



Atmonia

Towards a sustainable future

Ammonia production through the Atmonia process is the key to a sustainable fertilizer
The conventional production process is energy demanding and polluting
The Atmonia process will have a lower energy demand and no CO₂ emission

Atmonia

Patent accepted in Iceland
UI Applied Science Award
National Grant of Excellence
Technology development grant

Atmonia team

Prof. Egill Skúlason
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Other shareholders

University of Iceland
Innovation Center Iceland
SER holdings

Market

Annual production of NH₃ is worth approx. \$100 billion



Today

- ◆ Bulk production of ammonia through the Haber-Bosch process.
- ◆ High carbon footprint and high temperature, pressure and energy demand.

Future

- ◆ Versatile and sustainable ammonia production through the Atmonia process.
- ◆ Zero-carbon footprint, ambient conditions.
- ◆ Use of electricity from renewable energy sources.

Method

- ◆ Electrocatalysis from air and water using selective surface catalysts.
- ◆ **Small scale— on site production.**
- ◆ Cost compatible with the conventional method

Time is of the essence

In 2015, 195 countries signed the Paris agreement. The world needs sustainable solutions for large scale processes to decrease CO₂ emission and reduce energy demand.

Competition

Scientists worldwide are searching for sustainable ammonia production solutions. So far, the Atmonia process is the most promising.

The conventional Haber-Bosch process compared to the Atmonia process.

	Haber-Bosch	Atmonia
Energy (GJ/tonne)	36-52	20-40*
Tonne CO ₂ per tonne NH ₃	1.8	0
Temperature (°C)	350-450	25
Pressure (bar)	150-350	1

*estimated from quantum chemical calculations

Atmonia at the forefront

- ◆ Quantum chemical calculations have identified **four catalysts** that can reduce nitrogen from air to ammonia in water at ambient temperature and pressure.
- ◆ Experiments initiated in 2016—Experimental proof of concept has been acquired and will soon be published in scientific journals
- ◆ Atmonia income will be based on patent licensing and royalty fees

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