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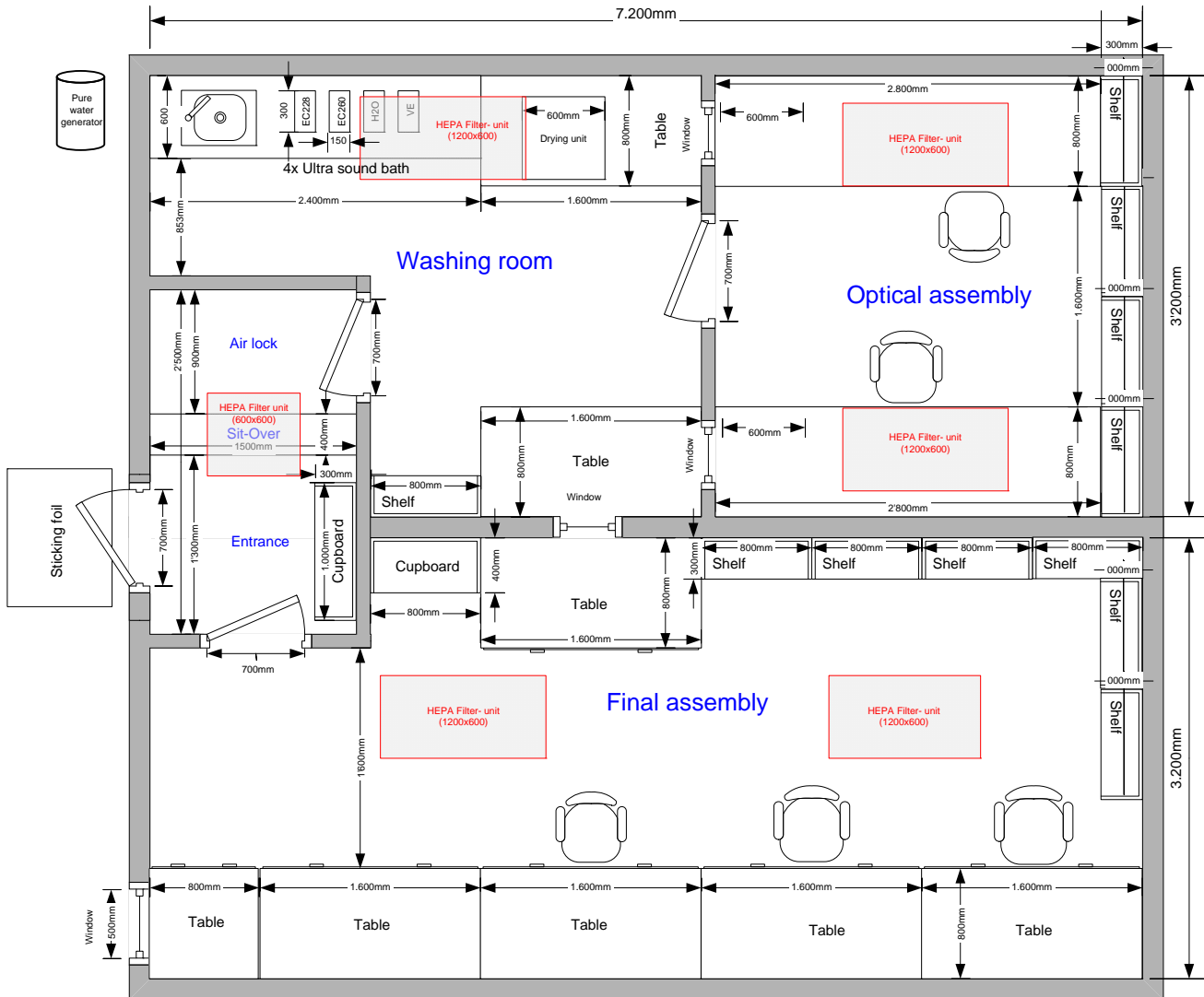
## CLEAN ROOM UNIT

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# 1 CLEAN ROOM FOR OPTICAL ASSEMBLY

The clean room has an area of 46m<sup>2</sup>.



The clean room is partitioned in 4 rooms:

Room	Aera (m2)	Qty. of HEPA-Filter	ISO standard
Air Lock	4	1	ISO 7
Washing room	10	1	ISO 7
Optical assembly	10	2	ISO 7
Final assembly	22	2	ISO 8



**Image 1: Clean room from outside**

The entrance into the air-lock is equipped with a sit-over and a cupboard where the clean room clths are stored. The staff has to change cloths and shoes here.

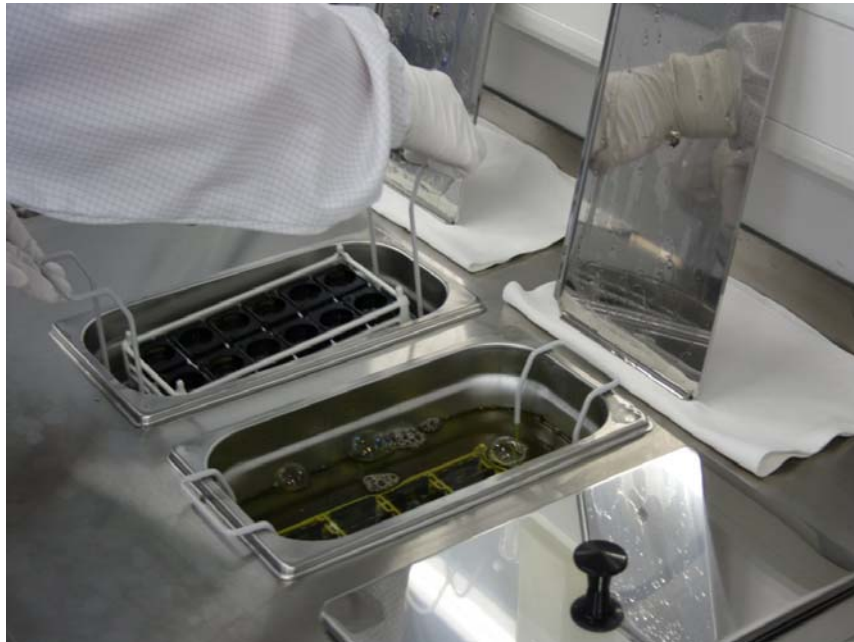
## **2 WASHING ROOM**



**Image 2: 4 ultra sound units and the drying chamber**



**Image 3: Bilt-in ultra sound devices from Elma (Germany)**



**Image 4: 4-stage ultra sound baths**



**Image 5: Preparing objects in dedicated trays for washing process**



**Image 6: Drying chamber from Mammert (Germany)**





Image 7: Tools for cleaning the clean room frequently

### 3 WATER TREATMENT UNIT

The clean room has connection to fresh water and waste water. Additionally there is a water treatment unit to generate pure distilled water on the fly. This pure water is available on a second tap inside the washing room.



**Image 8: water treatment unit**



**Image 9: washing trough with 2 taps**

#### **4 COMPRESSED AIR**

Out side the clean room there is a compression unit to generate compressed air. Built in is a 3 stage air filter unit to completely get out all dust or oil from the compressed air. This compressed air is conducted through a fixed installed pipe system to most of the working placed inside the clean room. At the appropriate work spaces there are deionizing pistols for cleaning objects with clean, compressed deionized air, in order to get all static charge away.



**Image 10: Compressor to generate compressed air**



**Image 11: 3-stage air filter unit**

## 5 ROOM FOR OPTICAL ASSEMBLY



**Image 12: Room for optical assembly, 2 work spaces**





**Image 13: Room for optical assembly**



**Image 14: Distributionsystem for compressed air**



Image 15: Deionizing air gun for cleaning- and deionizing process

## 6 ROOM FOR FINAL ASSEMBLY



Image 16: Room for final assembly, up to 4 work spaces



**Image 17: Room for final assembly**



**Image 18: Clima chamber for burn-in tests from -20 to +100°C**



**Image 19: Clima chamber**

## 7 OTHER EQUIPMENT



**Image 20: 5kW air conditioning system**





**Image 21: 4pcs. of Microscopes, wall connectors fro mains and Ethernet**



## 8 REQUIREMENTS, SPECIFICATIONS, PRICE AND AVAILABILITY

### 8.1 Requirements, specifications

Power requirements:	220V/10A without clima chamber and air condition equipment
Air condition:	220V/20A, requirement of a window of at least 1 within a few meters
Water:	tap with fresh water and pip for waste water are required
Space:	7.5 x 6.8m minimum, 9.0 x 8.3m recommended to provide the possibility to walk around the facility. The inside height of the building must be 3.05m minimum.

### 8.2 Equipment in the clean room

Clean room:	clean room facility as described in 1 "Clean Room for optical assembly", including 6pcs. of HEPA filter units with appropriate air flow generator.
Manufacturer of clean room:	BMF Reinraumtechnik GmbH, Halskestr. 12, D-72766 Reutlingen, Germany
Equipment:	washing equipment with 4 ultra sound units, 1 pc. drying chamber, 1 pc. water treatment unit, 2pcs. Deionizing air guns (top gun), 1pc. Air compressing unit with 3-stage air filter unit, clima chamber -20° to 100°C, 5kW air condirion unit.

### 8.3 Price and availability

Price now:	35'000€excl. VAT, including all equipment according to 8.2 "Equipment in the clean room", excluding unassembly, transport and reassembly.
Original price for new facility/equipment:	110'000€
Price for transferring the facility:	unassembly and reassembly is estimated from the manufacturer BMF with 8'000€ Transport and travel cost for the employees of BMF is dependent on the place to be rebuilt. Estimations are from 2.500 to 4000€
In use:	since December 2009
Availability:	must be moved out of our location between October 15 <sup>th</sup> and November 15 <sup>th</sup> 2012 or according to special agreement
Contact person:	Mathias Leumann, <a href="mailto:mleumann@leutron.com">mleumann@leutron.com</a> LEUTRON VISION AG Industriestrasse 57 CH-8152 GLATTBRUGG (SWITZERLAND) Tel. +4144 809 88 22