

GENSET HARDENING - ROTABLOC STABILIZER SUPPORTING OFF-GRID APPLICATIONS

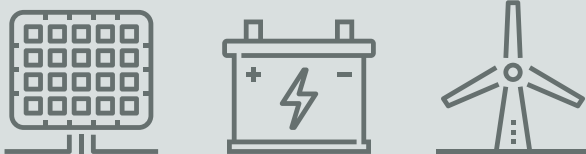
CHALLENGE DESCRIPTION

Micro grids sometimes work “off-grid”, which means they are not connected to any wider grid. Their power is generated by local sources such as diesel generators, gas generators or sometimes renewable energies like solar photovoltaic panels, wind turbines or battery storage.

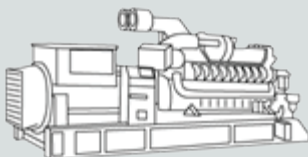
These local power sources have limitations:

- **Gas engines have a limited load acceptance capacity**, which means that they cannot accept big load steps (motor starting).
- **Diesel generators should not be used below 30% of their nominal power**, therefore they are also not suitable for varying loads.
- **Solar panels and battery storage have limited current capacity**, therefore they are not suitable for current demanding applications (motor starting...) and cannot effectively clear faults.

LIMITED SHORT CIRCUIT POWER



LIMITED LOAD ACCEPTANCE



ROTABLOC SOLUTION

The Rotabloc is well known as a Rotary UPS and Power Conditioner. In these Power Quality applications, the role of a Rotary UPS (or Power Conditioner) is basically to protect a sensitive user against disturbances coming from the utility, such as voltage variations, voltage sags and surges, micro-cuts and ultimately power failures (black-out). The Rotabloc brings additional benefits such as power factor compensation, harmonic filtration, unbalance correction...

Additionally, the Rotabloc is also a perfect solution as a stabilizer for off-grid applications.

It is able to supply active power, supporting frequency, and reactive power, supporting voltage.

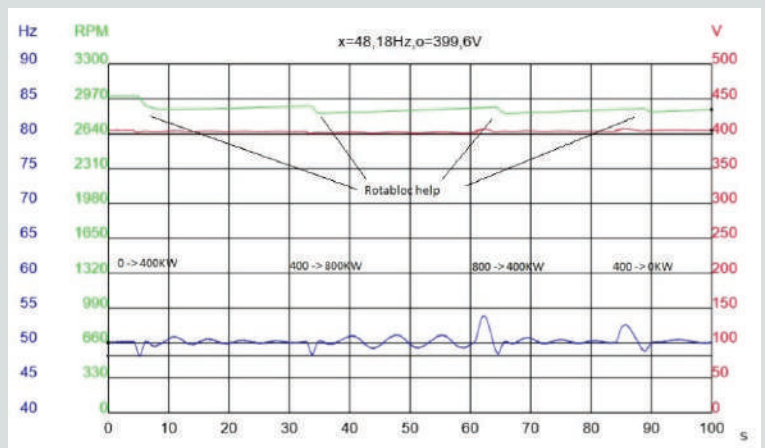
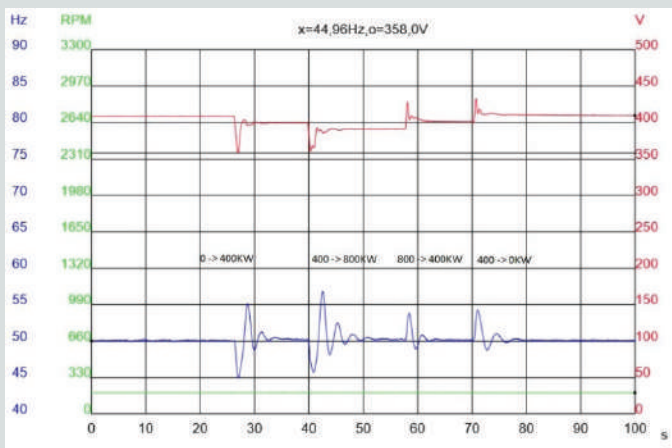


Rotabloc Stabilizer

Featured below are two example curves showing how the Rotabloc acts to help a 1MW engine with limited load acceptance.

Load was applied by steps of 400KW until 800KW and then decreased in the same way. Even if it was not a full load impact regarding the genset power, the frequency dropped until 45Hz (blue curve) and the voltage until 358V (red curve).

The same test with a Rotabloc supporting the generator and the load shows how the Rotabloc (green curve) stabilizes frequency (drop limited to 2Hz) and voltage (drop limited to 4V).



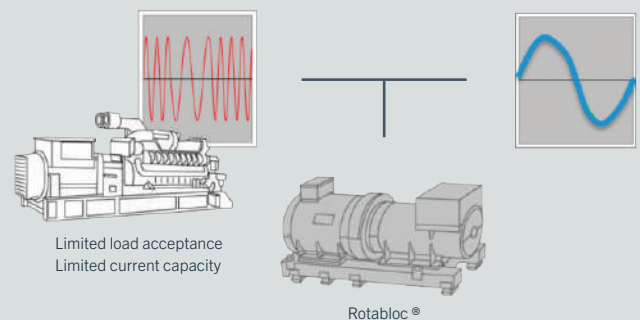
CONCLUSION

In addition to its power conditioner capability, the Rotabloc proved its potential to stabilize frequency and voltage for off-grid applications.

Key Figures¹

	Frequency Drop	Voltage drop
Generator alone	5Hz (10%)	40V (10%)
Generator + Rotabloc	2Hz (4%)	<4V (<1%)

¹ Indicative values for 1MW typical gas engine with load



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