



thyssenkrupp

Insights _Uhde



Cutting-edge technology and market-leading expertise in ammonia plants since 1928

Over 90 years of ammonia solutions tailored to our customers' needs: From the first ammonia plant using an uhde® proprietary process that went on stream at a German coalmine in 1928 with a capacity of 100 metric tons per day (mtpd) to the plants built in recent years in Saudi

Arabia and the USA with a single-train capacity of up to 3,670 mtpd, thyssenkrupp has repeatedly set standards in state-of-the-art ammonia plant engineering and construction.

Our market leadership in ammonia plants is based on pioneering achievements in critical plant equipment. These innovative developments include the uhde® primary reformer; the uhde® secondary reformer; a process gas cooling train downstream of the secondary reformer for generating and superheating high-pressure steam; a high-efficiency ammonia converter system with up to four catalyst beds, indirect heat exchange, and radial flow; and an ammonia synthesis waste heat boiler. We hold multiple patents for critical plant equipment and have granted numerous manufacturing and marketing licenses to equipment manufacturers and chemical engineering contractors. These innovative developments have made us one of the world-leading technology providers in this field.

In today's tough economic climate ammonia plant operators are looking for reliable and highly experienced partners offering the best available technology and the highest possible plant availability. We offer customers the best process for every feedstock either through our own cutting-edge technologies or licensed processes: natural gas or Naphtha processed by [uhde® steam reforming](#), biomass and waste by [uhde® Prenflo® gasification](#), and renewable energy by [uhde® water electrolysis](#); sulfur removal by the uhde® Claus or MDEA processes; CO₂ recovery from the flue gas; and CO₂ removal by the BASF OASE white®, UOP (Benfield) or other processes. The solutions we offer cover all possible requirements with plant capacities ranging from 50 to 5,000 mtpd, energy consumption as low as 6.4 Gcal/t, emission-reduction facilities, ammonia plant revamps, as well as plant maintenance and operating training services.

Our A30 series featuring the uhde® dual-pressure process using three converters enables energy-efficient mega-plants with a capacity of up to 5,000 mtpd. Our world-scale A20 Series plants using two converters are applicable for plant capacities up to 3,500 mtpd, which are also equally efficient and highly reliable, as proven by plants installed on three continents in greatly varying climatic conditions. Our exceptional experience is particularly evident in our mid-sized A10 Series featuring a cost-efficient design in the 1,200 mtpd class. Our small-scale A04 Series in the 250-550 mtpd class brings the benefits of downsizing to locations with low ammonia needs and high transportation costs. And last but not least, our CO₂-free A01 Series micro-plants allow a green energy source (e.g. sun, air or water) to be used to produce ammonia via our electrolysis-based ammonia process.





The bottom line: By delivering cutting-edge technology since 1928, we have built up a wealth of expertise and experience in ammonia plant engineering and construction. Our present-day technological leadership is based on decades of innovative developments in key production processes. Today, we offer customers the right process for every feedstock and turnkey ammonia plants with capacities ranging from 50 to 5,000 mtpd – each tailored to the customer's needs.
