

UNIVERSITY OF TWENTE.



MESA+

INSTITUTE FOR NANOTECHNOLOGY

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<https://www.utwente.nl/mesaplus/> <https://www.utwente.nl>



MESA+ NanoLab

- Open-access infrastructure
- 1250 m² cleanroom, materials analysis lab & specialized group labs
- 400 users, 80 new / year
- 28.000 hours/yr clean room
- Training/education skills in enabling technologies
- 40% use by 25 companies



UNIQUE ASPECTS OF THE NANOLAB

Vibration free floor: VC-G

Control of electromagnetic fields

Cleanroom: ISO 5

Temperature control: $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$

Humidity control: $45\% \pm 5\%$

Safety facilities

Fire alarm

Gas alarm

Emergency exhaust

Infra structure:

Active AHU up to $120 \text{ M}^3/\text{h}$

Wetbenches

DI water

Cooling water

Special gasses

Exhaust systems

Smart BMS/GBS

MESA+ NANOLAB

Building costs 40 Million euro Building time 2,5 years Opening November 2010

Floor plan Cleanroom and Laboratories



FIRST FLOOR

Total surface: 3000 M²

Laboratories: 800 M²

Cleanroom: 1250 M²

Temperature: 20 °C ± 1 °C

Humidity

45% ± 5%

VC-G area: 750 M²

Vibration: less than 1 μm

Temperature: 20 °C ± 0.5 °C

EMC: ≤100 nT

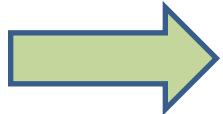
Vibration free floors: 90 cm thick, resting on 366 piles, each 19 m deep.

The floors are separated by 10 cm wide expansion joints with -20 dB damping

MESA+ NanoLab

2500 m² building

- cleanroom
- materials analysis lab
- research group labs
- BioNano lab
- VC-G surface



VC-curves Frequency 1-100 Hz

	Vibration-speed-amplitude	
VC-C	12,5 um/s	1 um details; optical microscope, epitaxy
VC-D	6,3 um/s	0,3 um details; foto lithography, cell implantation app.
VC-E	3,15 um/s	0,1 um details; scanning probe scanning beam, optical benches
VC-F	1,56 um/s	30 nm details; scanning probe,scanning beam
VC-G	0,78 um/s	10 nm details; Nanotechnology

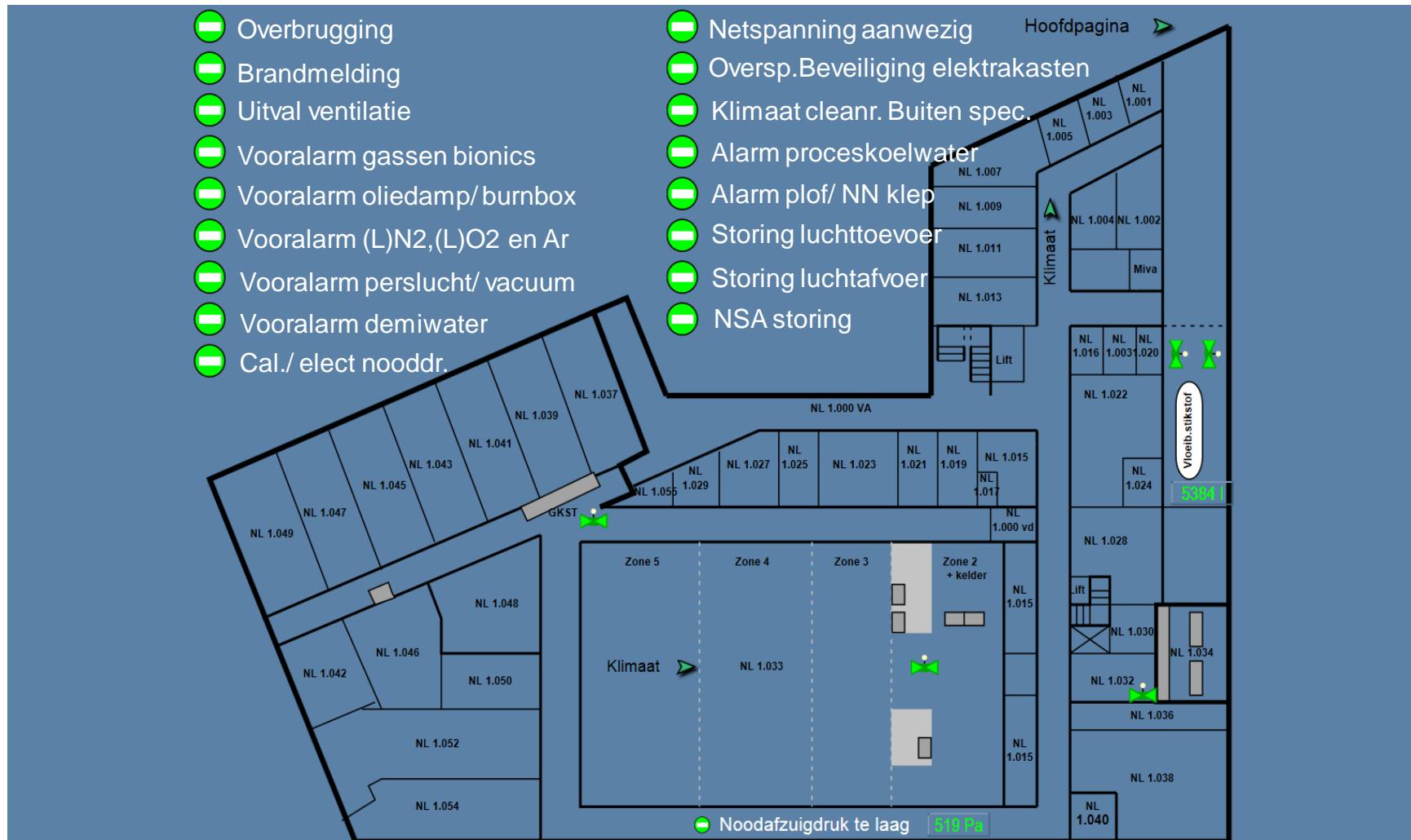
Cleanroom ISO 7 / ISO 5

Class	maximum particles/m ³						FED STD 209E equivalent
	≥0.1 μm	≥0.2 μm	≥0.3 μm	≥0.5 μm	≥1 μm	≥5 μm	
ISO 1	10	2					
ISO 2	100	24	10	4			
ISO 3	1,000	237	102	35	8		Class 1
ISO 4	10,000	2,370	1,020	352	83		Class 10
ISO 5	100,000	23,700	10,200	3,520	832	29	Class 100
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293	Class 1000
ISO 7				352,000	83,200	2,930	Class 10,000
ISO 8				3,520,000	832,000	29,300	Class 100,000
ISO 9				35,200,000	8,320,000	293,000	Room air

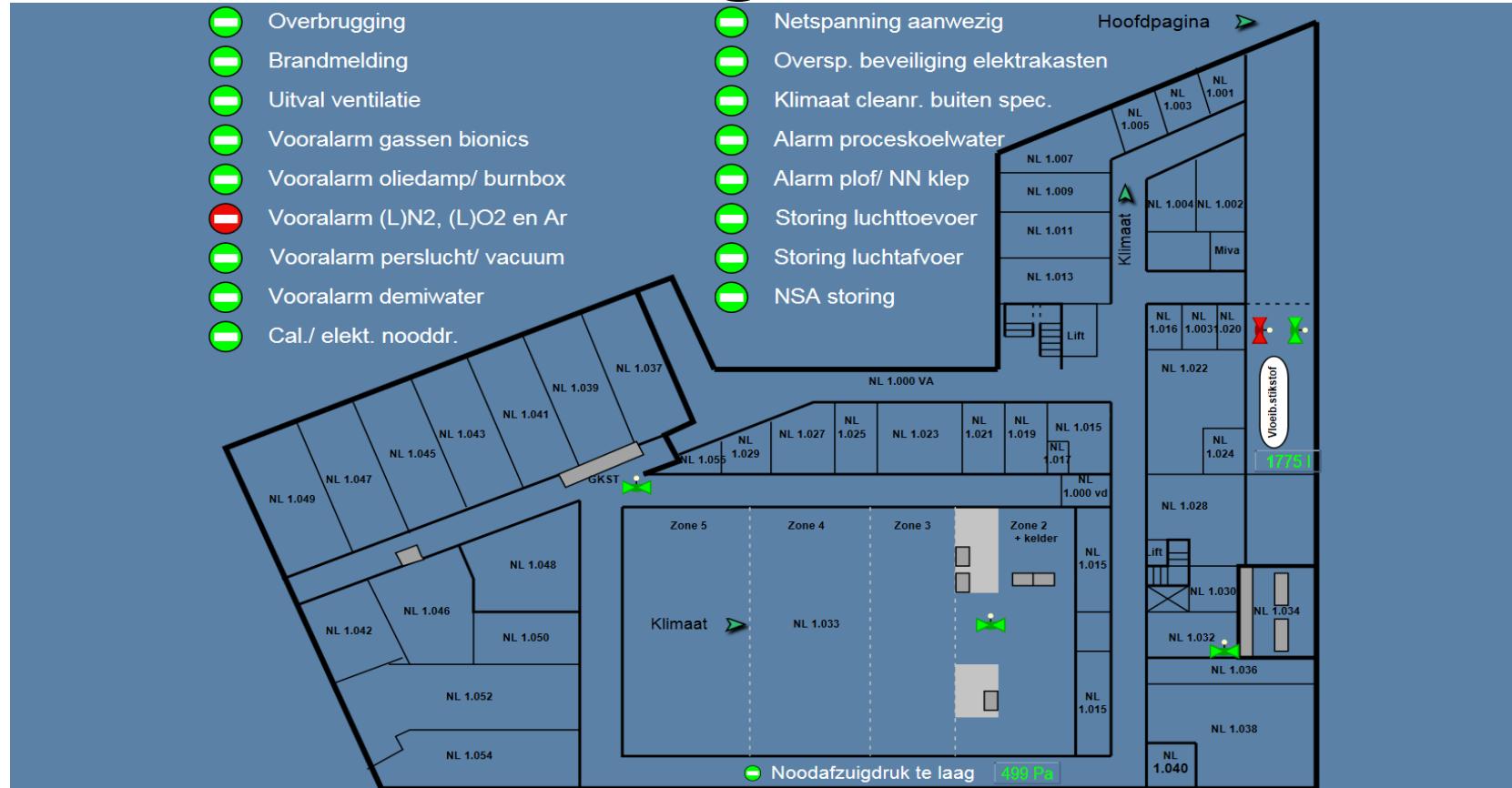
Working

Walking

Smart Building Interface (facilities)



Smart Building Interface (facilities)





Thanks for your attention

nymus3D

www.Nymus3D.nl

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