METATOMIC®
CLEAN ENERGY EVOLVED®

S.C. Governor's Nuclear Advisory Council Meeting

October 15, 2024

OUR COMPANY

South Carolina based Metatomic, Inc. was founded in 2016 to close the nuclear fuel cycle by converting commercial light water reactor spent nuclear fuel (SNF) to salt fuel for a new generation of Molten Salt Reactors (MSRs).

MOLTEN SALT REACTOR FUEL

Status of the industry

Metatomic, Inc. is working to commercialize company patents for converting Spent Nuclear Fuel (SNF) into new salt fuel for “thermal” and “fast” molten salt reactors (MSRs).

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BUSINESS VALUE

- By using SNF as a fuel, the “Metatomic solution” can reduce the need to mine or purchase (i.e., from Russia) non-irradiated uranium ore, a strategic asset. Notably, the Metatomic® technology is also believed to be the most efficient process for producing MSR fuel *from non-irradiated uranium ore*.

- Applying Metatomic’s technology reduces the SNF volumetric footprint up to 90% by processing SNF to salt fuel, a tangible benefit even if such salt fuel is not immediately used in an MSR.

- Major cost savings would result by locating both a Metatomic® facility and an MSR onsite with, and within the security envelope of, an existing light water reactor (LWR) and its SNF storage area, *thereby eliminating the transfer SNF offsite to process into salt fuel for use in an MSR*.

Science of Molten Salt

Presented by Ken Baer
Co-Founder and
Principal Inventor

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MOLTEN SALT IMMERSION PROCESS

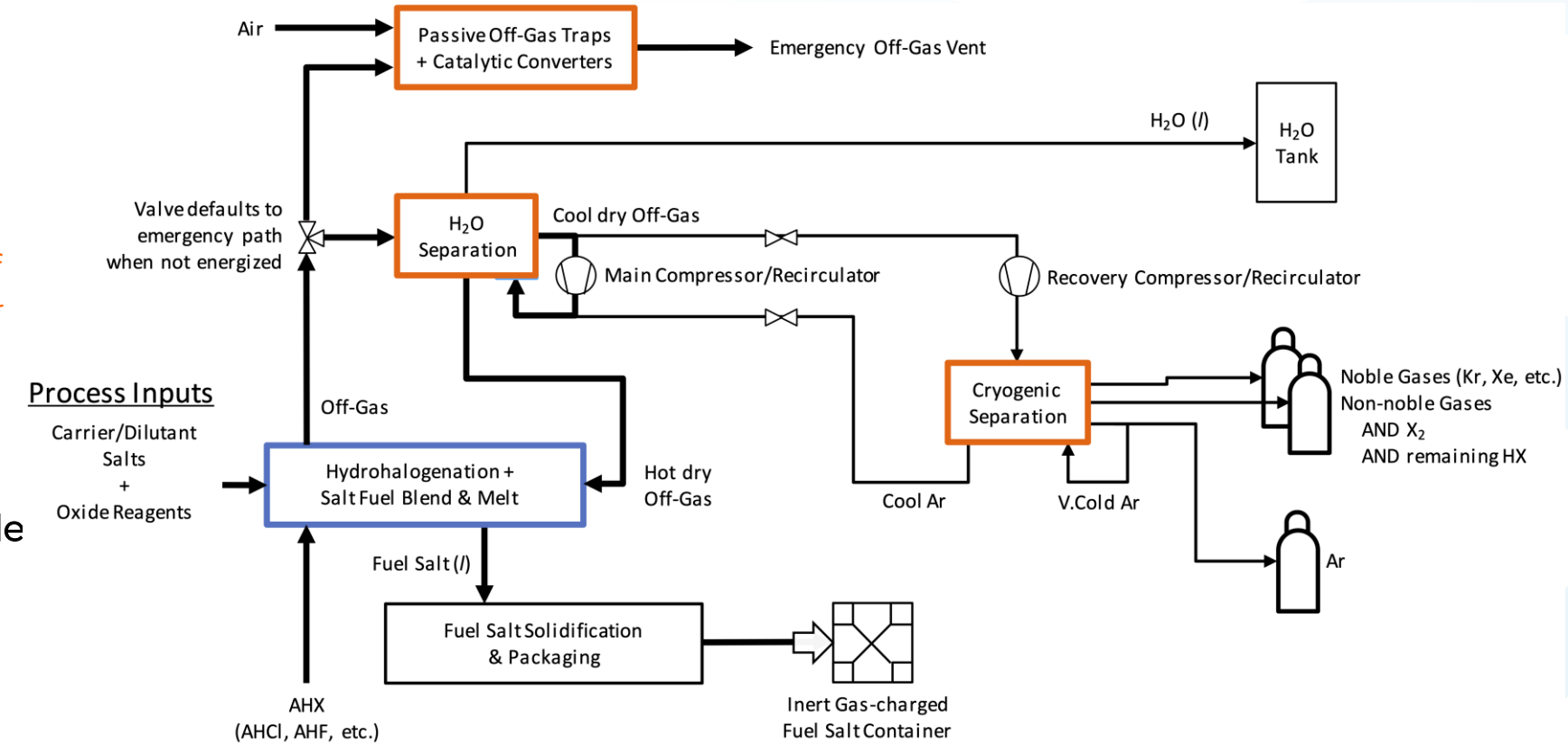
TOP-LEVEL BLOCK DIAGRAM

Simple, dry, non-aqueous process

- Molten salt immersed hydrohalogenation of spent fuel oxides under recirculated inert cover gas.
- Off-gas processing to draw off and capture by-product water vapor and noble gases.

Unlike PUREX or pyro-processing:

- Simple - NO separation of fissile materials within process
- Intrinsically proliferation-resistant
- Minimum waste & footprint



Facility Challanges

Siting Metatomic's SNF processing facility and a fast MSR at an existing light water reactor site, with its accompanying independent spent fuel storage installation (ISFSI), *all within the security envelope of the light water reactor*, removes complexity and regulatory burdens that could otherwise significantly slow the planning and development process.

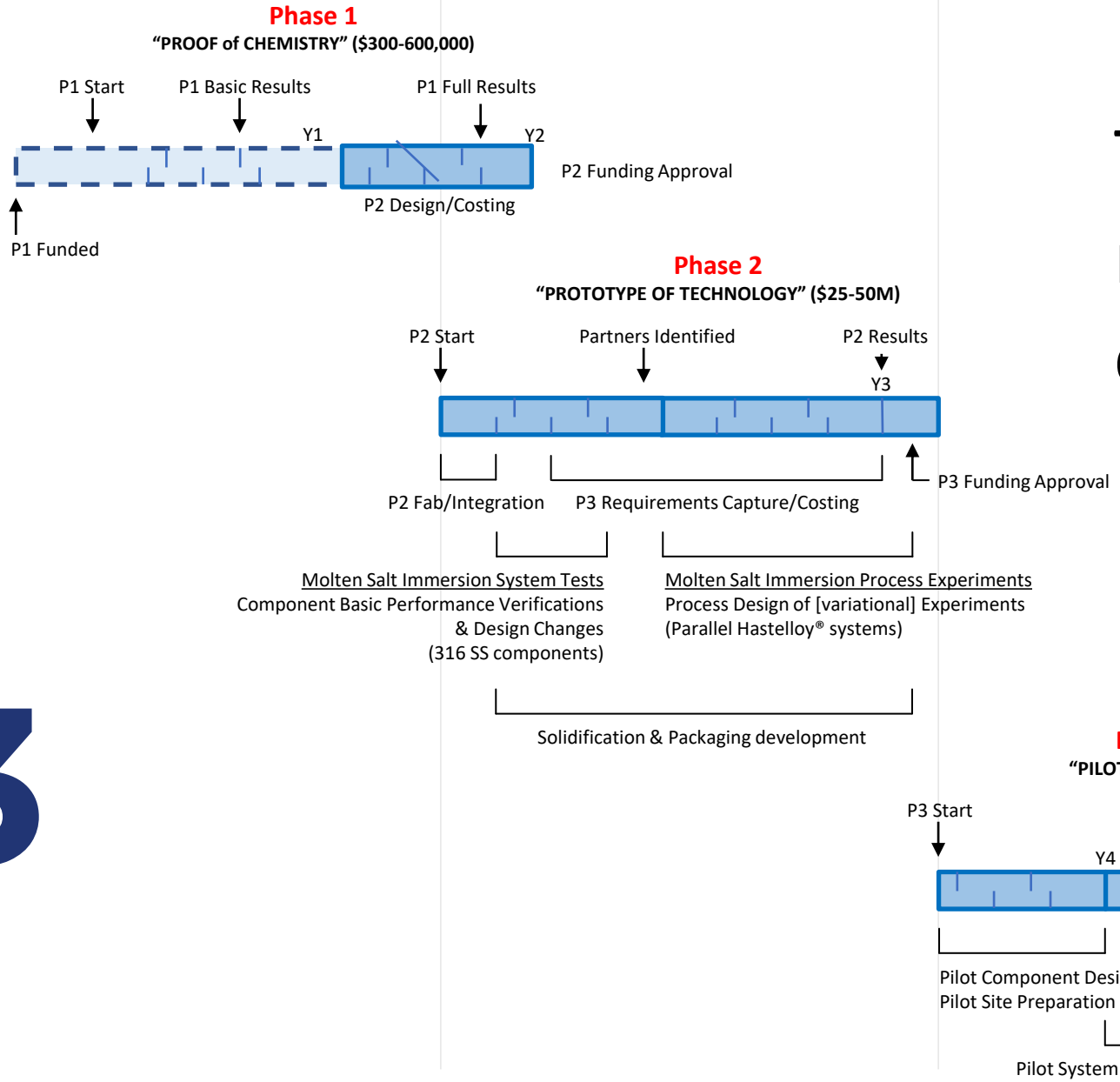
Facility Challanges

Major cost savings could also result by locating both a Metatomic® facility and an MSR onsite with, and within the security envelope of, an existing LWR and its SNF storage area, *and thereby eliminating the transfer SNF offsite to process into salt fuel for use in an MSR*.

Time Frame for realization and commercialization

PHASES

1-3



For More

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