AQ-OSL1 Experience Center

AQ COMPUTE

AI-READY DATA CENTERS

Objective:

To build a place where AQ Compute and its partners can test combinations of equipment and technologies and show them to potential clients (in particular their common clients), while offering the capacities (paid or not) to research centers and educational institutions for R&D and educational purposes. We want to show use cases of what can be done, on a small scale, in an AI-ready data center, showing as well real AI applications.

Shape:

A room of max. 50m² surface with different rack types, different cooling methods all combined in the same space. The room is not power nor cooling resilient and should be cooled down mostly using with free-cooling, even using snow accumulated during winter (it would be a great opportunity to try here the concept before deploying it for a higher scale for phase 2). The space surrounding this room (which is located within a dedicated simple 1-room building), should be enough to deploy pilots in the future and test them acting with this uncritical ecosystem: fuel cells, different heat reuse concepts, batteries…

Architecture:
- Number of racks/systems: 4 (3 racks and 1 immersion tank)
- Type of racks: 1 air-cooled, 1 RDHx, 1 DLC, 1 immersion tank
- All systems can be OCP-ready
- Footprint: 10 m² for the racks + 2 m² for CRAC or simple AHU + 2 m² for CDU + 2 m² switchboard + 16 m² clearances = 32 m² -> 9 x 5 m = 45 m² ideally

Power:
- Installed power: 10 + 35 + 100 + 100 kW
- Simultaneous power: 245 kW
- Non redundant power, no need of busbars, direct cable feeders to tap-offs (?)
- 1 Switchgear – no UPS – no back-up, switchgear could be the main one

Cooling:
- CRAC or a simple AHU: 100 kW
- CDU: 250 kW
- Dry-cooler
- Piping system

Others:
- Measurement/sensors
- Connectivity
- Experimental external heat reuse system: small container with vertical farming, algae growth, icemelting facility…

Expected costs for AQ Compute:
- Minimum expected: 50m² building, security, operations, general control and monitoring, lighting: 75-100 k€
- Minimum expected: planning costs: 50 K€
- If not financed by partners (desired situation), dry-cooler and piping, pumps (partially available from container): if new 25-50 k€
- If not financed by partners (desired situation), potentially a switchgear and cabling (can be potentially recycled from the container): if new 50 k€
- Fiber router inside: 15 k€?

Expected contributions from partners:
- Cooling devices and accessories
- Racks and accessories
- Power distribution devices and accessories
- Hardware
- Control software
- R&D work (partially)

Potential Partners:

- Moland DC: wooden modular data center building
- Hardware OEMs: Supermicro, HPE, Dell, Atos, NVidia, AMD, Intel, Gigabyte, 2CSRI,
- Immersion cooling systems: Submer, Asperitas, GRC, Liquidcool, Iceotope
- Cold plate cooling systems: Zutacore, CoolIT, (integrated in the hardware)
- RDHx: Cooltera (Vertiv), others
- Piping, Pumps: Aquatherm, Victaulic, Georg Fisher, Wilo
- CRAH/AHU: Stulz, Schneider Electric, Systemair
- Dry-cooler: we can use the current one (Güntner) from the container, others
- Power systems: ABB, Huawei, Schneider Electric
- "Stranded" capacity users: Helio, Cato Digital
- R&D/Universities: Sintef, RISE (already declined), University of Southeastern Norway (already contacted for other purposes), University of Oslo, University of Agder, Institute for Energy Technology, Moser research environment, Simula Met, Simula Research Laboratory, Norwegian Computer Center

Experience Center