PRODIGY’S TNPPs approach, implementing Sustainable Deployment of SMRs

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Prodigy would like to genuinely extend its deep gratitude to Mr Kim, Ms Scherer & the IAEA for their significant and most kind attention.

Moreover to a great recognition to the IAEA for their extraordinary work.
Our mission is to accelerate the delivery of safe, carbon-free, affordable and reliable power globally.

We are accomplishing this by packaging all the components of a traditional, site-constructed nuclear power plant into a prefabricated, transportable and relocatable facility delivered to customers worldwide.
COASTAL AREAS ARE HISTORICALLY PRIMARY LOCATIONS FOR INTENSIVE HUMAN ACTIVITIES BECAUSE OF ACCESS TO MULTIPLE MODES OF TRANSPORT TO MOVE BULK GOODS

FOR THESE ACTIVITIES TO THRIVE, THEY NEED RELIABLE ENERGY

BUT... A LARGE NUMBER OF COASTAL SITES AND ISLANDS ARE ALSO NOT SUITABLE FOR TRADITIONAL NUCLEAR CONSTRUCTION PRACTICES

- Either no local infrastructure present, or infrastructure is costly to make suitable for a land-based facility
- Land area is scarce, already occupied (or crowded) and/or very expensive to develop (not to mention the environmental impacts)
- If replacing existing fossil fuel generation, new nuclear build must have predictable schedule but also continuity of energy delivery. (minimal downtime between fossil plant shutdown and new plant startup)
Replace a site constructed plant project with one where one or more SMRs is integrated into a robust and transportable civil structure solution

**Example of a multiple unit NuScale grid scale TNPP.**

- All power plant systems and components on three marine structures
- Shipyard-fabricated and delivered to site via heavy lift carrier (within ~24 months of order). No fissile material onboard during transport
- Deployed within a protected, enclosed harbor
- Avoids complex and expensive on-site construction practices
- Enhanced nuclear safety
  - Resistant to earthquakes, hurricanes, ice, flooding, and other severe weather/ocean events
  - Seismically isolated
  - Unlimited coping period
- Reactors and fuel transported separately and integrated into the facility at site
- Equivalent commissioning and operations protocols to the NuScale land-based power plant
WHAT WE DO

PRODIGY DEVELOPS THE TRANSPORTABLE CIVIL STRUCTURES TO DEPLOY SMALL MODULAR REACTOR (SMR) FACILITIES VIA MARINE TRANSPORT TO SITES ON LAND OR IN A MARINE ENVIRONMENT.

WE DO NOT DESIGN SMRs... WE WORK WITH END-USERS TO UNDERSTAND THEIR NEEDS AND WITH SUITABLE SMR VENDORS TO INTEGRATE THEIR TECHNOLOGY INTO OUR PURPOSE DESIGNED TNPP STRUCTURES, ENABLING A STANDARDIZED METHOD FOR MANUFACTURING, INTEGRATION AND DEPLOYMENT TO TAKE ADVANTAGE OF SERIAL PRODUCTION.

Our TNPP structural systems (and, where applicable, arranged transport solutions) enable:

- Flexible siting options - By extending SMRs siting feasibility into locations with limited accessibility and infrastructure
- Ways to reduce deployment cost and introduce timeline improvements through the use of dedicated manufacturing facilities - Increased standardization
- Reduced need for site preparation and on-site construction and related environmental effects
- Reduced decommissioning complexity and more rapid path to releasing the site for re-use at the end of the project
PRODIGY MICROREACTOR POWER STATION TNPP
BRINGING RAPIDLY-DEPLOYED CLEAN ENERGY TO REMOTE AND OFF-GRID REGIONS

COLLABORATING WITH WESTINGHOUSE
Efficiency Gains: Prodigy TNPP vs. Traditional Site-constructed SMR

Range of durations of each phase are influenced by size/complexity of the Project, and whether First-Few-of-a-Kind Project versus serial deployment. Each project assumed to improve as lessons learned are applied.

Much smaller site preparation scope. Less space, less site works, less environmental impact, lower cost, timeline can be halved.

Factory fabrication, outfitting, cold commissioning, transport and installation on site in 18 months -2 years. Quality, cost and schedule is repeatable for nth of a kind.

Facility is ‘more ready’ for nuclear commissioning when it arrives at site. Time to operation reduced to weeks.

These efficiencies can result in deployment timelines ~4 years shorter than an SMR constructed on site in the same siting conditions.

Nuclear fuel permitted on site, hot commissioning & transition to commercial operation.

Site Approval/Preparation Authorization

Prepare Site

Long Lead Component Assessment & Procurement

Long Lead Item Receipt

Licence to Construct

Construct and Cold Commission

Licence to Operate

Environmental Assessment

These efficiencies can result in deployment timelines ~4 years shorter than an SMR constructed on site in the same siting conditions.
User Requirements Driving Prodigy’s Design Program

- TNPP design ready to integrate with an SMR when the SMR is ready to deploy
- Extends the reach of existing SMRs into markets where traditional construction is too costly or logistically challenging
- Flexible design approach for smaller plants (off-grid) and larger plants (grid-scale)
- Inherent features for more efficient logistics, e.g., transport, installation/de-installation and fuel handling
- Optimized for serial fabrication to support rapid fleet-scale uptake
- Capability for multiple unit arrangements to meet various target capacities
- Designed upfront for waste prevention/mitigation and removable from site for centralized decommissioning

- Operates similarly to a traditional land-based NPP, but compensates for site location, e.g., in remote environments:
  - Increased self-sufficiency for maintenance, safety, and security
  - Designed for reliability
  - Structural systems provide additional protection against external events
Demonstrating Safety, Security and Safeguards by Design

Design and deployment methodologies are well aligned with objectives and practices in the International Atomic Energy Agency (IAEA) Safety Framework.

Prodigy TNPP Civil Structures work with SMR features to achieve these objectives and meet regulatory requirements.
Applying our TNPPs to solve real world challenges

- Countries with mix of remote and grid-scale opportunities recognized to be a near-term market need aligned with governmental priorities
- Mature regulatory framework and proven regulatory corporation with other countries
- Collaborate early with experienced operators who understand the local regulatory environment
WE ARE EXPLORING NEAR-TERM GLOBAL APPLICATIONS

1. H2, synthetic fuels
2. (Petro) chemical industries
3. Grid scale power & water desalination
4. Oil & gas
5. IT & data centers
As global citizens, it is our duty to build a sustainable energy future for generations to come; one in which clean energy is the standard, and not the alternative. Increasing access to nuclear energy generation will achieve precisely this.

Prodigy's goals are to meet the demands of today’s global energy markets and to mitigate the effects of climate change, through safer, lower-cost, and more flexible nuclear power deployment.

To learn more, please contact:

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