

Saving steam costs in paper producing companies using the Ecat

1. Steam consumption in paper producing companies.

In papermaking operations, the expense of drying paper with steam plays an important role.

Depending on the thickness of the paper, on the production speed and on the width of the paper web, about 100 t / h of steam are needed for the paper machines for drying the paper.

A ton of steam costs on average 18-23 euros. At around 8200 operating hours per year, at **least 14,760,000 euros** must be expended for the steam demand of 100 t / h.

With the heat generator **Ecat QX 1 MW**, these costs can be significantly reduced.

2. The Ecat QX 1 MW is a LENR based heat/steam generator.

LENR stands for Low Energy Nuclear Reactions. The Ecat QX 1 MW uses the worldwide patented Rossi effect, developed by Dr. Andrea Rossi, CEO Leonardo Corporation was invented.

The plant consists of 1000 Ecat QX reactors. The E-CAT QX is a heat source based on a LENR reactor with a fuel consisting essentially of lithium-aluminum hydrate and nickel. The energy density is similar to that of nuclear processes. That's million times more than chemical reactions. There is no CO₂ emitted as in fossil burns. In contrast to nuclear fission, the generation of heat by the LENR process does not produce any radioactive or radioactive waste.

Due to the fact that no CO₂ is emitted no CO₂ certificates are required.

3. The construction

The reactor modules are arranged in 4 shelves with 25 modules each in the horizontal axis (y) and 10 modules in the vertical axis (x). Thus, each module is known by its coordinates x and y. A shelf contains 250 modules.

The plants are manufactured according to their use with connections for water vapor to the customer plants.

- Through a window you can look into the E-Cat QX 1 MW during operation. Entering the plant during operation is safe.
- It is not necessary to enter the E-Cat 1 MW QX. All that is necessary is done during operation from outside the container.
- Inside the E-Cat 1 MW (QX) will have a temperature of about 30-35 ° C.

The E-Cat 1 MW QX is the product that is manufactured with the minimum power of 1 MW. It is conceivable that systems with other services such as. 500 or 250 kilowatts of thermal power are produced. It is possible to operate the system with some of the maximum possible power or to add modules to increase the power.

The system is delivered in a container. The size of the container depends on the performance. The customer must provide a suitable site, a 220V power connection and a fast internet connection. The connection of the pipes for the heat supply is made by the customer.

4. The drive of the plant

The Ecat QX 1 MW is powered by electricity. At the full load of 1 MW, a power of 2 kW is required for the drive. About 67% of the time, the E-Cat QX will be in SSM (self sustained) mode. The E-Cat QX does not require a higher startup performance compared to normal operation. In „self sustained“ mode, the reactor continues to emit heat, although no more electrical energy is supplied.

5. The heat / steam release

The temperature is adjusted by the controlled variation of the flow. The system delivers heat in the range of 90-600 ° C. With it you can:

- High pressure steam > 75 psi / 5.17 bar,
- medium pressure steam (16-75 psi / 1.1-5.17 bar)
- Low pressure steam (<16 psi / <1.1 bar) and
- hot water are generated.
- The heating of oil and compressed air are also possible.

The E-Cat QX can be turned on or off, or turned off indefinitely, without losing efficiency or affecting its life.

6. Fuel refill

The operating time without refueling will be 6 months to one year. The refilling is done by replacing the reactor modules.

- The fuel used (LiAlH₄ with nickel powder and catalyst) is needed in very small quantities. He is not expensive and not short.
- Replacing the modules for a 1 MW system takes several days. The costs are comparatively low.
- For the replacement of the modules, we organize the necessary service in all areas where products are sold. Replacing the modules is not dangerous.
- The modules are then reworked in the factory with robots.

7. Control and safety

The control of the reactors and the power (modulation) is carried out by a central computer system at the Leonardo Corp. via the internet cloud and at the request of the customer by telephone / e-mail. The customer is able to perform an emergency shutdown.

- Remote control is via the cloud. The transfer will be „Military grade“ and unassailable.
- This allows for the observation of the behavior of delivered Ecats by Leonardo Corp.
- Internet blackouts are always possible, so customers keep their previous system as a backup.

If the liquid flow is interrupted unexpectedly, the E-Cat QX will not overheat because the Control System shuts off everything when the temperature exceeds a permitted limit. If the control system fails or communication with the E-Cat QX ceases, the E-Cat QX stops automatically

8. The settlement of the heat /steam delivery

Leonardo Corp. will only charge the customer for the delivered heat. In this case, a minimum purchase of heat by the customer is agreed. The contract duration is 60 months. The investments remain owned by Leonard Corp.

Depending on the situation, the price for the heat energy is agreed with the customer on a case-by-case basis and the savings are shared with the customer. How the customer uses the heat is up to him. The customer can measure how much watt he feeds and how much heat / steam he consumes.

If the system does not work, the customer can use his traditional system as a backup and the risk is at Leonardo Corp.

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