

Multiple Flywheel Systems for the Grids of Tomorrow

Temporal Power flywheels are typically arrayed in modules of 10 flywheels, offering tremendous flexibility with a scalable and modular design.

A module of ten flywheels can offer a maximum power output rating of 5 MW.

A 5 MW plant can offer up to 10 MW of range with fast responding flexibility to the power system. This is achieved as energy storage acts as either a generator or a power consumer.



POWER RATING	10 MW
Nº. OF FLYWHEELS	10
RAMP TO FULL POWER	< 10 ms



Temporal Power Flywheel Energy Storage System Benefits

High Energy & Power

Temporal Power's flywheel technology is able to deliver high energy and power, offering a maximum power rating of 500 kW per module. This results in a reduced footprint of the energy storage facility, saving the customer money through reduced construction costs.

Flexibility

Temporal Power is able to customize power to energy ratios to meet the need of many applications. Temporal Power's 50 kWh flywheels offer power output of up to 500 kW, with 1 MW of available range. While the power to energy needs may change over time, Temporal Power systems remain flexible and able to adapt within the designed power level, without any changes to the hardware. This further enhances the customers' ability to capture value of its initial investment, even as their demands of the system change.

Temporal Power Flywheel Energy Storage System Benefits

Real and Reactive Power Capability

Temporal Power systems have full four quadrant capability allowing it to supply or absorb any combination of the two within its system rating. This offers great flexibility in managing the grid.

Reliability

Temporal Power manufactures its rotors using a single solid steel forging. This material, which is highly predictable with long established quality control techniques, ensures longevity. Temporal Power's design incorporates a fixed mechanical bearing with permanent magnet lift. This design minimizes system wear and parasitic losses.

Universal Power Supply (UPS)

Temporal Power includes a self-contained UPS system in each drive to ensure continued operation of the flywheel's control systems and vacuum and cooling pumps in the event of loss of grid connection. This maintains the system availability at a high level so that our customers can use the flywheel energy storage system as the system demands.

Lowest Total Cost of Ownership (TCO)

For high cycle applications, like fast regulation and grid balancing, the long life of Temporal Power flywheels make them significantly less expensive over a 20 year time period.



The key factors for Temporal Power's industry leading Total Cost of Ownership for high cycling storage applications are:

- ▶ *Temporal Power systems have been designed to minimize maintenance costs with a 20 year life cycle*
- ▶ *Amongst the lowest \$/kW of any storage technology*
- ▶ *Use of non-exotic materials allow for low cost and high availability of components*
- ▶ *End of life - Temporal Power's flywheels are fully recyclable reducing future disposal contingencies*