



TECHNICAL SPECIFICATION FOR RFI

Subject : Possibility of implementation of new solutions allowing modernization of ammonia synthesis reactor with catalyst

1. Technical specification

The purpose of the inquiry is to obtain information on available solutions to reduce the energy intensity of the ammonia synthesis process.

The catalyst will be located in the reactor. The reactor receives synthesis gas with a hydrogen and nitrogen concentration of 3:1, the current capacity of the synthesis plant is 825 Mg/day.

Synthesis gas parameters:

LOAD [%]	70	100
PRESSURE [MPa]	11	20
TEMPERATURE [°C]	130	150

The gas composition at the reactor inlet:

Gas component	Design value [%]	Permissible range [%]
Hydrogen H₂	62,89	61-67
Nitrogen N₂	20,96	20-25
Methane CH₄	9,34	8-10
Argon Ar	3,66	3,5-5,1
Ammonia NH₃	3,15	2,1-4,0

Reactor dimensions: 17875 mm x Ø 2650

The main goal is to modernize the synthesis process, hence the search for the latest and most efficient production techniques.

1. Scope of work/supply:

- Delivery of a catalyst designed to conduct ammonia synthesis.
- Safety Data Sheet delivery in accordance with REACH, and a Quality Certificate for the offered catalyst in Polish..

3. Technical conditions for the performance and acceptance of the service / supply:

3.1. Supply of catalyst for ammonia synthesis

- 3.2.** Delivery of valid Material Safety Data Sheet compliant with REACH and Quality Certificate of the offered catalyst in Polish.
- 3.3.** Submit technical specifications including: physical and chemical characteristics, catalyst loading-unloading and activation instructions, guaranteed catalyst performance parameters
- 3.4.** The amount of catalyst specified in units of weight and volume
- 3.5.** Country of origin of the catalyst
- 3.6.** Packaging - barrels stacked on pallets (weight of a single barrel max 70kg)

4. Requirements:

- Guarantee of a minimum of 4 years of preservation of catalyst operating parameters for 70% and 100% load
- Determination of parameter forecast for 6-year catalyst operation for 70% and 100% load - maximum ammonia content in the exhaust gas [%mol]
- Determination of the task completion date
- References from the last 10 years (min. 5) - references should include company name, locations, type of reactor, type of catalyst and date

5. Contact:

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