



POWERING PACIFIC ISLANDS

Advanced Energy Management System for Sustainably Energy Transition

PPA conference 2024



ENERGY POOL : OUR KEY ASSETS TO COMPLEMENT YOUR BUSINESS

A COMPANY WITH INTERNATIONAL EXPERIENCE IN ISLANDED MICROGRIDS

ENERGY POOL, A GLOBAL INDEPENDENT PLAYER AND A WORLD LEADER IN ENERGY MANAGEMENT



15 YEARS of experience in flexibility management and islanded microgrids operations



> 7000 ASSETS managed by our operations centers
8 GW of capacity managed



Gross sales of 100 M€ Growth (>40%/year)



>400 employeesBusinesses in 15 countries, incl.Japan, Turkey, KSA, Ivory Coast



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Key references among islanded utilities (Enercal, Tonga Power Limited)



5 network operations centers 24/7 (France, Japan, Turkey, KSA, Ivory Coast)



On Grid and Off Grid microgrids design and operations



DSO & TSO end-users Teams with a strong energy expertise

+1 MILLION TONS

of CO2 saved/year



CHALLENGES OF ISLANDED MICROGRIDS

PACIFIC ISLANDS CONTEXT

Smart energy management



Harsh environmental conditions: impact on infrastructure, equipment longevity



Unpredictable weather: impact on demand and production forecasting

Logistics: transport materials and fuel, availability of qualified personnel, system maintenance



High dependency on fossil fuel: high costs, environmental impact, noise pollution





EVOLUTIONS IN PACIFIC MICROGRID CONTEXT

THE CHALLENGES





© Energy Pool Développement SAS







160

140

120

100

80

60

40

20

0

NPV Lost

Power (kW)

Energy Smart energy management



ASSETS' PROFILE

One day

Consumers

Gensets

PV Used

THE CHALLENGES



EVOLUTIONS IN PACIFIC MICROGRID CONTEXT THE CHALLENGES

HOW DO I MAXIMISE THE USE OF RENEWABLE ENERGY?

















ASSETS' PROFILE

EVOLUTIONS IN PACIFIC MICROGRID CONTEXT





EVOLUTION IN THE PACIFIC MICROGRID CONTEXT

CONTEXT OF NEW CALEDONIA LOYALTY ISLANDS: ENERCAL





EVOLUTION IN THE PACIFIC MICROGRID CONTEXT

CONTEXT OF NEW CALEDONIA LOYALTY ISLANDS: ENERCAL





THE ISLAND MICROGRID CONTEXT

FOCUS ON THE ISLE OF PINES : THE CHALLENGES

TYPICAL DAY WITH INITIAL CONFIGURATION





ENERGY POOL'S SOLUTION – A TWO-LEVEL MANAGEMENT

LOCAL STABILITY AND GLOBAL OPTIMISATION







ENERGY POOL'S SOLUTION

FUNCTIONAL DETAIL





THE ISLAND MICROGRID CONTEXT

FOCUS ON THE ISLE OF PINES WITH NEW CONFIGURATION

Smart energy management

TYPICAL DAY WITH NEW CONFIGURATION



PARTLY CLOUDY SUMMER DAY WITH NEW CONFIGURATION



THE ISLAND MICROGRID CONTEXT

FOCUS ON THE ISLE OF PINES WITH NEW CONFIGURATION

Smart Energy Management

TYPICAL DAY WITH NEW CONFIGURATION







1 GENSET

night-time operation, covering peak consumption



BESS grid-forming when PV produces



 \sim up to 70% penetration of renewable energies (over the last months)

 $\sim 68\%$ of operating time without generators



ISLE OF PINES

NEW CONFIGURATION

ENERGY POOL PV – 1.5 MWp EMS / PMS NERCAL Île des Pins 🗸 Z Display forecasts Day Week Month 2022-12-15 Battery – 1 MW / 4 MWh Active Power - December 15 2022 December 15 2022 08:10 - Centrale Batterie Comagna -343.29 kW 780.00 kW 741.00 kW 0P - Centrale PV Gadji 0P - Centrale PV Gadji - Prediction ommation (Mwiré exclus -431.70 kW -325.00 kW Consommation (Mwiré exclus) 325.00 kW 0.00 W 0.00 W 0.00 W 0.00 W -5.01 kW 0.00 W Groupe 520kW #1 Groupe 520kW #2 - Groupe 520kW #3 - Groupe 520kW #4 OP - Groupe 520kW #5 isidual power IERCAL Île des Pins TESLA



Consumption ~0.6 MW average ~5 000 MWh/year 5 Gensets x 0.6 MW = 3 MW





CHALLENGES OF ISLANDED MICROGRIDS

1 YEAR ANALYSIS: ISLE OF PINES





ENERGY POOL'S SOLUTION FOR TONGATAPU

AN OPTIMISED & GLOBAL MONITORING AND CONTROLLING SYSTEM FOR ALL ASSETS

Smart Energy Management



and and





AN ADVANCED EMS IS A MEAN OF MITIGATING RISKS AND REDUCING COSTS



> Reduce dependency on fossil fuels and thus reduce CO2 emissions

> Increase resiliency and stability through intelligent control of power flow and frequency regulation

> Maximise renewable energy use by minimising curtailment

> Optimise storage use through state-of-the art predictive algorithms

>Adapt instantly to unexpected events



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THANK YOU FOR YOUR ATTENTION, ANY QUESTION?

