



COMBUSTION OF LIQUID AMMONIA, ASSISTED
BY PLASMA DISCHARGES, AS A NOVEL & CLEAN
ENERGY CONVERSION METHOD

2nd Press Release

April 2026

CAIPIRINH₃A Co-Hosts Successful Workshop on Green Ammonia Energy in Eindhoven!

On 1st of April 2026, the [CAIPIRINH₃A project](#) successfully co-hosted the workshop “Green Ammonia Energy: Intensified production, conversion and separation” at the Aristo Meeting Center in Eindhoven, The Netherlands. Organised in collaboration with the [AMBHER](#), [ANDREA^H](#), [APOLO](#), [FASTER](#), and [MEASURED](#) projects, the event brought together a diverse group of researchers, industry representatives, and technical experts from across Europe.

The one-day workshop offered an in-depth look at the latest innovations in green ammonia energy, including intensified ammonia synthesis, membrane-based ammonia cracking, and sustainable energy technologies. Participants engaged in a full program of presentations, roundtable discussions, and networking opportunities, creating a dynamic environment for knowledge exchange and collaboration. Distinguished presenters from the industry and academia shared their views on real world case studies from ongoing projects, and



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outlined the technical and economic challenges that must be addressed to accelerate the transition toward a low carbon ammonia economy. Participants joined from across Europe, attending both in person and online, with a total of more than 140 people taking part, over 40 at the meeting venue in the Netherlands and almost 100 connecting remotely.

The full agenda can be accessed here: <https://www.caipirinh3a.eu/wp-content/uploads/2026/03/Green-Ammonia-Energy-program.pdf>

The CAIPIRINH₃A team was represented by **Dr. Konstantinos Kourtzanidis** from **CERTH**, the project coordinator, **Dr. George Skevis** from **CLEOS** (one of the projects industrial partners) and **Dr. Agustin Valera-Medina** from **Cardiff University**. Our team presented the project's recent advancements in green ammonia production, focused on enhanced plasma combustion, and discussed its potential to support the transition toward sustainable energy systems. Other presentations covered a broad range of developments, from Europe's efforts to scale low emission ammonia production, and life cycle assessments, to advances in hydrogen



selective membranes and sustainable industrial solutions. Speakers also shared insights on scaling Periodical Open Cellular Structured (POCS) catalysts for intensified membrane reactor processes and examined the dynamic behaviour of ammonia synthesis and cracking for flexible, renewable integrated energy systems.

During the workshop, participants engaged in a series of roundtable discussions where each project shared insights on their current progress, challenges and future directions. These sessions helped to highlight synergies across different technological approaches and explored

how collaborative research can accelerate innovation in green ammonia and hydrogen value chains. The event concluded with a networking reception that provided further opportunities for attendees to connect with potential partnerships. Participants' feedback highlighted the strong value of uniting complementary research efforts with industry insight to accelerate progress in green ammonia and sustainable energy.

The success of this workshop illustrates the commitment of CAIPIRNH₃A and its partner projects to supporting a more sustainable energy future and strengthening the European research community in intensified ammonia technology, low carbon fuels and process intensification.



Take a brief overview of the Projects co-organising along with CAIPIRINH₃A the workshop



Develops advanced hydrogen storage for short- and long-term use: green ammonia (NH₃) for seasonal storage and nanoporous MOFs for compressed hydrogen. It integrates novel catalysts, membranes, and 3D-printed reactors for efficient ammonia synthesis, and designs MOF-based cryogenic vessels for high-pressure H₂ storage.

AMBHER aims to enable scalable hydrogen storage for renewable energy and transport.



Develops ammonia decomposition technology to produce ultra-pure hydrogen (>99.998%) using a Catalytic Membrane Reactor (CMR). It converts ammonia at lower temperatures (400–450 °C) with improved efficiency and reduced critical materials. The system combines structured catalysts, hydrogen-selective membranes, and a polishing step to deliver fuel-cell-grade hydrogen.

ANDREAH targets demo-scale validation (10 kg H₂/day) and commercialisation via spin-off.



Advances ammonia-to-power technologies for maritime use via an onboard membrane-based ammonia cracker.

Combined with fuel cells or ammonia/hydrogen engines, it targets ship decarbonisation at 125 kW (TRL5).

APOLO aims to prove scalability beyond 3 MW, enabling ammonia-powered vessels.



Demonstrates the techno-economic viability of hydrogen storage in ammonia (NH₃), linking water, energy, and fertiliser systems. It uses non-noble catalysts active at low temperature (<250 °C) and pressure (<50 bar), with structured reactors and absorption units for synthesis and separation. FASTER aims to develop improved heat/mass transfer reactor concepts and a demonstration system.



Develops and demonstrates advanced membranes for pervaporation, distillation, and gas separation in industrial applications. It targets cost reduction, higher performance, and sustainability (lower CAPEX, water use, and membrane costs). The project will reach TRL 7 with 20,000+ hours of industrial validation, supported by modelling, life-cycle assessment, and societal impact analysis.



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