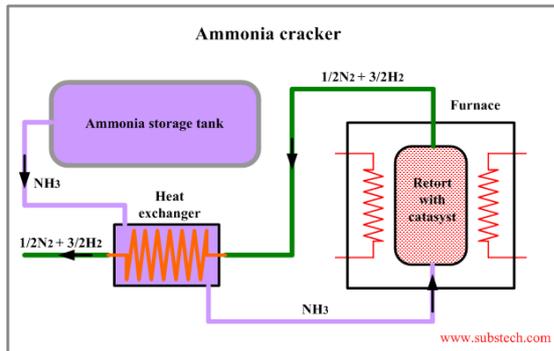


# AMMONIA CRACKER



MARUTI CORPORATION having a modern facilities with over 50000 square feet of manufacturing space near Vadodara (Gujarat, India).

Vadodara is one of the biggest industrial and chemical complexes hub in India making us ideal for easy availability of specialized skilled engineers, man power, spares & instruments availability also.



NH<sub>3</sub>-Cracker or hydrogen generator is used for the production of forming gas. Hydrogen and Nitrogen are generated in a cost effective way in a volume ratio of 3 : 1 or in a weight ratio of 14 : 3. Capacities from 1m<sup>3</sup>/h to 60m<sup>3</sup>/h are available. Ammonia cracking is a simple and cost effective method of manufacturing hydrogen, however it may be used only in the applications, in which presence of nitrogen is acceptable. The NH<sub>3</sub> is coming from bottles or from or bulk tanker. The ammonia gas is pre-heated in a heat exchanger and vaporizer and then cracked in the main furnace unit. The furnace is electrically heated by special LGO heating elements. The decomposition of ammonia gas NH<sub>3</sub> takes place at a temperature of 920°C in the presence of a special grade nickel catalyst in an electrically heated furnace.  $2 \text{NH}_3 \text{ gives } \text{N}_2 + 3 \text{H}_2$  The cracked gas then passes to the heat exchanger for cooling and for pre-heating the incoming gas. This way and in combination with the low power consuming LGO heating elements, it can be made sure that only a minimum of electricity has to be used for the cracking process.

\* Ammonia cracking is a process of dissociation (decomposition) of gaseous anhydrous Ammonia (NH<sub>3</sub>) into a mixture of Hydrogen (H<sub>2</sub>) and Nitrogen (N<sub>2</sub>) according to the reaction:  $2\text{NH}_3 = \text{N}_2 + 3\text{H}_2$

\* The reaction is endothermic, requiring 383 kJ/mol. The process is performed at increased temperature within the range 1560-1740°F (850-950°C) in the presence of special grade nickel as catalyst.

The resulting gas mixture is composed of hydrogen and nitrogen in the proportion 3:1 (75% of H<sub>2</sub> and 25% of N<sub>2</sub>) with very little amount (20 -100 ppm) of residual undissociated ammonia with dew point -60°F to -20°F (-51°C to -29°C). The gas may be further purified by molecular sieves purifier resulting in reducing the uncracked ammonia to 1-3 ppm with dew point -110°F (-80°C).

Available Capacities : 0 m<sup>3</sup>/hour to 60 m<sup>3</sup>/hour.

**Salient Features :**

\* Easy to operate.

\* Low capital cost

\* maintenance free operation.

\* Low running cost

\* Available in different capacities.

\* Long service life.

\* Very cost effective alternate for water Electrolysis Plants in terms of power, capital cost and running cost

## Applications:

- \* Annually furnace in cold rolling industries.
- \* For providing atmosphere in Hydrogen Bell.
- \* For providing reduction in bulk drug.
- \* Stainless steel wire annealing.
- \* Continuous galvanizing lines.

- \* Bi-metal products annealing.
- \* Sintered products annealing.
- \* Metal Powder annealing.
- \* Brazing application.
- \* Heat treatment.

