



Prof. Mahroo Eftekhari

CEng DPhil MASHRAE

STUDENT COMPETITION

m.m.eftekhari@lboro.ac.uk



Iasi, Romania

2025

REFRIGERATION SUMMIT



11 July, 2025

12 July, 2025



AIIR MOLDOVA BRANCH



www.bsee.ci.tuiasi.ro
update soon



+40747051340



AIIR Filiala Moldova



Student Summer School

[endorsed conferences page](#)

<div><div><div>11 - 12.07.2025</div><div>SUMMER SCHOOL</div></div><div><div>01 INTRODUCTION</div><div>11.07.2025 - Aula Magna</div><div>9:00</div></div><div><div>02 SESSION I</div><div>11.07.2025 - Library</div><div>11:00</div></div><div><div>03 LUNCH</div><div>11.07.2025 - Aula Magna</div><div>14:00</div></div><div><div>04 SESSION II</div><div>11.07.2025 - Library</div><div>15:30</div></div><div><div>05 TECHNICAL VISIT</div><div>11.07.2025 - IASI</div><div>16:30</div></div><div><div>06 SESSION III</div><div>12.07.2025 - Library</div><div>10:00</div></div><div><div>06 LUNCH</div><div>12.07.2025 - Aula Magna</div><div>14:00</div></div><div><div>07 CLOSING</div><div>12.07.2025 - Aula Magna</div><div>15:30</div></div><div><div>08 CULTURAL</div><div>12.07.2025 - IASI City</div><div>16:00</div></div></div>		
--	--	--



school

ASHRAE EUROPEAN REGION XIV STUDENT COMPETITION

"How do you see yourself tackling global climate change & what do you expect from ASHRAE?"

PRIZES

First place

Free attendance at the ASHRAE European Region XIV CRC in Portugal in September 2025

Second & Third place

Free travel at the ASHRAE European Region XIV CRC in Portugal in September 2025

From 1 - 10 place

First year of ASHRAE SmartStart program for free

Scan the QR code to register, or follow the link to learn more:

<https://www.ashraeregionxiv.org/event/ashrae-european-region-xiv-student-competition/>





NET ZERO BUILDING DESIGN COMPETITION

STUDENT COMPETITION

About Net Zero Building Design competition

The Net Zero Building Design competition requires multidisciplinary teams to design an energy efficient sustainable project approaching a "Zero Energy" building with minimized energy demands for HVAC and all other technical systems that could be satisfied with locally available or building-installed renewable energy sources (RES).

Students will be asked to satisfy a national or local sustainability standard (LEED or the equivalent in their country), and then implement RES to approach "Zero Energy" limit.



The Building

The 2025 NZBDC of ASHRAE Region XIV focuses on a new **DATA CENTRE** building, the location of which should be selected by the participating team, but it has to be in the country of the participating team.



The Brief

A data centre operator near you is looking to expand its estate with a **new build data centre** comprising **three distinct halls** joined in a **single building envelope**. Each of the three halls represents a particular type of operation and will require a different approach to the cooling design. Where possible the design should focus on resilience followed by efficiency with all cooling infrastructure designed to at least N+1 or better. There is space for renewables and energy storage solutions if the design requires. Also, there are industrial building located nearby should waste energy streams be seen as effective. The operation is 24/7 with no allowable downtime hence the need for N+1 for maintenance.



Major Design Goals

The final HVAC System Selection and Design for the proposed building shall address the following **major design goals**:

- Energy efficiency
- Occupant health and safety
- Functionality
- Future flexibility as well as maintainability and a 50-year service life



The Aim

The fundamental goal of the Net Zero Building Design competition is to encourage students to obtain experience in the Net Zero Energy Design process.

Architects and engineers should work together from the very beginning to determine building orientation, layout, materials, mechanical systems, and electrical systems that meet the client's needs and work with the surrounding environment to minimize energy consumption.



Special Attention

Special attention should be given to **sustainability**, i.e. the needs of the future shall be as (or more) important as the needs of the present when designing the building layout and integral systems. The judging criteria will be centred on **ASHRAE Standard 189.1**; thus, areas of judging shall include:

- Site Sustainability
- Water Use Efficiency
- Energy Efficiency
- Indoor Environmental Quality
- The Building's Impact on Atmosphere-Materials-Resources
- Construction and Plans for Operation

Standard for the Design of High-Performance Green Buildings

Except Low-Rise
Residential Buildings

A Compliance Option of the International Green Construction Code™



ANSI/ASHRAE Standard 90.4-2022
(Supersedes ANSI/ASHRAE Standard 90.4-2019)
Includes ANSI/ASHRAE addenda listed in Appendix E

Energy Standard for Data Centers

Recommended Standards



ANSI/ASHRAE Standard 62.1-2016
(Supersedes ANSI/ASHRAE Standard 62.1-2013)
Includes ANSI/ASHRAE addenda listed in Appendix K

Ventilation for Acceptable Indoor Air Quality

- ASHRAE standard 189.1
- ASHRAE Standard 90.1
- ASHRAE standard 90.4
- ASHRAE Standard 62.1



ANSI/ASHRAE/IES Standard 90.1-2022
(Supersedes ANSI/ASHRAE/IES Standard 90.1-2019)
Includes ANSI/ASHRAE/IES addenda listed in Appendix M

Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

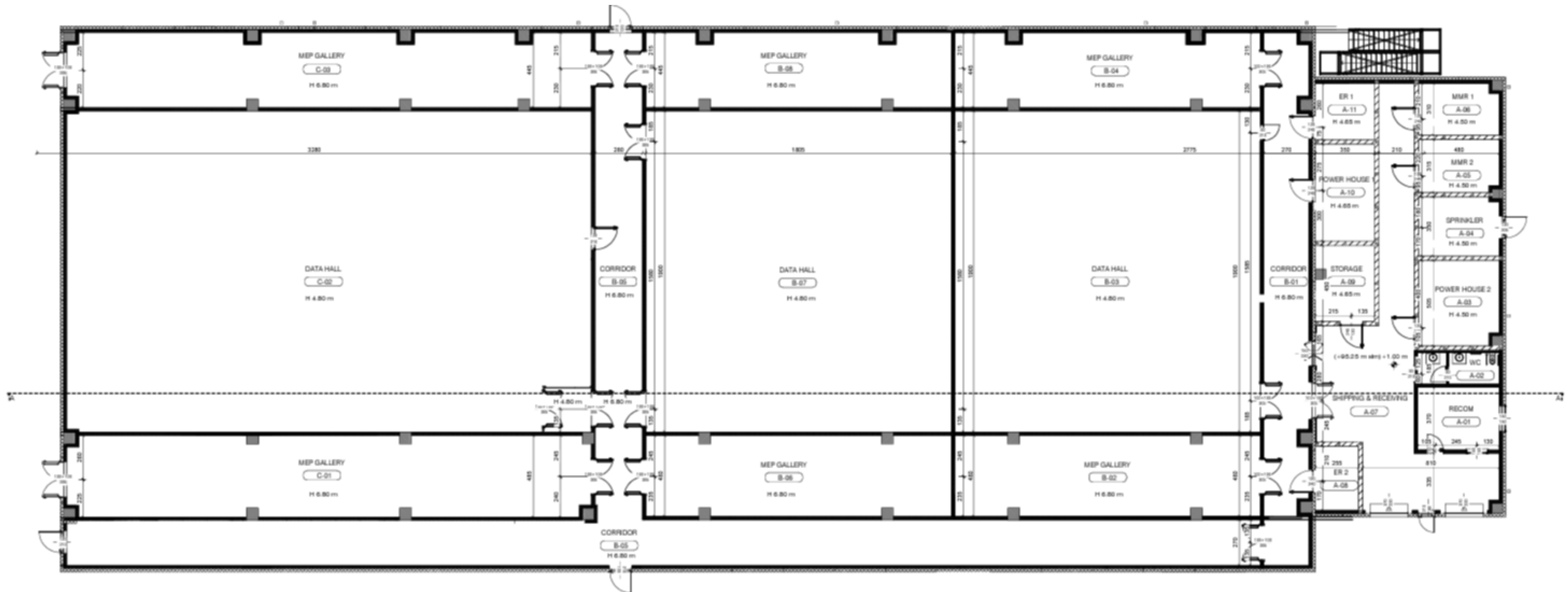
© K for approval dates by the ASHRAE Standards Committee, the ASHRAE Board of Directors, and the American Standards Institute.

It is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards as established a documented program for regular publication of addenda or revisions, including procedures for nented, consensus action on requests for change to any part of the Standard. The change submittal form, and deadlines may be obtained in electronic form from the ASHRAE website (www.ashrae.org) or in paper 1e Senior Manager of Standards. The latest edition of an ASHRAE Standard may be purchased from the xsite (www.ashrae.org) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. s@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for and Canada). For reprint permission, go to www.ashrae.org/permissions.

RAE ISSN 1041-2336



The Building Layout



Specific Owner Requirements



Data hall 1 – Legacy Air Cooled IT racks:

- 300 IT racks of 1 to 10kW each
- Total IT load for the Hall 300kW

IT servers contained in cabinets or racks with cooling air fed to front of rack according to ASHRAE TC 9.9 rules. The method of air delivery may be via and underfloor plenum with movable floor grills. Alternatively, designs may adopt a solid floor fan wall approach. Depending on climate, DX, chilled water AHU, free air, adiabatic cooling may all be possible.

Data Hall 2 – High Density AI racks

- 30 IT racks of 10 to 50kW each
- Total IT load for Hall 900kW

IT servers contained in cabinets with liquid to chip capability. The liquid supply to the chip is typically delivered via a CDU or other device that separates the facility cooling water from the IT cooling loop. Attention should be made to the efficacy of the liquid to chip technology and the potential that 15-20% of heat is not fully recovered by the liquid loop.

Data Hall 3 – High Density AI racks with full immersion in dielectric fluid

- 30 IT 'tanks' of 10 to 50 kW each
- Total IT load 900kW

IT servers are fully immersed in dielectric fluid typically delivered via a CDU or other device that separates the facility cooling water from the circulating dielectric fluid. The immersion tanks may be insulated to improve efficacy to 95%+ but attention should be made to the remainder. Also, the IT equipment has been found to operate effectively when immersed in tanks at 50-60°C.

Registration

To register, follow this link
and
complete the online registration form:

[Registration form](#)

Or scan this QR code





THANK YOU