

Ewa Grzybowska

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]@airliquide.com

National Infrastructure Planning
Planning Inspectorate
Temple Quay House
2 The Square
Bristol
BS1 6PN

12 March 2024

Dear Sir or Madam,

Planning Inspectorate Reference: TR030008

Proposed Immingham Green Energy Terminal Development Consent Order

Title: Comments in respect of the Immingham Green Energy Terminal Project

Examining Authority's submission deadline 13 March 2024

It is essential to note that hydrogen production through ammonia cracking currently serves small-scale industrial applications within the metallurgical sector, yielding up to around 120 tonnes of hydrogen annually.

Embarking on the transition to large-scale hydrogen production through ammonia dissociation, it is imperative to acknowledge the distinct requirements posed by this shift, both in terms of technology and catalyst. The shift from a small to a significantly larger scale production necessitates adjustments in operating conditions, the implementation of proven catalysts, and enhancements in the energy efficiency of ammonia cracking process. The proposed technology must exhibit a high level of technological readiness to guarantee utmost safety and reliability.

The market for large-scale ammonia dissociation is in its infancy, with no operational industrial-scale plants under any technology licensor. Demonstration units are in the planning stages to validate ammonia cracking technology for subsequent commercialization.

Given this context, I propose that certain critical factors such as operational experience, environmental impact and health and safety safeguards, be comprehensively addressed and submitted for the deliberation of the Examining Authority.

For the purpose outlined, I recommend that Examining Authority request the Applicant to furnish information regarding the following topics:

- a) Demonstrate the readiness of the applied ammonia dissociation technology for commercial application.
- b) Provide evidence showcasing practical operational experience with the ammonia dissociation plant for hydrogen production.
- c) Given the acknowledged negative environmental impact of utilizing Natural Gas as a fuel, elucidate the rationale behind the Applicant's decision to abstain from alternative fuel sources (e.g. ammonia, hydrogen) to mitigate carbon dioxide emissions and consequently diminish the carbon intensity of hydrogen production.
- d) Clarify the reasoning behind the proposed deployment of six smaller Hydrogen Production Units, as opposed to a singular larger unit, emphasizing how this approach aligns with the objective of minimizing plot space requirements for the industrial facility's development.
- e) Recognizing the potential hazards associated with the catalysts implemented in the ammonia dissociation facility, submit a Safety Data Sheet to enhance awareness and elucidate the hazards linked to the catalyst and recommended safety precautions.

Addressing these factors during Examination will play a pivotal role in ensuring that the development proposed by the Applicant adheres to the highest standards of reliability, safety, and environmental sustainability.

Yours faithfully,

Ewa Grzybowska