- Azores Archipelago (9 islands),

Autonomous Region of Portugal (PT)

- Island with low-RES share: São Jorge

» 5.4 MW peak demand, 29.4 GWh annual net emission,

- 8.6% total RES share (8.4% wind plus 0.2% distributed microgeneration) Year 2022;
- » Thermal (diesel) power plant with 7 gensets (8.2 MW total installed power);
- » Wind farm with 6 wind turbines of 300 kW each (1.8 MW total installed power);
- » Future developments / investments:
  - + Installation of a BESS (6 MW / 4.5 MWh) static reserve and voltage/frequency regulation;
  - + Investment in a 30kV transmission grid to enable the increase of renewable production;
  - + Replacement of the current windfarm end of life (5 new WT of 900 kW each);
  - + Installation of a new PV park (1 MW).
- » Challenges:
  - + Increase RES share beyond 35% without compromising system stability;
  - + Maintain short-circuit power levels to ensure protection operation with high levels of inverter-based production.



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SÃO JORGE



### - Island with high-RES share: Flores

» 2.2 MW peak demand, 11.5 GWh annual net emission,

50% total RES share (44% hydro plus 6% wind) – Year 2022

- » Thermal (diesel) power plant with 5 gensets (3.7 MW total installed power);
- » Hydro power plant (1.6 MW) with very small reservoir and wind farm with 2 wind turbines of 300 kW each (600 kW total installed power);
- » <u>100% RES operation possible</u> for small periods (max 7-9 hours), including VER (wind) due to the existence of a 350 kW / 18 MWs (5kWh) flywheel;

#### » Future developments / investments:

- + Installation of a BESS (1.6 MW / 1.3 MWh) static reserve and voltage/frequency regulation;
- + Replacement of the current windfarm end of life (1 new WT of 900 kW);
- + New hydro power plant (1.1 MW) and installation of a PV park (400 kW).
- » Challenges:
  - + Increase RES share beyond 85%;
  - + Increase even further the time periods of 100% RES operation (days/weeks).



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**Daily Power Supply** 



SÃO JORGE 9% 
91,4% 8,4% 0,2%



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FLORES