

Introducing Our Novel Power Generation Technology The Energy Recycling Reservoir (ERR) system

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Ever since the commercialization of electricity, there has been an untapped by-product in the form of magnetic fields generated by flowing currents in power lines. By harvesting and harnessing this unused, wasted magnetic energy, Ferraris has opened a new pathway for electric power generation and electrical energy recycling technology.

Specialists from the energy sector may contest the above statement with their impressions of the typical current transformer (CT) sensors or question the viability of large-scale electrical energy production with CT-like ring cores or simple transformer; on the contrary, Ferraris proudly introduces world's first and only Energy Recycling Reservoir (ERR) system.

We developed the ERR system to allow for large-scale electrical energy production, as evidenced by a beta test that was successfully completed at a small hydroelectric power plant (Korea Midland Power). The beta test included evaluations on the integrity and reliability of the ERR system, and was assessed for 2.5 years upon installation [1].

These favorable results were possible with our unprecedented, patented technologies (high-power ring cores manufacturing and power-focusing technologies).

We are confident that this system will revolutionize the power generation solution for additional electricity generation capacity. The installation and operation of the ERR system (a fully developed novel system, not yet applied worldwide) is comparable to small- or medium-scale decentralized power plants.

In time, substantial implementation of the ERR system would amplify and provide sufficient electricity generation capacity and consequently better compensate for the ever-increasing electricity demands of modern societies.

[1] Supp. Beta test results on the integrity and reliability of the ERR system technology - summary description

Advantages and Limitations

The ERR system is indirectly connected to power lines and makes use of the magnetic field around a flowing current to generate electric power, thus potentially the most optimal solution for decarbonization and environmental protection as it does not further expend natural resources.

Moreover, installations of the ERR system will not further harm the environment: vacant spaces in present operational facilities will be utilized, with approximately 500-1,000 ft² of installation space required per site.

The electric power generation of ERR system is similar to the output of fossil fuel-type power plants, and far superior to renewable energy-type power plants. It is also an economical system that is fundamentally competitive in regard to development and installation period (approximately 4-6 months per site), investment cost, and operation and maintenance cost.

Used power line current	Used 3-phase 4-wire power line	Install method	The ERR system (UH-10)	Electricity net generation
900 Amperes	3 line-split	Parallel	3 ea	75 MW
		Parallel & Cascade	6 ea	150 MW
			9 ea	225 MW

Table 1: Estimated electricity net generation from the ERR System

If the power line current at a distribution substation is over 900 amperes, it is possible to further split the three-phase four-wire power lines to build the system. Additional line splits are necessary because the ERR system is optimized for power generation at 250-300 amperes.

However, the ERR system is not without limitations: if an outage occurs in a power line that is indirectly connected to the ERR system, the magnetism is lost and thus electricity would no longer be generated.

The ERR system

The ERR system is designed to be a multipower-focusing module with contactless high-power ring cores that indirectly connect to power lines and generate electric power.

The large-scale electrical energy produced can then either be stored in an Energy Storage system to be used when needed or distributed to the load in real-time.

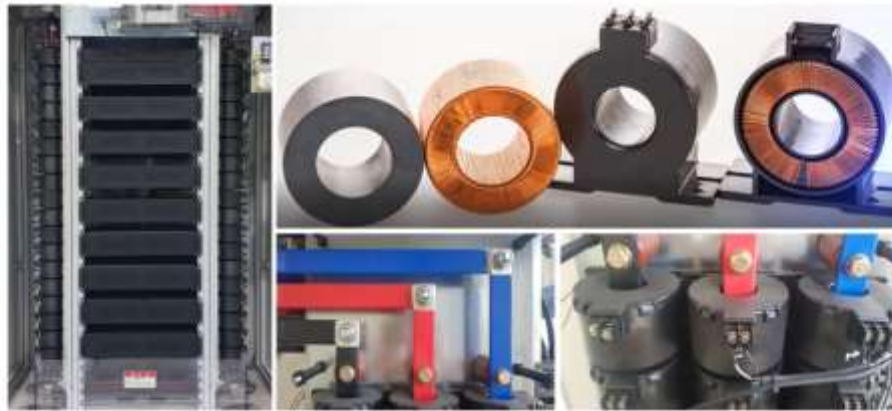


Fig. 1: The ERR system and its installation in a contactless method

The ERR system (models: UH-10 and UL-10) is typically installed in a contactless method on three-phase four-wire power lines (i.e., R, S, T, and N). The ERR system can be connected in cascade and/or parallel and is highly scalable for decentralized installations.

The ERR system is operated in conjunction with its subsystem (Power Control system, Battery pack and, Monitoring system).

Additionally, if the ERR system is used for a load whereby reactive power occurs (kilovolt ampere reactive hours, kVARh), the system can reduce the reactive power by “Improved Power Factor Technology.”

With the ERR system, customers can thereby vastly improve the efficiency of power energy usage: for instance, by reducing the reactive power, improving the power factor, and more to ultimately save electricity.

From an alternative perspective, installing the ERR system in the basement of skyscrapers and hotel across cities could increase the power efficiency and electricity generation at the same time, acting as a decentralized power plant (known as **Inter-building Power Network**).