



# Fraunhofer

## TESTED<sup>®</sup> DEVICE

Ergoswiss AG  
SLA.3 4330

**Report No. ER 2305-1425**

DUPLICATE

Statement of  
Qualification

Single product  
Particle Emission

# Statement of Qualification · Single product

**Customer**  
 Ergoswiss AG  
 Nöllenstrasse 15a  
 9443 Widnau  
 Switzerland

**Component tested**

Category: Automation Components

Subcategory: Positioning Systems

Product name: Spindle lift system SLA.3 4330  
 (manufacturing date: 6/2023; serial number: 903)  
 in combination with

- Controller SCT4 iSMPS 230V (manufacturing date: 6/2023; serial number: 124)

## Random sampling of particle emissions (airborne) at representative sites

Standards/Guidelines: ISO 14644-1, -14  
 The norms stated generally refer to the version valid at the time of the tests.

Test devices: Optical particle counter:  
 LasAir II 110 and LasAir III 110 with measuring ranges  $\geq 0.1 \mu\text{m}$ ,  $\geq 0.2 \mu\text{m}$ ,  $\geq 0.3 \mu\text{m}$ ,  $\geq 0.5 \mu\text{m}$ ,  $\geq 1.0 \mu\text{m}$  and  $\geq 5.0 \mu\text{m}$

Test environment parameters:

- Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1
- Airflow velocity:..... 0.45 m/s
- Airflow pattern:..... vertical laminar flow
- Temperature: .....  $22 \text{ }^\circ\text{C} \pm 0.5 \text{ }^\circ\text{C}$
- Relative humidity: .....  $45 \% \pm 5 \%$

Test procedure parameters:

- Installation position: ..... vertikal
- Cycle time: .....  $t_c = 2/18$  (travel time: max 2 min; rest time: max 18 min)
- Pause (top/down): .....  $t_b = 300 \text{ s}$
- Payload: .....  $m = 600 \text{ kg}$
- Velocity (stroke up/down):.....  $v = 9 \text{ mm/s}$
- Stroke length: .....  $s = 300 \text{ mm}$
- Lowest position: .....  $s_L = 0 \text{ mm}$
- Highest position: .....  $s_H = 300 \text{ mm}$

## Test result / Classification

When operated under the specified test conditions, the spindle lift system SLA.3 4330 in combination with controller SCT4 iSMPS 230V is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:

Test parameter(s)	Air Cleanliness Class
Stroke: $s = 300 \text{ mm}$ Velocity (up/down) $v = 9 \text{ mm/s}$ Payload: $m = 600 \text{ kg}$ Cycle time: 2 min on/ 18 min off	3
Controller	1
<b>Overall result</b>	<b>3</b>

Please note: Transport damages, incorrect installation, oil leakage, aging behavior, corrosion etc. can influence the test result.

The measuring devices used for the qualification tests are calibrated at regular intervals; their results can be traced back to national and international standards. In cases where no national standards exist, the test procedure implemented complies with the technical regulations and norms applicable at the time of the test. The relevant documentation can be viewed on request at any time.

Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

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Department of Ultraclean Technology and Micromanufacturing

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on behalf of   
 Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA