



APPLICATION OF THE COMBINED CYCLE LWR-GAS TURBINE TO PWR FOR NPP LIFE EXTENSION, SAFETY UPGRADE AND IMPROVING ECONOMY

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The unconventional technology to extend the lifetime for the NPPs now in operation and make a construction of new NPPs cheaper — erection of steam-gas toppings to the nuclear power units — is considered in the paper. Application of the steam-gas toppings permits through reducing power of aging reactors to extend lifetime of nuclear power unit, enhance its safety and at the same time to keep full load operation of NPP turbine and other balance-of-plant equipment. Proposed technology is examined for Russian VVER-440 reactor as an example and, also, as a pilot project, for Russian boiling VK-50 reactor now in operation

Application of the steam-gas topping permits:

- extend the service life of aging VVER-440 reactor by 10...15 years;
- use the turbine and other NPP balance-of-plant equipment at full power;
- increase the efficiency of combined cycle up to 48 % and more;
- enhance the safety of NPP operation;
- utilize NPP balance-of-plant equipment after reactor decommissioning;
- perform the cost-effective operation in maneuvering modes;
- increase capacity factor of the plant.

The construction of pilot project on the basis of the VK-50 reactor will allow not only to demonstrate new technology but also to attain appreciable economic effect including that obtained due to using the available reserves of the NPP turbine.

REFERENCES

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