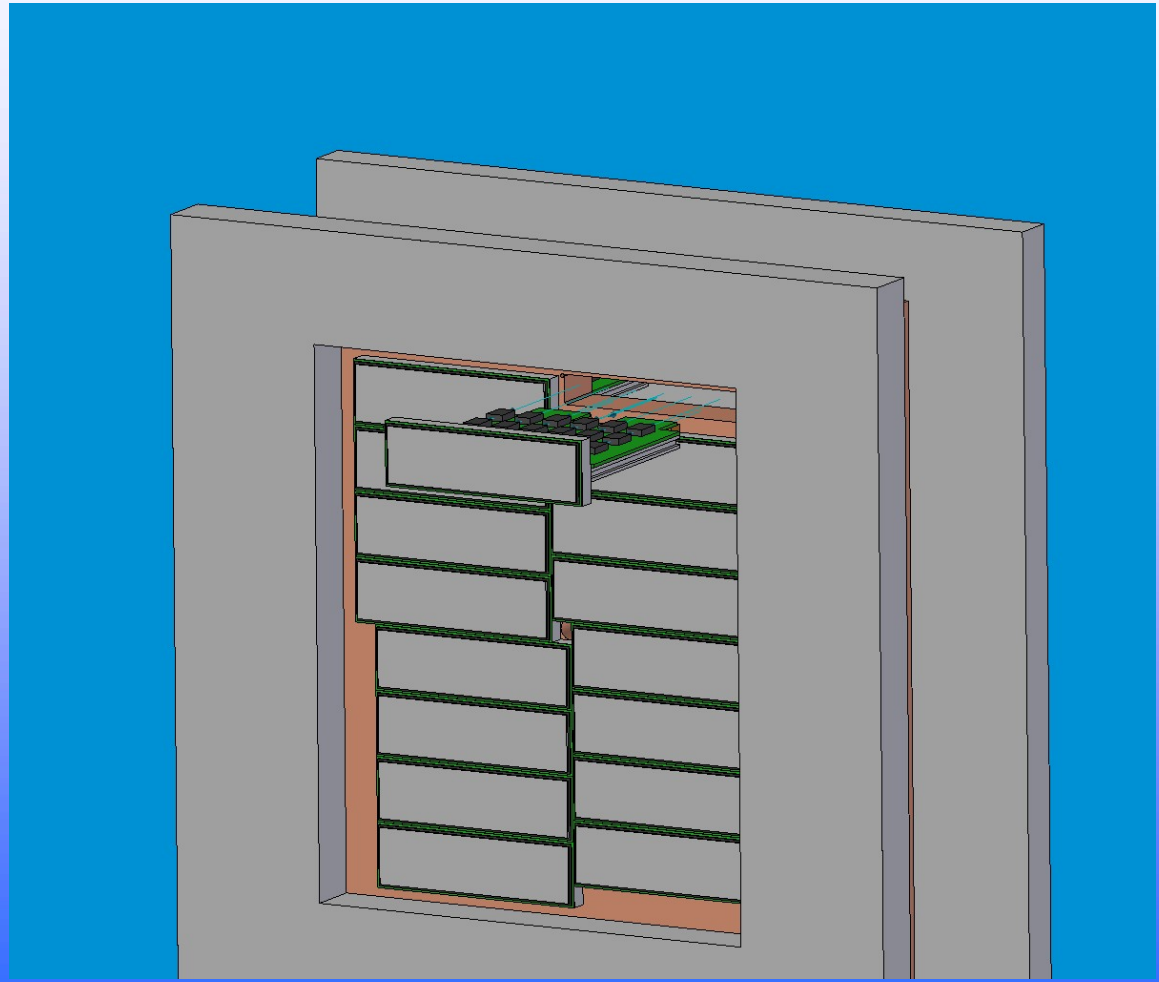
Mechanics Design

Requirements:

- The mechanics should meet the following requirements:
- Mechanical stability and high precision positioning of the modules.
- Cooling of the chips to -15°C.
- Easy maintenance access and module replacement.
- Operate under ambient pressure or vacuum.
- Support for the front end electronics.

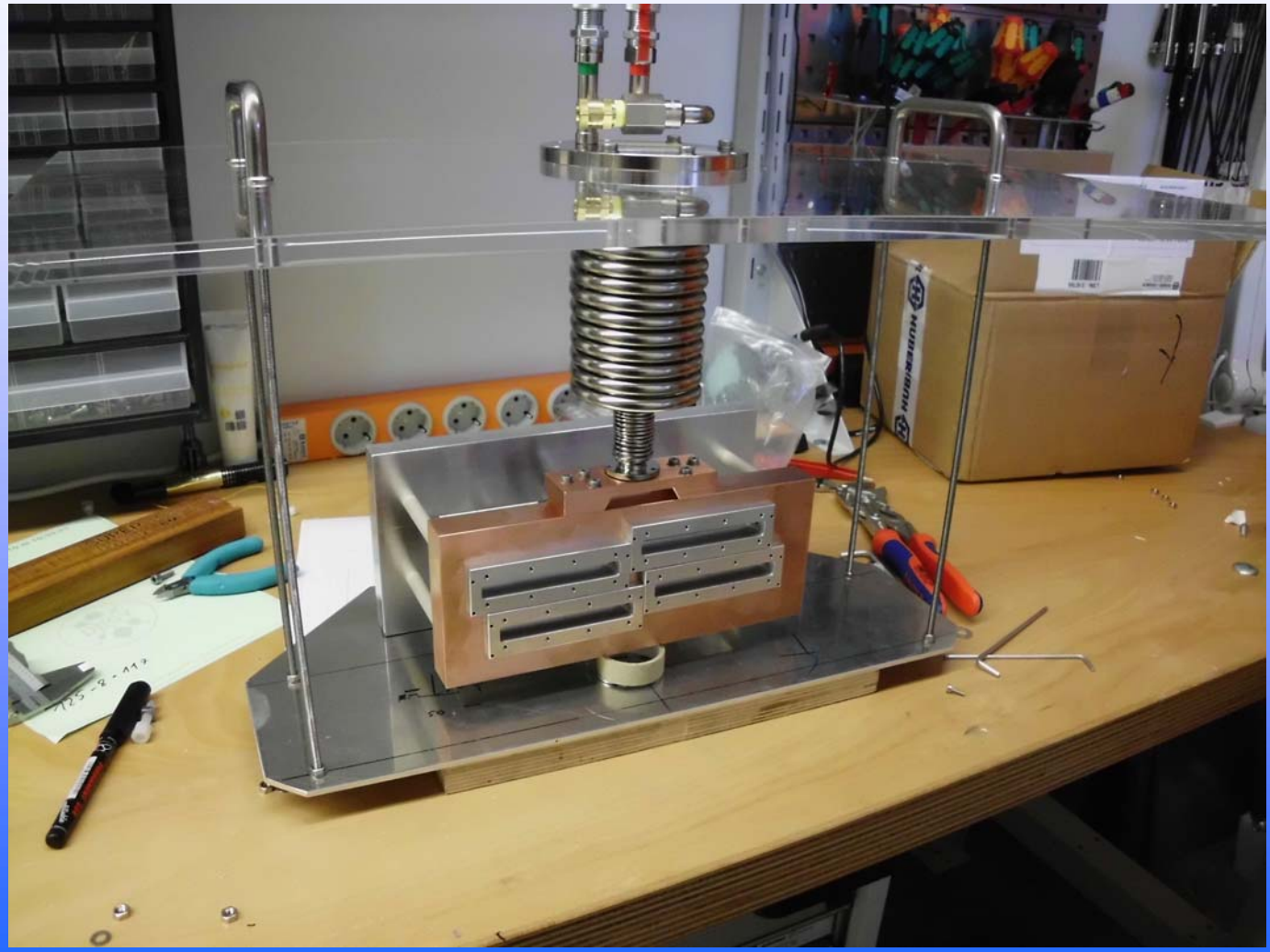
1k x 1k Sensor

Front View



AGIPD-Dummy

in Lab



CO_2 - Cooling:

CO2 Cooler for XFEL Detector R&D

For XFEL detector R&D activities DESY is interested in acquiring a CO2 cooler based on the Nikhef 2-PACL technique.

Global Specifications

Nikhef designs and builds a cooling plant for DESY with the following specifications:

1. Cooling Power maximum 1.2 kW
2. Minimum evaporating temperature required -15C
3. Temperature stability in time of < 2°C
4. Maximum cooling volume of detector: < 1 liter
5. Ambient temperature < 35°C
5. No parallel cooling loops.
6. Distance of cooling machine to experiment < 5 meter

AGIPD Bare Module

Chip Parameters:

No. of Pixels	64 x 64
Total Area	12.94 x 13.74

(assuming 800um periphery + 70um die seal ring)

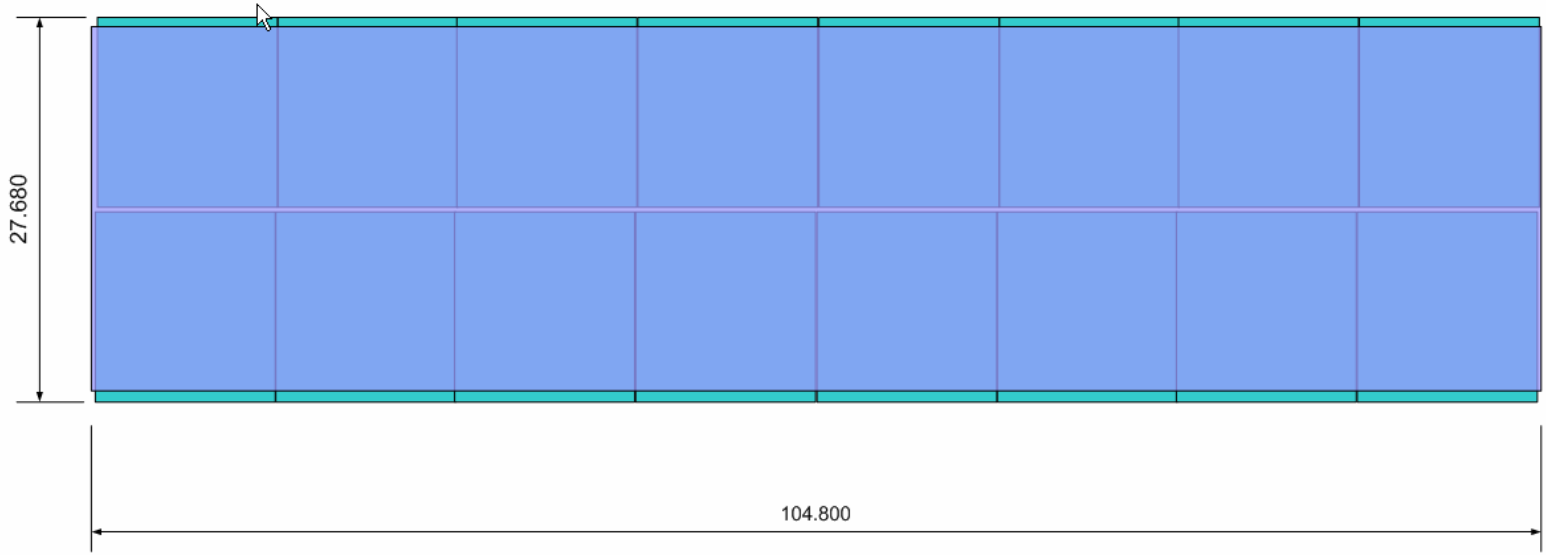
Module Parameters:

No. of Pixels	519 x 129
Active Area	103.800 x 25.800
Total Area (Sensor)	104.800 x 26.800
Baseplate	104.800 x 27.680
HDI	104.870 x 28.680
Support	104.940 x 28.780

(assuming 500um Sensor Guard Ring)

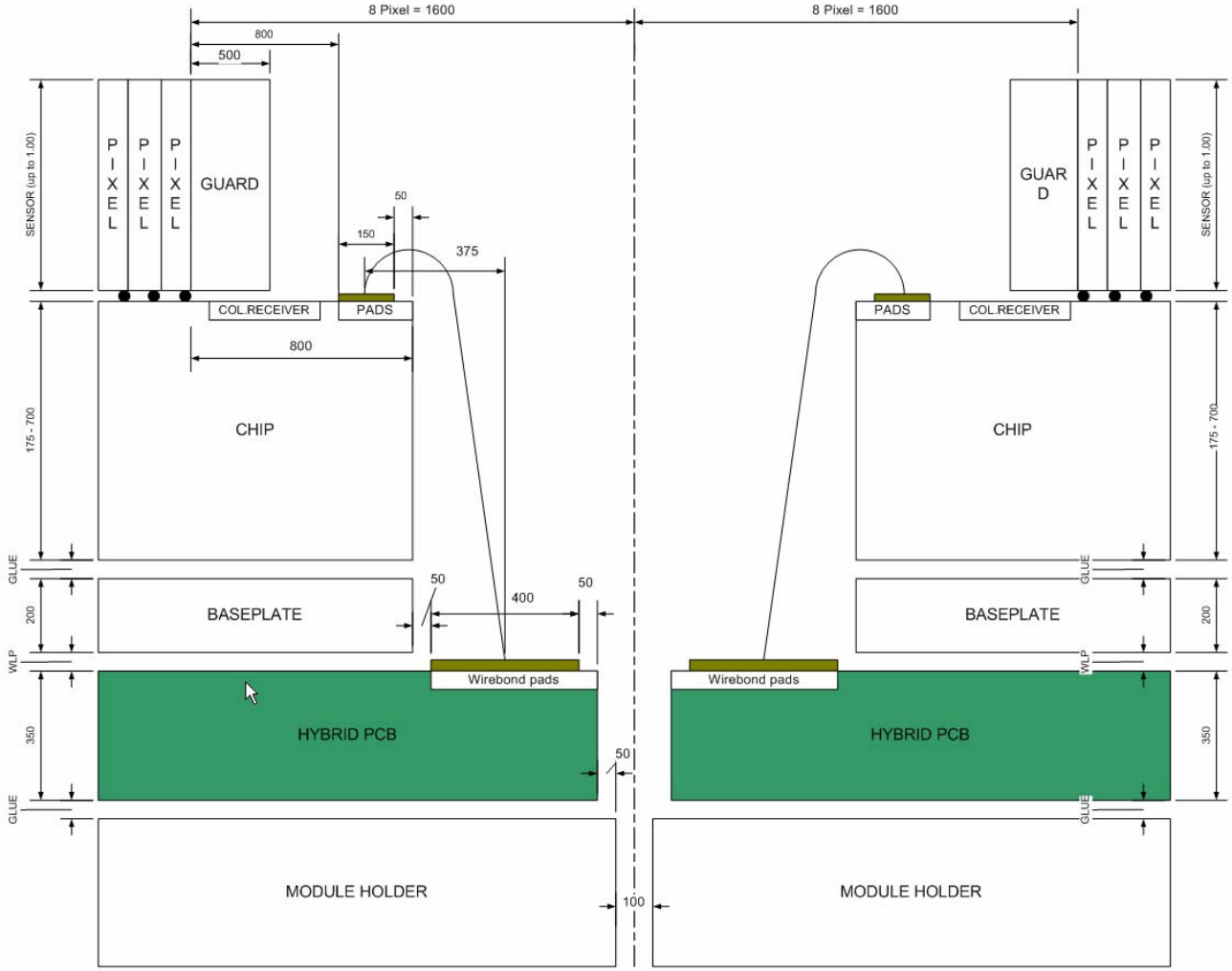
Multi Module Parameters:

No. of dead Gap Pixels	(2x3) x (2x8)
No. of Pixels incl. Gap	525 x 145
Module Step	105.000 x 29.00



Dimensions

Module 2 Module Longside



Dimensions

Module 2 Module Shortside