



Waste Heat Utilization

Turning waste heat into usable energy. For stable steam generation and reduced primary energy demand.

CompriVAP

Upgrading large, single-source waste heat streams into process steam using mechanical vapor recompression (MVR) – efficiently and cost-effectively.

How it works

CompriVAP is an industrial heat pump system based on proven mechanical vapor recompression (MVR) technology. It is particularly suited for upgrading waste heat streams from medium-temperature sources.

In the process, vapor is drawn in by an electrically driven compressor and compressed to a higher pressure level. This increases the temperature and energy content of the vapor, enabling it to be reused as valuable process steam.

Waste heat sources

- Reuse of warm liquid waste streams such as wastewater and process condensates.
- Utilization of gaseous waste streams including exhaust air and process gases.

System configuration

The system configuration depends on the specific application, the characteristics of the heat source, and the required steam parameters. A CompriVAP installation may consist of a single compressor or multiple compression stages. When liquid waste streams are used as the heat source, an additional flashing stage is integrated into the system.

Advantages

By reusing waste heat, the system reduces primary energy demand and CO₂ emissions while lowering fresh steam and cooling water consumption. The resulting energy savings reduce operating costs. At the same time, the system can be installed quickly and easily retrofitted into existing plants. The technology is proven and already used at industrial scale.

How we support you

- Waste heat evaluation
- Tailored design
- Compressor selection
- Cost evaluation
- EPC delivery
- Service & commissioning



Explore our
CompriVAP calculator

Standalone CompriVAP system



Mechanical vapor recompression(MVR)



VarioVAP system – combining heat streams from different sources and media.

VarioVAP

Unlocking the potential of multiple waste heat streams – towards a Zero Waste Heat future.

How it works

At the heart of the VarioVAP system is a plate falling-film evaporator that serves as the central heat exchanger. Each heat source – typically individual vapor streams – is introduced into separate bundles designed as lamella heat exchangers within the evaporator. The thermal energy is recovered, converted into steam, and compressed to the required pressure level by compressors.

Applications

- The VarioVAP system is designed for environments with multiple waste heat streams.
- Industrial plants: Suitable for processes such as distillation, evaporation, and drying across industries like chemicals, food, pulp, and paper.
 - Industrial parks: Enables combined use of waste heat from multiple sources—for internal reuse or district heating.

System configuration

The system can operate either as a stand-alone heat exchanger or in combination with an open heat pump system based on mechanical vapor recompression (MVR). In this configuration, the generated steam is compressed to a higher energy level and can be supplied as high-quality steam to production processes or external energy networks as required.

Advantages

By integrating multiple waste heat sources into one system, VarioVAP maximizes the use of available energy, reducing primary energy demand and CO₂ emissions. Its flexible and scalable design adapts to different heat sources and operating requirements. VarioVAP uses proven plate falling-film evaporation and incorporates MVR when vapor compression is required.

Advantages with waste heat utilization

- Maximum waste heat utilization
- Reduced energy and resource demand
- Lower CO₂ emissions
- Significant OPEX savings
- Flexible and retrofit-friendly
- Proven technology



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website



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our technical blog

WE ENGINEER GREEN KEY TECHNOLOGIES

GKT is a globally operating system partner for thermal separation and environmental technologies – built on nearly 90 years of metalworking expertise and today defined by deeply rooted process engineering competence. In an industry where resources, circularity, energy, and CO₂ determine competitiveness, we make challenges technologically manageable and economically effective.

Our approach:
We Engineer Green Key Technologies.

We develop and implement key industrial technologies – from falling-film, thin-film,

and short-path evaporators to distillation and drying, as well as CO₂ valorization, waste heat recovery, and IIoT-enabled process optimization.

As part of the Dr. Aichhorn Group, we validate processes in our own technical center under real operating conditions and scale them up to turnkey EPC facilities.

For our customers, this means maximum efficiency, reduced energy consumption, lower CO₂ emissions, and stronger economic viability – proven worldwide through numerous successfully executed projects.



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