature • 12 minutes of alkaline cleaning • 77 minutes of H_2O_2 aging at 50°C • 12 minutes of alkaline cleaning • 77 minutes of NaCl spray test • 12 minutes of alkaline cleaning • 77 minutes of H_2O_2 aging at 50°C • 12 minutes of alkaline cleaning
Cleanability	The XTS Hygienic Design system solution was cleaned with the alkaline cleaner "Diversey Safe Foam VF9" over 60 cleaning cycles, with temperature fluctuations between 20°C and 50°C. Cleaning was performed with the machine fully operational and the movers in motion (Cleaning in Place). After 60 cycles, no impairment of machine functionality was observed.
Disinfection capability	The XTS Hygienic Design system solution was disinfected with a vaporized H_2O_2 concentration of 35% at an ambient temperature of 50°C, over 60 cycles. Disinfection was carried out with the machine fully operational and the movers in motion (Sterilization in Place). After 60 cycles, no impairment of the functional parts was observed.
Salt tolerance	The XTS Hygienic Design system solution was contaminated with a NaCl concentration of 2% at an ambient temperature of 50°C, over 36 cycles using a spray mist procedure. The contamination occurred when the machine was fully operational, and the movers were in motion. No impairment of the functional parts was observed after 60 cycles. To ensure optimal performance and longevity, regular maintenance (cleaning and inspection) is required. Exposure to saline substances can accelerate material wear.

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Conclusion

Test result	The XTS Hygienic Design system solution was able to withstand the harsh chemical conditions of the test without damage to any critical components. Machine functionality remained fully intact after the tests.
Confirmation	This laboratory report confirms that the XTS Hygienic Design system solution has been tested and proved hygienically suitable and easy to clean, in accordance with the above-mentioned guidelines and tests. The system meets the hygienic requirements for use in the food and pharmaceutical industries. With standard maintenance, the system will be able to withstand harsh conditions for several years.
Disclaimer and validity	This test report applies only to the XTS Hygienic Design system solution when operated and maintained according to the manufacturer's specifications. Liability for damages resulting from improper use or maintenance is expressly excluded.

Date, signature

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