PRODUCT

EVALUATION

REPORT

TESTS PERFORMED FOR:

STANLEY ACCESS TECHNOLOGIES

ROUTE 6 & HYDE RD.
FARMINGTON, CT 06032

PROJECT NAME:

DURA-GLIDE 2000/3000

SLIDING DOOR SYSTEM

CLEAN ROOM COMPATIBILITY EVALUATION

REPORT NUMBER: 071-96

SEPTEMBER 24TH, 1996

TESTS PERFORMED BY:

OMNI TESTING, LTD.
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PRODUCT EVALUATION REPORT FOR: Jerry Colello
Stanley Access Technologies
Route 6 & Hyde Rd.
Farmington, CT 06032

REPORT DATE: September 24th, 1996
TEST DATE: August 28th, 1996
REPORT NUMBER: 071-96

TEST OBJECTIVE: To determine airborne particle levels contributed by Stanley Dura-Glide 2000/3000 sliding door system under normal operating conditions.

TEST DESCRIPTION: The Dura-Glide 2000/3000 sliding door system was installed in a Class 1, vertical laminar flow clean room, was cleaned by hand using cleaner and an alcohol and water solution, then sprayed down with cleaned compressed air, and was then tested for particle counts during normal operation. The automatic sliding door was tested for particle counts using three different methods:

First, particle counts were taken around the door using a Gorpler sampling probe. The Gorpler probe allows representative, average samples to be collected over an area of 12" X 15".

Second, counts were taken inside the drive housing in order to determine areas of high particle counts. Components inside the housing were then scanned (using the particle counter) with a probe to further localize areas of high particle generation.

Third, particle counts were taken on a 6 inch by 6 inch grid in the work zone. The work zone is defined as the horizontal plane two feet below the drive housing of the door. Particle counts were taken using a "Particle Measuring Systems" particle counter model 110. Counts were taken at a 1 CFM flow rate for the following particle sizes: all particles greater than or equal to 0.1 microns, 0.2 microns, 0.3 microns, 0.5 microns, 1.0 microns, and 5.0 microns. For each one minute sample, the door was exercised through one cycle of opening and closing as soon as sampling was started.

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REVIEW OF RESULTS

This door needed a bit of extra cleaning after it was installed. When we did some initial tests the particle counts were a little higher than expected for this unit. After a second wipedown with an alcohol and water solution the results were improved. Care should be taken to assure a quality installation and thorough cleaning before use.

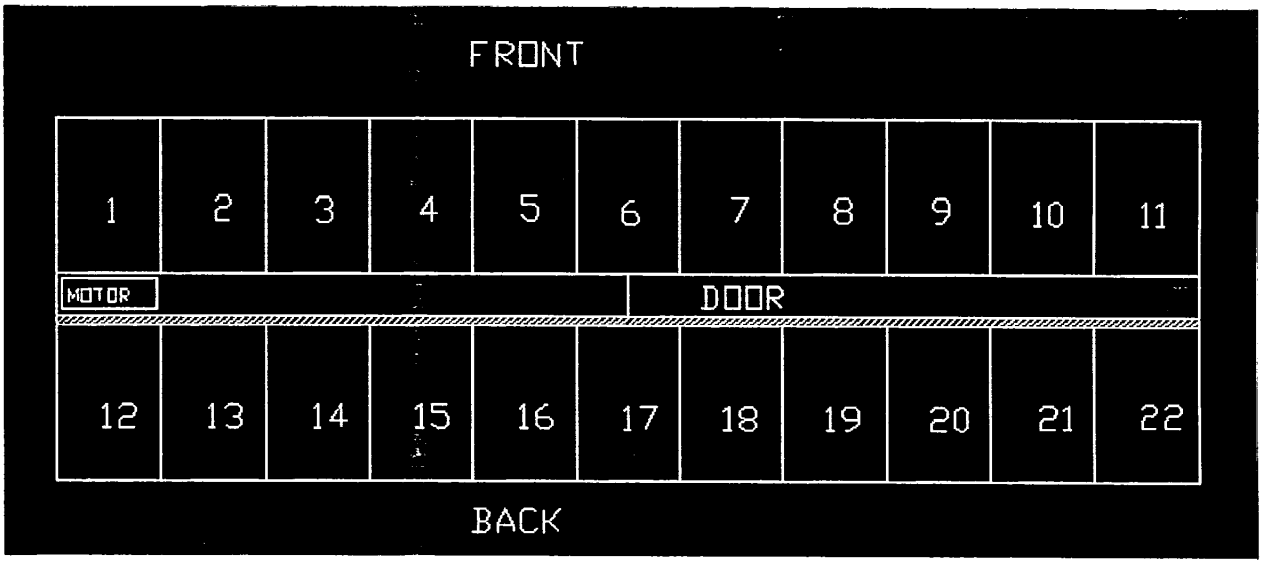
The initial Gorpler probe samples indicate that under normal operating conditions, in a vertical laminar flow clean room, the contribution of airborne particles by the Dura-Glide 2000/3000 sliding door system is such that it is suitable for use in a class 1 clean room. With a zero background level, the counts for all particle sizes per Federal Standard 209E met class 1.

Detailed results are on the following pages.

Tested by:

Peter Elliott
OMNI Testing Limited

Grid Points For the Gorpler Probe

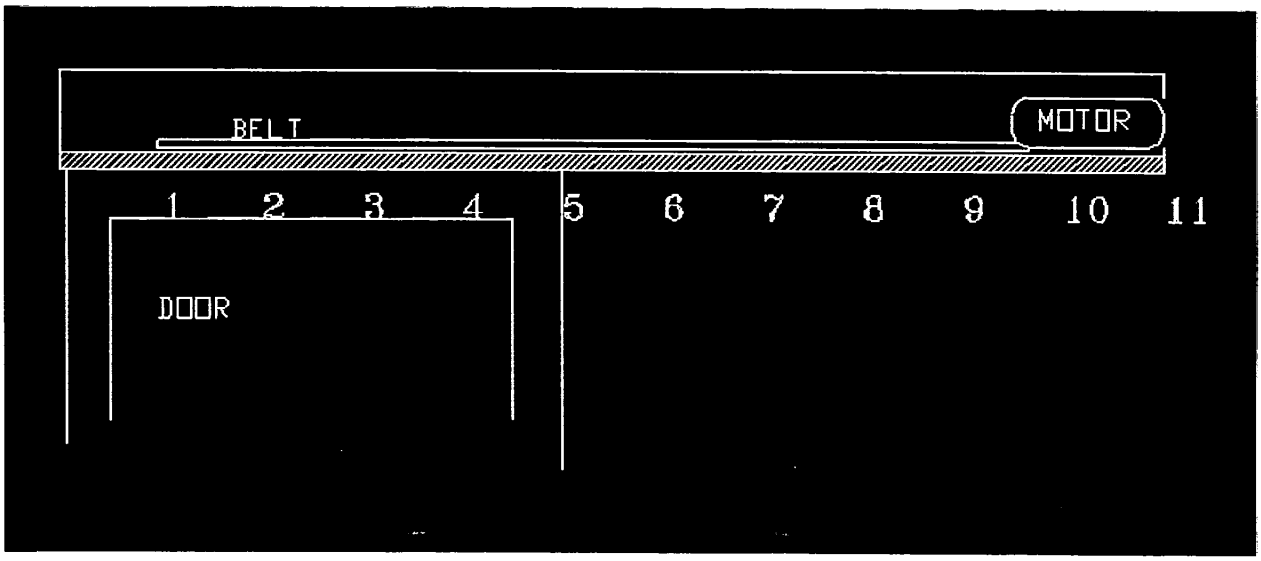


PARTICLE COUNT RESULTS FROM SAMPLES TAKEN WITH GORPLER PROBE

Samples were taken 24 inches below the drive housing

	Particle size in micrometers					
Station	0.1	0.2	0.3	0.5	1	5
1	2	1	0	0	0	0
2	6	3	2	0	0	0
3	7	7	2	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	5	5	1	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	1	1	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	3	1	0	0	0	0
20	1	1	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
Average	1.1364	0.8636	0.2273	0	0	0

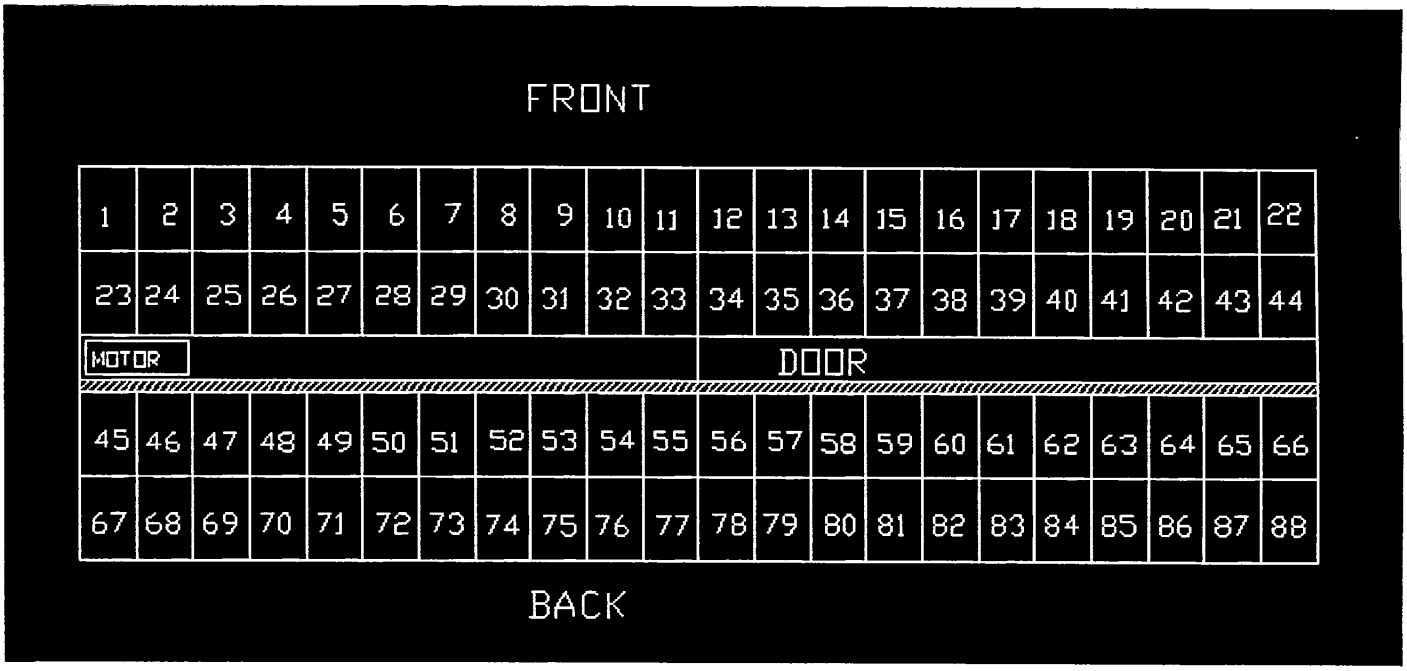
Grid Points around the Drive Housing



PARTICLE COUNT RESULTS OF SAMPLES TAKEN IN FRONT OF DRIVE HOUSING

	Particle size in micrometers					
Station	0.1	0.2	0.3	0.5	1	5
1	2	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	2	1	1	1	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	1	1	0	0	0	0
8	0	0	0	0	0	0
9	10	5	1	0	0	0
10	8	3	0	0	0	0
11	0	0	0	0	0	0
Average	2.0909	0.9091	0.1818	0.0909	0	0

Grid Points for Particle Counts



PARTICLE COUNT RESULTS FROM SAMPLES TAKEN ON A 6" X 6" GRID IN THE WORK ZONE

	Particle size in micrometers					
Station	0.1	0.2	0.3	0.5	1	5
1	5	2	0	0	0	0
2	3	0	0	0	0	0
3	3	1	0	0	0	0
4	1	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	8	3	1	0	0	0
10	11	5	3	0	0	0
11	5	0	0	0	0	0
12	3	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	17	11	3	0	0	0
24	3	1	1	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	1	0	0	0	0	0
32	0	0	0	0	0	0
33	2	1	1	0	0	0
34	4	3	0	0	0	0
35	12	11	6	0	0	0
36	6	5	1	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0

43	0	0	0	0	0	0
44	0	0	0	0	0	0
45	2	1	1	0	0	0
46	0	0	0	0	0	0
47	0	0	0	0	0	0
48	0	0	0	0	0	0
49	0	0	0	0	0	0
50	0	0	0	0	0	0
51	0	0	0	0	0	0
52	1	0	0	0	0	0
53	2	2	1	0	0	0
54	0	0	0	0	0	0
55	0	0	0	0	0	0
56	8	7	1	0	0	0
57	9	7	2	0	0	0
58	18	11	0	0	0	0
59	10	8	0	0	0	0
60	0	0	0	0	0	0
61	10	4	1	1	0	0
62	0	0	0	0	0	0
63	0	0	0	0	0	0
64	0	0	0	0	0	0
65	0	0	0	0	0	0
66	0	0	0	0	0	0
67	0	0	0	0	0	0
68	0	0	0	0	0	0
69	0	0	0	0	0	0
70	0	0	0	0	0	0
71	0	0	0	0	0	0
72	0	0	0	0	0	0
73	0	0	0	0	0	0
74	0	0	0	0	0	0
75	0	0	0	0	0	0
76	0	0	0	0	0	0
77	0	0	0	0	0	0
78	0	0	0	0	0	0
79	24	13	6	0	0	0
80	28	14	11	0	0	0
81	18	10	0	0	0	0
82	8	2	0	0	0	0
83	0	0	0	0	0	0
84	0	0	0	0	0	0
85	9	0	0	0	0	0
86	6	1	0	0	0	0
87	0	0	0	0	0	0
88	0	0	0	0	0	0
Average	2.05	0.92	0.23	0.01	0.00	0.00

EQUIPMENT CALIBRATION LIST

EQUIPMENT	MODEL#	SERIAL#	CALIB. DATE	NEXT CALIB.
PARTICLE COUNTER	P.M.S. uLPC-110	9409-0387-09	4/96	4/97