



Container-Based Power Station

innovative system, a fully autonomous electricity generation

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We use a Pelton turbine because it is one efficient of the most impulse-type hydraulic turbines, perfectly suited for high-head liquid applications. It transforms the kinetic energy of a powerful jet into rotational mechanical energy with minimal losses. The high-pressure jet is directed through a nozzle and strikes the specially designed buckets arranged around the turbine wheel. Thanks to the unique shape of the buckets, the liquid is redirected by nearly 180°, enabling maximum energy transfer and producing a strong torque.

In our station, we employ a heavy liquid an 80% solution of zinc iodide (Znl₂, CAS 10139-47-6) — chosen for its high density. This innovative solution allows for the most effective utilization of the Earth's gravitational field, converting it efficiently into mechanical shaft rotation. By feeding the heavy liquid onto the Pelton turbine buckets from above, we have achieved outstanding system efficiency. This liquid completely environmentally safe, is circulating within a closed and sealed loop, ensuring sterile operation and significantly extending the service life of the equipment. Moreover, using a heavy liquid significantly reduces the volume needed compared to traditional waterbased solutions, simplifying the system and lowering operational costs.



NIMEC proudly presents the world's first modular power station as Container-Based Power technology! This innovative system is a fully autonomous electricity generation station, assembled from six High Cube 40-foot containers. The station is delivered in a Plug & Play format — all you need is a levelled site. Our specialists will handle delivery, installation, and commissioning of the equipment on a turnkey basis.











We utilize permanent magnet generators, which offer a high efficiency rate by eliminating the need for external excitation — the magnetic field is created by the magnets themselves. This reduces energy losses, simplifies the design, minimizes heating and mechanical wear. As a result, our generators operate more quietly, reliably, and efficiently, and have a longer lifespan compared to traditional electric machines. By using permanent magnet generators, we can transform almost 100% of mechanical energy into electrical energy with minimal losses.

Our unique solution — combining two pairs of generators on a single shaft enabled us to create a closed-loop energy system. As a result, 100% of the energy generated by the master generators is delivered to consumers, while the energy needed for the station's internal operation supplied by secondary is smaller generators. This approach ensures truly autonomous. balanced, and highly efficient station operation.

1st container — the heart of the system:

A powerful Pelton bucket turbine connected to four generators, arranged in pairs on either side of the turbine.

2nd container — the muscle:

Approximately 100 hydro and pneumatic cylinders, paired for optimal efficiency. The exact number is calculated based on the required output capacity.

3rd container — the station's breath:

Two industrial compressors, along with air purification and storage systems.

The reduced volume of heavy liquid and the use of modern materials allowed us to employ highspeed hydro- and pneumatic cylinders. These cylinders efficiently receive energy from compressed air and transfer it to the heavy liquid, maintaining continuous circulation. Powerful compressors compress the air, which also circulates within a closed-loop system, maintaining constant air quality essential for long-term reliable compressor operation. The sealed circulation of both liquid and air ensures the station's autonomy and stable operation, regardless of environmental conditions.





4th container — control and autonomy: Energy storage blocks for backup power, start-up systems, internal power supply, dispatch centre, and control modules.

5th container — the connection point:

Two power control blocks with robust transformers (default output: 6.3 kV, customizable to your specifications) and switchgear cells for connecting two consumer groups or feeding into the grid.

6th container — service hub:

Used as a technical warehouse, containing all necessary consumables, tools, and spare parts for regular maintenance of the station.

