

1. Record Nr.	UNINA9911021142103321
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Titolo	The Global Synthetic Ammonia Industry : History and Developments // by Anthony S. Travis
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	3-031-87978-3
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (415 pages)
Collana	Perspectives on the History of Chemistry, , 2662-4605
Disciplina	338.4766134
Soggetti	Technology History Chemistry - History Chemistry Hydrogen as fuel History of Technology History of Chemistry Chemical Synthesis Hydrogen Energy
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Agriculture: Fertilizers for Feeding Growing Populations -- The Great Nitrogen Challenge: Synthetic Ammonia -- Luigi Casale and the Foundation of Ammonia Casale SA -- Ammonia Casale in Nobeoka, Japan, and Toulouse, France -- Reorganisation, and Research and Development at Ammonia Casale. The Final Years of Luigi Casale's Remarkable Life Story -- Casale's Process Described -- Pure Gases, Compressors, Catalysts, and Special Steels -- American Synthetic Ammonia, 1920-1940 -- The United States Emerges as the Global Leader -- Methanol and Urea, New Feedstocks, Steam Reforming, Fertilizers, Postwar Recovery, Regional Expansion -- The Green Revolution, 1,000-tpd Single-Train Ammonia Synthesis -- The Energy Crises, The People's Republic of China, the Soviet Union, and the 1970s -- Process Innovations in the 1970s and 1980s. International Growth -- Revamping, Catalyst Studies, and Green Hydrogen.

This monograph is the first comprehensive historical overview of the global synthetic ammonia industry, highlighting its critical role in fixing nitrogen from the air in order to produce the fertilizers that support a significant portion of the world's population. While the first part includes the storied Haber-Bosch process, introduced in 1913 by the German firm BASF, its main focus is on the largely forgotten Italian chemist Luigi Casale, the inventor of an alternative synthetic ammonia process. Casale had the distinction of launching the global synthetic ammonia industry through, and unlike BASF, the licensing of his technology. The narrative here incorporates the first biography of Casale, with descriptions of his innovations, and the early years of his company, Ammonia Casale SA. Technical challenges, relationships with collaborators and investors, and patent issues are discussed. The second part, through a macro perspective, explores the industry's international expansion, the evolution of novel technologies, and contributions to the Green Revolution. Included are the roles of engineering contractors, high-capacity manufacturing units, and geopolitical contexts. The final chapter covers the recent past, and briefly looks to the future with moves towards sustainability within the context of green hydrogen and ammonia production. This story of one of the world's most important industries is recommended for historians of modern science, technology, and business, chemical engineers, practitioners in the petroleum and chemical industries, and readers interested in technological advances that have shaped our world today.

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