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The concept of 50-300 MWe modular-transportable nuclear power plant with sodium coolant and a gas turbine

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Well-known vulnerability points for sodium-cooled reactors are:

- chemical interaction of sodium and water;
- three-circuits reactor design;
- increased material consumption and building cost compared to PWR and BWR;
- increased on-site amount of building and assembling operations.

The most of these difficulties can be solved with replacing steam turbine by specially designed gas turbine. Since 2001 IPPE is working on development of so-called ``BN GT'' technology set, including:

- the use for primary circuit BN-600's well-proven materials, elements and technologies of sodium reactor;
- the use for secondary circuit specially designed helium turbine without any intermediate circuits;
- design specification, intended to locate any reactor and turbine equipment in rail-car form-factor
- and some others.

Currently achieved competitiveness estimates show significant commercial advantage of 300 MWe BN GT power. Commercial competitiveness over gas-burning power plants is also possible in case of nuclear fuel recycling.

Country/Int. Organization

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