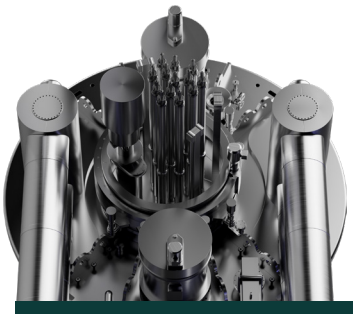

INDUSTRIAL APPLICATIONS

OF THE NATRIUM® TECHNOLOGY

The industrial sector in the United States accounts for approximately 35% of total energy consumption. Decarbonizing this sector can be difficult due to the high heat and constant output requirements to maintain operational control of industrial processes. This is where advanced nuclear power can play a key role.

TerraPower's Natrium technology is adaptable to serve industrial users by providing power and process steam; and providing the necessary flexibility to meet the power and heat demands typical for large industrial users.

THE NATRIUM TECHNOLOGY

TerraPower's Natrium reactor is the next generation of nuclear power. Unlike today's nuclear fleet, the Natrium reactor is a 345-megawatt sodium-cooled fast reactor coupled with a breakthrough innovation—a molten salt integrated energy storage system that provides built-in gigawatt-scale energy storage that can be modified to support site specific power needs.

The Natrium technology's advanced design enables simultaneous production of **carbon-free electricity, heat and steam to support decarbonization of power and industrial sectors. No other reactor has this capability.**

NATRIUM TECHNOLOGY

RANKINE EFFICIENCY

41% net

STEAM CYCLE

Superheated Steam: High-pressure steam with reheater

THERMAL ENERGY STORAGE

Yes, customizable by site requirements

RAMP RATE

Fast: 10% per minute

PEAKING POWER

Energy Island power can change from 30% to 150% while reactor power stays at 100%

THE BENEFITS OF NATRIUM PLANTS FOR INDUSTRIAL USERS

A recent study conducted at a large industrial chemical plant complex found that Natrium units have a higher net efficiency compared to the existing combined cycle units on site. Specifically, **a three-reactor configuration could effectively replace up to six existing combined cycle units and gas turbine generators at U.S. industrial facilities.** This configuration provides redundancy with staggered outages to ensure uninterrupted power and heat supply to the facilities.

This provides the opportunity for additional revenue generation through exporting power to adjacent industries and/or alternatively reduce reactor power output at times to reduce nuclear fuel burnup. The use of the Natrium advanced modular nuclear reactors provides an excellent option to improve operating efficiencies and reduce carbon dioxide emissions by supplying electrical power and process steam to a variety of industrial users.

Power generation from a three-reactor Natrium plant would exceed that of process steam

normal usage demand by 15% & **peak power demand by 3%**

The Natrium Reactor is a TerraPower & GE Vernova Hitachi Nuclear Energy Technology.

TerraPower

Natrium