Expression of Interest (EOI) For Supply, Installation, and Maintenance of Racks with RDHX Solution

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The EOI process will follow the detailed steps outlined below, along with a tentative timeline.

Activity Date of completion Release of EOI	**31-10-2025 2:00 PM**
Questions submitted over one consolidated email from each vendor	**04-11-2025 2:00 PM**
Answers to consolidated questions provided to all vendors	**06-11-2025 2:00 PM**
Submission of EOI response	**07-11-2025 2:00 PM**

IITK reserves the right to make any changes deemed necessary in the above process, as needed. While IITK will attempt to follow the above timeline, it reserves the right to adjust the dates if necessary; any changes to the schedule will be posted on the website. The vendors are requested to send their detailed EOI response via email with the subject 'EOI for:' and the date of the EOI closing to the email address prajwalb@iitk.ac.in by **07-11-2025, 2:00 PM**.

A Tier-3 equivalent state-of-the-art water-cooled data centre is being planned to host the RDHx Racks. The proposed system will be hosted in the same data centre by replacing the existing system and storage.

S.No.	Bidder / OEM Qualification Criteria	Comply (Yes/No)
1	The bidder / OEM must be a registered company under the Indian Companies Act, 1956/2013, or LLP Act, 2008.	
2	Bidder Company must be ISO 27000/2013, ISO 9001/2015 etc.	
3	Must have a valid PAN and GST registration.	
6	Net Worth: Positive net worth in the last 3 financial years.	
7	Supporting documents: Audited financial statements or a CA-certified turnover certificate.	
8	The bidder must have experience in supplying and maintaining data center Solutions, specifically involving racks and iPDU, Rear Door Cooling (PAC), and In-row Cooling.	

9	Must have completed at least 3 similar projects in the last 5 years, each involving RDHx or equivalent cooling solutions.	
10	The OEM must have installed at least 50 RDHx units across India.	
11	Supporting documents: Work orders, completion certificates, and client references.	
12	If the bidder is not the OEM, they must submit a valid OEM authorization certificate.	
13	The OEM must have a presence in India for at least five years and provide local warranty and service support.	
14	Declaration of non-blacklisting.	
15	OEM must have 1 CDCP (as per TIA 942) certified Data Center designers	
16	The Racks and RDHx Solution must be of the same OEM.	

S.No.	Parameter	Server Rack Requirement	Comply (Yes/No)
1	Rack Dimensions	42U, 600mm Width x 1200mm Depth (excluding RDHx Adapter Frame)	
2	RDHx Compatibility	Must fit rack size with proper framing and blank-off panels; no air bypass	
3	Load Capacity	Static load ≥ 1250 kg Dynamic 600KG	
4	Blanking Panels	Flame-retardant panels for 20% empty space	
5	Frame Construction	Extruded MS/Aluminum frame for stability and load-bearing	
6	Front Door	Hexagonal Front perforated 75%, 180^{O} Hinges & 3 Point Locking Lever Handle	
7	Accessories	All built-in accessories for cable management and mounting hardware	
8	Safety Certifications	UL-CA-2134146-0 UL-US-2140717-0 RoHS; TSCA; REACH	
9	Side Panels	Lockable & Removable Type	
10	Cable Management	Top & Bottom Cable Entry Cutout at Rear of Rack with Brush locks	
11	Grounding Kit	Pre-Installed	
12	Blanking Plates	20% Minimum of Rack U Space	

S.No.	Parameter	Intelligent Power Distribution Unit (iPDU) Requirement	Comply (Yes/No)
1	Quantity per Rack	Minimum 2 Nos. intelligent PDUs inside each rack	
2	PDU Type	Intelligent Input Socket Level Monitoring Only	
3	Mounting	0U Vertical Mounted	
4	Capacity & Number of Outlet	43.5kVA / 63A 3Ph 380-415VAC; 42Nos 21Nos 4In 1 Combi Socket (C13/C15/C19/C21) & 21 Nos 2in 1 Combi Socket	
5	Monitoring Display	Hot Swappable, Fast Plug, High Visibility LED Interactive Display	
6	Monitoring	Inlet Monitoring with 1Nos. T&RH Sensor, Spot Leak Detection Sensor	
7	Cable & Connection	Minimum 3Mtr Top of Rack Connection Cable with Industrial Socket IEC 60309 530P6 / 532P6	
8	Protection	Necessary MCB at Input Level & Phase Distribution Control	
9	Operating / Storage Temperature	-5 to 60C (23 to 140F) / -20 to 60C (-4 to 140F)	

10	Humidity (Operating/Storage)	5-90% RH / 5-95% RH; non-condensing	
11	Safety & Environmental	IEC 62368 listed. RoHS, REACH compliant. UL 2900-1 certified for safety software cybersecurity for network-connectable products	
12	Remote Connectivity	Minimum HTTP(s), iPV4 and iPV6, SSH, Virtual Serial, SNMP (v1, v2c, v3), JSON-RPC, LDAP(S)	
13	Warranty	Similar to IT Equipment, Server PDU should be warranted for a Minimum of 5 Years	

S.No.	**Rear Door Heat Exchanger (RDHX):**	**Comply (Yes/No)**
1.	The RDHX should have a 30kW capacity and ensure optimum thermal and energy performance by removing the heat generated by the active IT/compute equipment directly at the source, thereby preventing hot exhaust air from entering the data center/server room.	
2.	It should work independently of the IT equipment fan speed to route the warm air flow to the cold-water heat exchanger, utilizing a maximum water temperature of 15 °C.	
3.	The heat from the warm exhaust air flowing from the IT components needs to be dissipated through the water heat exchanger with active EC fans mounted on the cooling door.	
4.	RDHX should be fitted to the back of the rack, and should be a maximum of 281mm in Depth addition to the Rack Frame	
5.	It should be compatible with any OEM Rack of either 600 dimensions.	
6.	RDHX should not occupy space in the rack; therefore, the full server rack is available for IT equipment.	
7.	The solution for an active EC fan should be self-sufficient, featuring an in-built controller and T&RH sensors to control the flow of water and fan speed, depending on temperature data monitored through various sensors mounted in front and rear of the RDHx doors.	
8.	The cooling output must be designed according to the individual rack's IT load in terms of kilowatts (kW).	
9.	It should support the IT Heat load 100% as per design and enter the chilled water temperature of 15 degrees C.	
10.	RDHx must work in accordance with the IT load variations in the rack to optimize energy consumption.	
11.	The active EC fan solution requires each RDHx to be equipped with its own intelligent controller, which manages the water flow and EC fan speed according to the IT load and should be independent of the other coolers.	
12.	There should be no overcooling or undercooling, regardless of the rack IT load.	
13.	The controller should ensure adequate cooling is delivered.	
14.	Intelligent RDHx must have a built-in controller within the chassis of the RDHx that receives feedback from temperature sensors installed at various points (front, rear, and exhaust). The controller should be Toolless Hot Swappable in Case of Breakdown, without affecting RDHx Operation. Based on this feedback, the controller automatically adjusts the fan speed and water flow rate.	

15.	Fans must be backward-curved centrifugal fans incorporating EC technology, IP44-rated. Unit Noise should not cross more than 72 dBA @ 1 metre at full load condition, and Unit Noise should not cross more than 60 dBA @ 1 metre at normal load condition (30% to 50 % fan speed).	
16.	RDHX should comply with the minimum IP21 rating and meet standards such as CE and UL.	
17.	Vendor to submit the Certificates for the claimed standards and compliances at the time of submission.	
18.	The system should be free from condensation, which occurs when the temperature of the water inside the environment exceeds the dew point temperature.	
19.	Supply and return hoses are made from a mix of galvanized wire, fabric, and rubber silicone, offering ultra-pliable hoses with a smaller bend radius than most other hoses available. This helps prevent twisting while providing the benefit of additional flexibility.	
20.	Hose testing to be confirmed with pressure of 5 bar & theoretical burst minimum at 15 bar to be submitted.	
21.	RDHX should have communication protocols built in, including Modbus over TCP/IP, with options for SNMP etc.	
22.	The connection of the hose pipe should be from the bottom, and at the connection point, utmost care should be taken to protect the IT hardware in case of water leakage inside the rack.	
	Features and Specifications	
1.	Dramatic Energy Savings	
2.	100% “Sensible” Cooling	
3.	Extremely Scalable Depending on Design Conditions	
4.	Eliminates Hot Spots in The Data Center	
5.	Can Be Retrofitted to Any Rack in Today’s Market	
6.	No Low Load, CRAH/CRAC, Raised Floor, Or Containment Required	
7.	Built-in Redundancy for Fans, Power	
8.	Condensate Free Operation with Provision of Condensation Tray	
9.	Leak Prevention System	
10.	Can Be Coupled With:	
	1. Free Cooling Chiller Systems	
	2. Chilled Water Systems	
	3. Ground Source Water Systems	
	4. River or Other Natural Water Sources	
11.	Modular Design Allows for Convenient Build-Out Over Time	
12.	Active PLC Control Logic That Constantly Monitors and Adjusts in Real Time to Server Heat Loads	
	Heat Exchanger	
13.	High efficiency copper tube, aluminum fin heat exchanger	
14.	Heavy-duty door hinge allows for simple installation and easy server equipment access	
	Fans	
15.	Centrifugal fans with reverse curved blades	
16.	EC Motor design for maximum efficiency	
17.	Hot swappable design for live toolless fan changes in the event of failure	

	Power	
18.	208V-230V/1PH/50-60HZ standard	
19.	Available power: 277V/1Ph/50-60Hz optional	
20.	Single point power connection (Provision of Redundant power connection)	
	Controls	
21.	Adjustable PLC control system for active cooling of server racks	
22.	Ambient sensing probe	
23.	Adjustable interval, automatic, fan failure test sequence	
24.	Available BMS interface (consult factory for additional pricing)	
	Shipping Dimensions	
25.	Crate: **OEM to confirm**	
	Weight	
26.	Shipping: **OEM to confirm**	
27.	Operating: **OEM to confirm**	
	Components and Construction	
28.	Powder-coated metal enclosure and local LED status indicator	
29.	Chilled water coil	
30.	2-way control valve	
31.	EC fans & motors	
32.	Microprocessor controls and instrumentation	
33.	Flex hose connections	
34.	Leak prevention system with 2-way valve isolation	
	Powder Coated Metal Enclosure	
35.	The Chilled Door® should be enclosed in a structural, welded frame capable of supporting all the required components and suitable for attachment to the rear plenum of any industry-standard server rack.	
36.	The enclosure includes an internal coil protection grill and external perforated screens for fan discharge.	
37.	Perforated screens shall contain LED status indicators to alert staff to any alarm.	
38.	The Chilled Door should be constructed in a high-quality sheet metal housing, with a stainless-steel removable fan access panel and finished in baked epoxy powder paint. The Chilled Door only requires connection to utilities furnished by others to be fully operational.	
39.	The Chilled Door should be supplied with an adapter frame (Interface Frame) featuring a hinged connection, allowing for simple accessibility to all racks by one person.	
40.	When fully open, the door allows unobstructed access inside the rack and does not interfere with adjacent doors when open.	
41.	The active door and frame are prepared, primed, and finished in a black or white baked epoxy powder.	
	Chilled Water Coil	
42.	The Chilled Door should be fitted with an extended surface chilled water coil with plain copper tubes and corrugated aluminum fins.	
43.	The coil is designed to remove 100% of the sensible heat from the server when provided with the specified chilled water flow.	
44.	The coil in/out headers shall be located at the bottom or top of the coil and shall allow	

	for flexible, quick-connect chilled water hoses.	
45.	The coil headers contain vents to remove accumulated air from the coils.	
46.	The coil frame is manufactured with aluminum to prevent the formation of zinc whiskers.	
	2-Way Control Valve	
47.	The valve is a fail-safe modulating control valve that provides proportional control of hot or chilled water in commercial applications.	
48.	The PLC shall also control a 2-way valve fitted in the chilled water supply line by either a manufacturer-authorized installation provider or a suitable local mechanical contractor. The standard control band shall be adjustable to maintain close control of the data center room temperature while cooling the servers.	
49.	In the event of a power failure, the valve automatically drives to its failsafe position, either fully open or fully closed.	
50.	The factory set point is fully closed.	
51.	The valve uses a microprocessor-controlled, low-voltage stepper motor with a supercapacitor-based power supply that stores sufficient power to drive the valve to its fail-safe position when 24V power is removed from the actuator.	
	Fans & Motors	
52.	The Chilled Door should be equipped with up to Twelve (12) centrifugal fans, each featuring its own close-coupled 208-230V/1Ph/, 50-60Hz motor.	
53.	Fan motors are EC and independently powered for variable speed operation and rated for a minimum protection of IP54 for indoor applications.	
54.	Fan/motor assemblies shall be designed for easy access and shall allow for any fan/motor to be safely isolated & “tool-less hot swapped” in service while the others remain operational.	
55.	Fans meet all EMI regulations in the EMEA region.	
	Microprocessor Controls and Instrumentation	
56.	The Chilled Door operation should be controlled and monitored by a plug-in, fully integrated, reprogrammable microprocessor.	
57.	The microprocessor controls all functions of the rear door and monitors all operating parameters.	
58.	The PLC includes an LCD display.	
59.	An adjustable alarm is provided for all critical functions. The alarm points are wired to a common alarm relay and a panel-mounted LED.	
60.	In the event of any alarm condition, the microprocessor displays a code for the alarm condition. The Chilled Door features telemetry points for monitoring and adjustment, enabling customization according to customer preferences. PLC / Controller can be Hot Swapped for Maintenance in Case of Failure without Downtime to RDHx performance	
61.	The entire PLC control is accessible and mounted on the door. The PLC is suitable for connection to a central control system for remote monitoring & alarm access.	
62.	Remote communication is an open protocol via an (optional) communication card, including Modbus, IP, MS/TP, or SNMP.	
63.	The Chilled Door is remotely adjustable when integrated with the DCIM tool.	
	Flex-Hose Connection	
64.	Each Chilled Door is equipped with a pair of flex hose connections.	
65.	The hose shall be 1” in diameter and suitable for the specified flow and pressure drop.	

	Steel Hose construction is made of black nitrile synthetic rubber (Class A - Oil Resistant) with a black Chemivic synthetic cover.	
66.	Reinforcement is a spiral-plied synthetic fabric with a wire helix. The hose is temperature rated from ‑40°F to 200°F (‑40°C to 93°C).	
67.	They are rated for a maximum working pressure of 150 psi and have undergone pressure testing twice prior to shipment.	
68.	The hose has a bend radius of 1” (25mm). The hose can be fitted with an external stainless-steel braided cover for added protection against accidental damage (plenum-rated).	
69.	The hose has a 1” female (FNPT) quick-connect socket pre-attached for connection to the door and header system.	
	Leak Prevention System	
70.	The Chilled Door isolates the door in the event of leak detection. The 2-Way valve is a spring return valve holding a single charge set to fail closed.	
71.	The Chilled Door adjusts fan speed accordingly, up to 100% fan speed.	
72.	All Chilled Doors collectively control the ambient room temperature in any failure scenario, maintaining a constant server inlet air temperature.	
	Inherent Redundancy	
73.	Hot Swappable Fans	
74.	PLC Bypass: Fans/Valve -100% Default (Other doors pick up the difference)	
75.	A/B Power Supply: Rack PDU, Dedicated Power	
76.	Audible & Visual Alarms: Blue (normal operation), Green (non-critical alarm), Red (critical alarm)	
	Declaration of Conformity	
77.	The complete assembly has been tested & approved by ETL, in accordance with UL 1995 and CSA C22.2 236-06 safety standards.	

S.No.	**Parameter**	**1U KVM Switch with Monitor, Keyboard & Touchpad Requirement**	**Comply (Yes/No)**
1	Monitor	17" TFT display, 1280×1024 resolution, 16.7M colors, 350 cd/m² brightness, 1000:1 contrast	
2	Keyboard	83 keys with numeric pad, USB/PS2 connectivity	
3	Touchpad	Integrated touchpad with USB connectivity	
4	Voltage	Wide-range input (110–240 VAC), optional 12/24/48 VDC	
5	Mounting	Depth-adjustable mounting for different server panel pitches	
6	Dimensions (Closed Monitor)	1U (44 mm) height, 19" (483 mm) width, 470 mm depth (without handle), 590 mm (with handle)	
7	MTBF	35,000 hours	