BEAT THE HEAT

TASK:-

Design and contrive a semi-batch Heat Exchanger that can offer maximum efficiency in a given time.

ABOUT:-

A semi-batch heat exchanger is a type of heat exchanger in which one fluid is held stationary inside the exchanger vessel/shell while other fluid is passed continuously through a tube(s) (of MOC copper, aluminium, etc.) and the heat exchange takes place through indirect contact i.e., from hot fluid to cold fluid by heat flow through the walls of the tube(s).

For efficiency, heat exchangers are designed to maximize the surface area of the wall between the two fluids, while minimizing resistance to fluid flow through the exchanger.

PROBLEM STATEMENT:-

Construct a semi-batch Heat Exchanger to extract heat from a stationary hot fluid using a continuous cold fluid with maximum efficiency in a given amount of time

NO OF PARTICIPANTS:-

1. Maximum 3 per team
2. Students of different institutions can also form a team.
3. The participants can be of any department

DESIGN SPECIFICATIONS:-

1. The prototype should fit into a box of 30*30*40 cm
2. It should have proper inlets and outlets for both hot and cold fluids

3. Cold water will be provided through a 0.5 inch diameter pipe at inlet, and 2 kg of hot water in bulk will be provided before-hand, therefore make necessary provisions

4. Suitable valves arrangement should be fitted to regulate the flow of fluids

ROUNDS:-

- Round-1

1. The participants have to present a power-point presentation (of not more than 10 minutes) about the prototype, explaining its design, calculations, safety factors and innovation.

2. It will be followed by a Q&A session of 5 minutes by the judges.

3. This round will carry 30% points weightage.

4. Final marking will be done by the judges.

- Round-2

1. 2 kg hot stationary fluid (70-800C) will be provided.

2. Cold fluid (ambient temperature) at a flow-rate of 0.2 m3/hr will be given.

3. Run-time for performance will be 2 minutes.

4. Judging will be done on the basis of final temperature difference of hot fluid and water loss (leakage).

5. This round will carry 70% points weightage.

6. The final results will be decided by the “Beat the Heat” team based on total points from these two rounds. [Note: Any team is subject to disqualification if it doesn’t adhere to the rules mentioned above and the decision to do so rests in the hands of the judges and Beat the Heat team].

*CORE COMMITTEE DECISION WILL BE FINAL AND INDISPUTABLE IN ANY CASE.
*ANY MISBEHAVE WILL LEAD YOU TO DISQUALIFICATION.
*THIRD PRIZE WILL BE GIVEN IN CASE OF MORE THAN 15 REGISTRATIONS.
*IN CASE OF PARTICIPATION LESS THAN 5 PRIZE MONEY WILL BE DECIDED BY ORGANISERS.

CERTIFICATION POLICY:-

Certificates and prize money will be provided to top three teams of the competition.

FOR QUERIES CONTACT:-

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