

## HyNet Hydrogen Production Plant 1 – Technical Note

### EPR Response – 9civ – BAT for Cooling

#### Summary

##### Problem Statement

Provide further explanation and justification for the proposed use of air-cooling as opposed to more energy efficient cooling options (such as direct water cooling or wet cooling towers / hybrid systems).

#### Response

##### Further Development

A value engineering exercise shall be completed on the cooling circuit as part of the current engineering phase. This exercise shall examine the merit of possible alternative options for the cooling circuit such as replacing it with an evaporative cooling tower system.

Associated areas that would be reviewed shall be the evaporative cooling tower water circulation pump and fan electrical power demand, along with the development of heat integration and actual number of water-cooling heat exchangers to further improve the overall cooling system.

However, in the interim, the following paragraphs provide some guidance as to what could be envisaged as being completed during the value engineering exercise and what was chosen for the current design.

##### Current Design Basis

Air cooling system was selected based on site limitations such as:

- Limited continuous source of water
- Lower maintenance frequency requirements for the system.
- Avoiding additional chemical handling, storage and disposal or leakage into cooling system.
- Avoiding higher quality material selection due to chemical injection in cooling water.
- Removing the need for additional biological treatment to avoid algae and bacteria contamination in water basin.

##### Value Engineering Exercise

Whereas evaporative or hybrid cooling water system can have the following advantages:

- Lower footprint than air cooling system.
- Energy saving of approximately 25% less than the air-cooling system.
- Footprint reduction by 10 to 20% compared to the air cooler system.
- Reduced flume from hybrid systems.