HyNet North West

VERTEXHYDROGEN

HyNet Hydrogen Production Plant 1 – Technical Note

EPR Response - 9cii - BAT for energy efficiency

Summary

Problem Statement

Advise the total cooling duty of the plant (i.e., MW released to the environment).

Response

Data:

The major cooling duties for the LCH plant where heat is released to the environment are shown below:

A) ASU Cooling Towers – Water flowrate (maximum) – 1970 m^3/hr:

   MW released = 22.9 MW (maximum)

B) Air cooled heat exchangers:

   LP Flash Column condenser – 4.5 MW (maximum at design condition)

   Leam Amine Cooler = 35.2 MW (maximum duty)

C) Air cooler for cooling medium system:

   MW released = 16.5 MW

Total Cooling duty released= 22.9 + 4.5 + 35.2 + 16.5 = 79.1 MW.

Further Developments:

Further value engineering activities are envisaged to be executed within the next engineering phase, such as:

- Finalisation of individual heat loads from vendor data
- Operation synchronisation
- Further heat integration
- Possible removal of equipment such as the Natural Gas inlet compressors, removal or intermittent use of hydrogen compressor, cooling medium system change to evaporative or hybrid system and replacement of air coolers with water coolers.

Some of above development shall drive down the total cooling duty release from plant to environment.

References Used:

[1] Utility Summary - 5194812-000-49EL-4-0003 Rev 03

[2] Air Cooler Data sheet - 5194812-000-45ED-4-0028