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Balancing Security – Sustainability and economy

Jorge Barcelona. Sales Manager Sustainable Solutions. Rolls Royce Solutions Iberica.

27 April 2022. Funchal (Madeira- Pt)





Rolls-Royce group

A world-class technology company, built on three strong and complimentary business units.

Power Systems being the groups 2nd largest business and frontrunner in electrification.



Civil Aerospace



35
types of commercial aircraft powered by us



13,000
engines in service around the world



26,100
total employees



8,107m
underlying revenue

Defence



150
customers in over 100 countries



16,000
engines in service around the world



9,900
total employees



3,250m
underlying revenue

Power Systems



>40,000
customers in 13 different industries



20,000
reciprocating engines sold per year



10,400
total employees



3,545m
underlying revenue



Power Systems at a glance



Revenue 2019
£3,545m



Employees
10,400



25%
Industrial



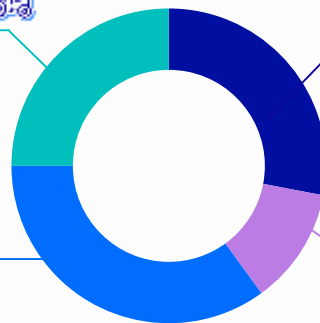
28%
Marine



35%
Power
Generation



12%
Defense
& Others





What's a
Microgrid?

What's a hybrid
Microgrid?



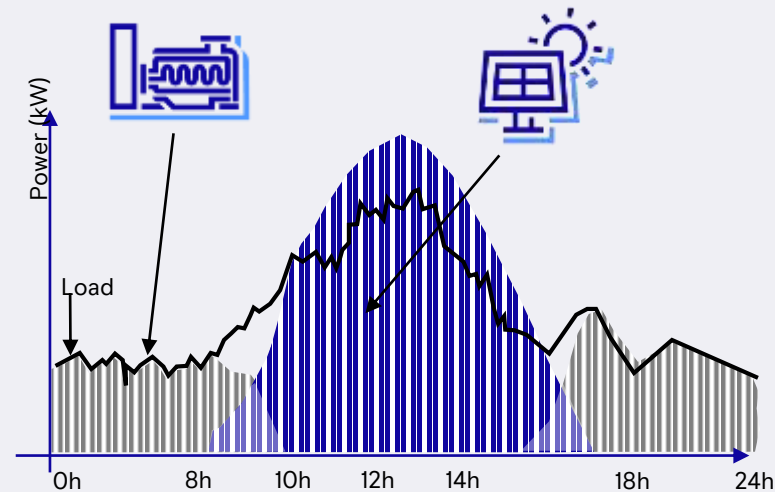
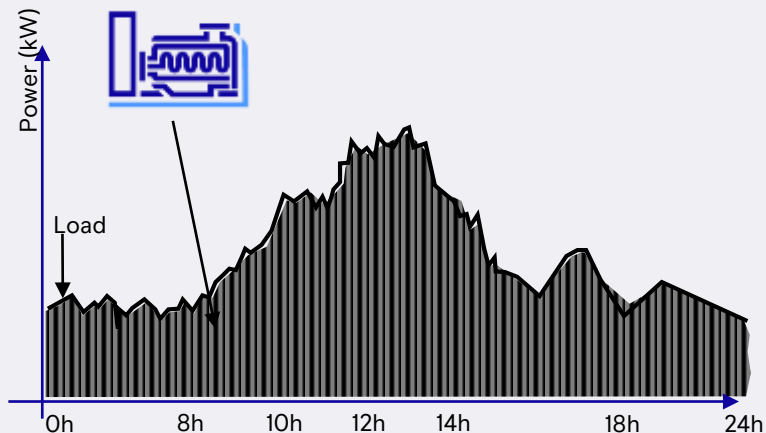


Microgrid power supply

1. Only diesel power supply
2. Integration of Renewables



Intermittent Operation
Not full potential





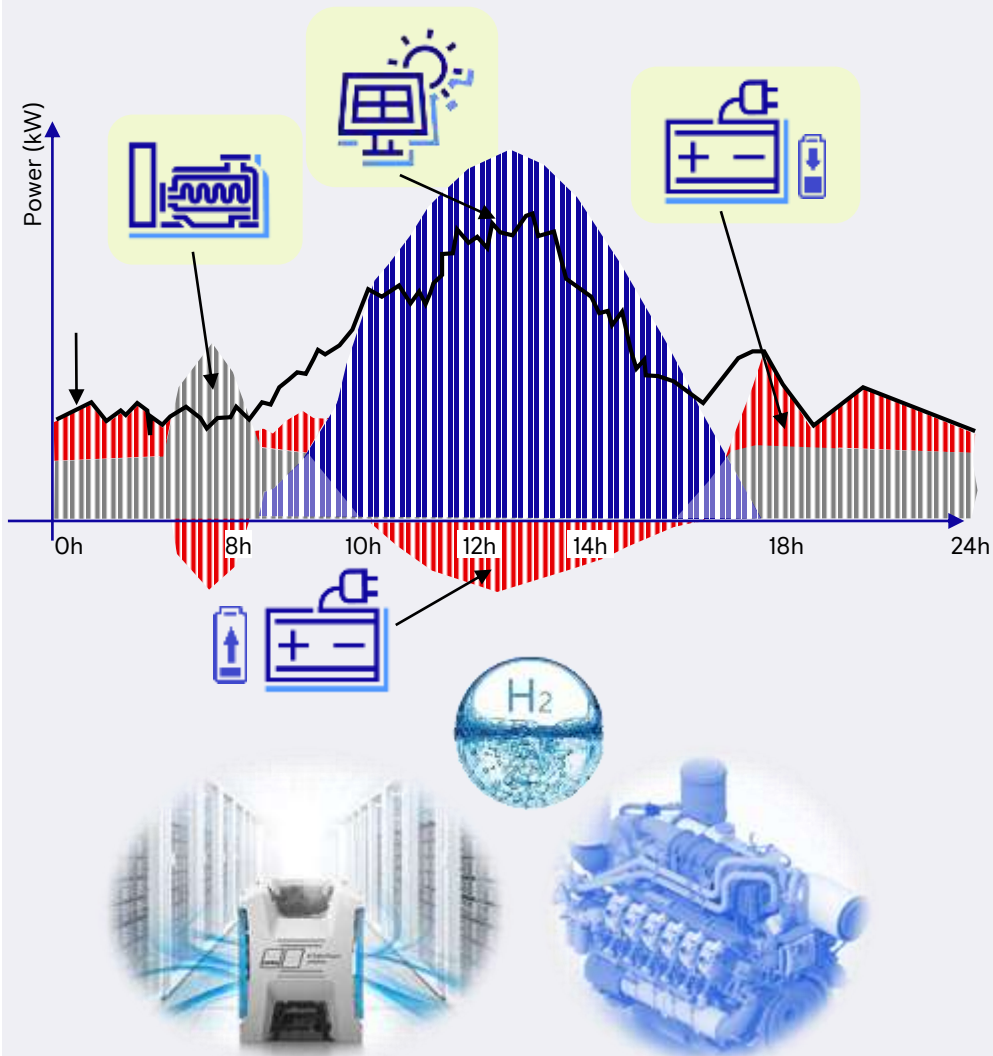
Microgrid power supply

1. Maximize solar share
2. Provide immediate support for PV intermittency
3. Reduce cost and CO2 footprint



Small CO2 footprint ...
but No 0 emissions

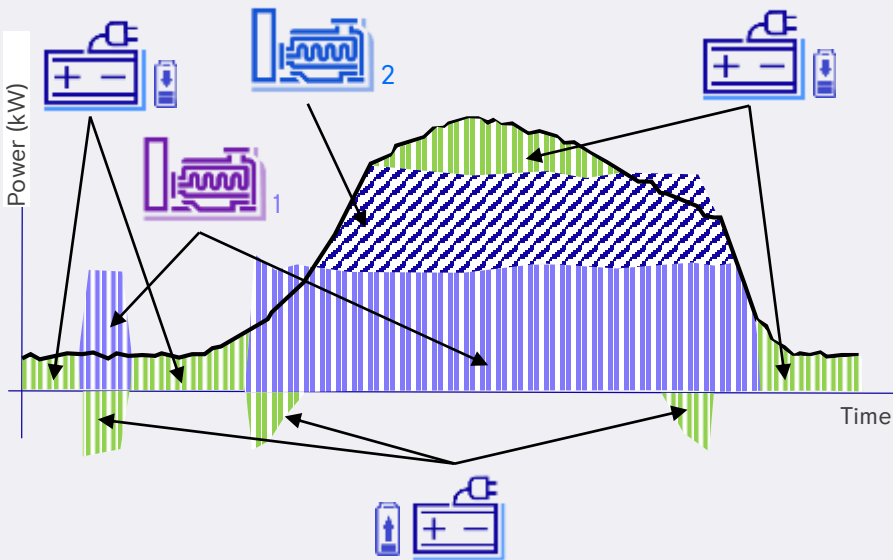
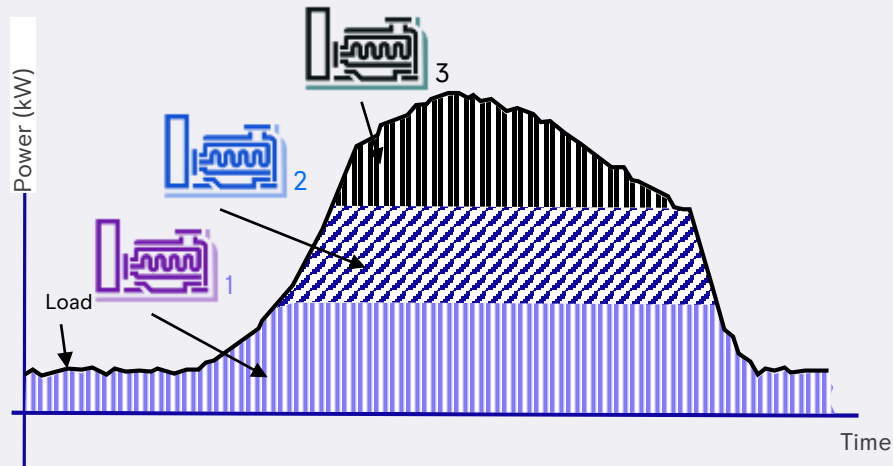
Long term storage





Genset dispatch optimization

1. Minimize running hours
2. Optimize load (>50%)
3. Reduce Fuel consumption
4. Reduce Capex & Opex

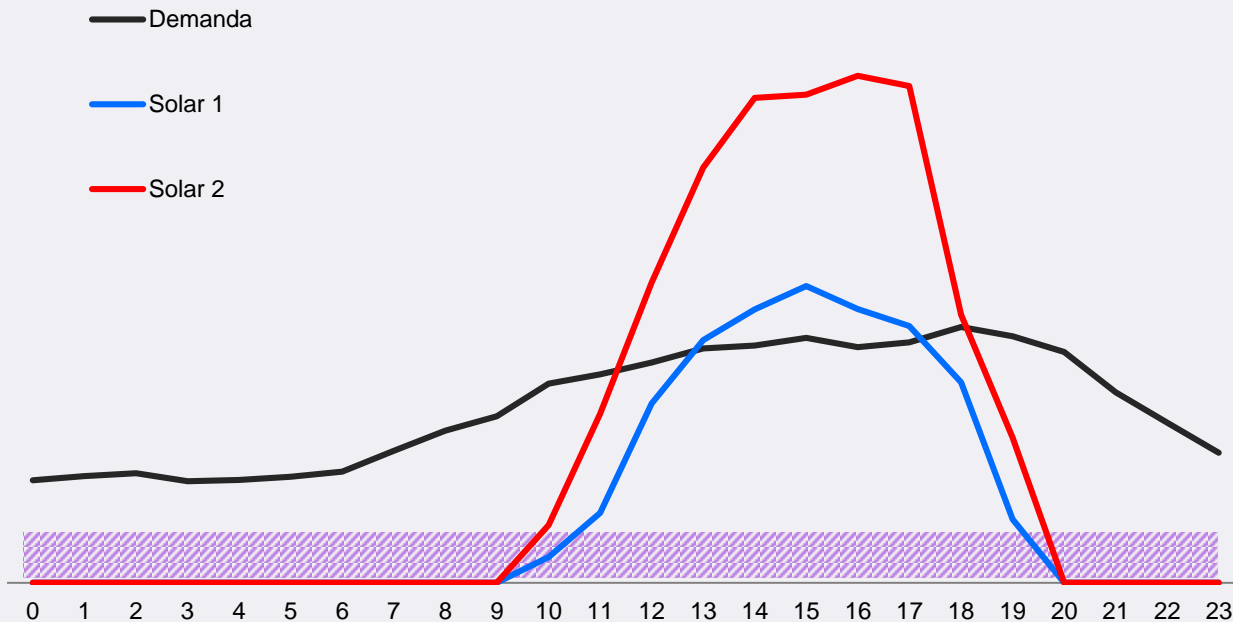


1. Design a plant considering all assets, not by separated systems
2. Balance CAPEX & Opex
3. Reduce load and stress to the gensets (1000 - 1500 rpm)



Solar PV Optimization

1. Balancing Capex
2. Not exceed demand so much... unless batteries are considered
3. Always a Diesel /Gas Backup





Microgrid Optimization

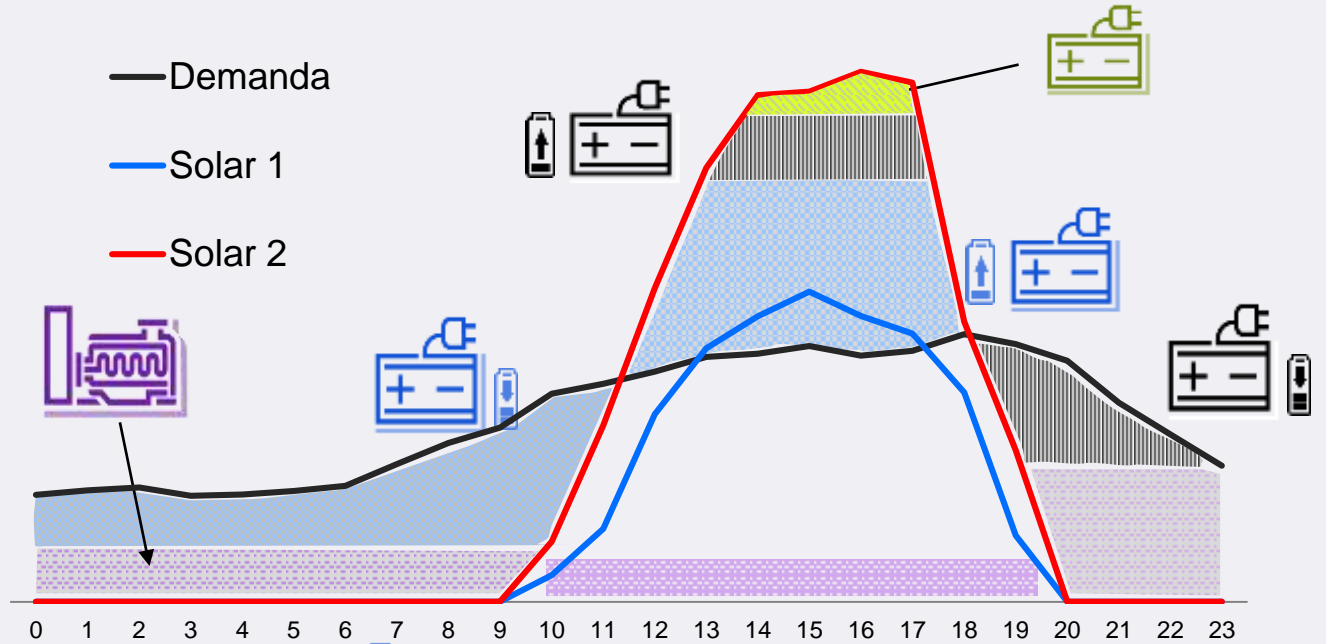
1. Cost of Energy



2. Renewable Share



3. Payback /IRR



0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

	✓	✓	✓	✓
	✓	✓	✓	✓
	✓	✓	✓	✓



THANK YOU



A Rolls-Royce
solution



Reference case | Cook Islands Off-grid Energy Supply

Configuration



Off-grid



Solar PV



ESS



Diesel

Customer

Power Smart Solutions

Commissioned

2019

Applications

Increasing renewable energy and reserve

MTU EnergyPack QM



500 kW / 502 kWh

MTU Microgrid Controller



Estimated savings |
diesel

1.09 Mio
USD/year

Estimated savings |
OPEX

174,000
USD/year

Opportunity

In 2019, the community of Aitutaki extended its energy system (750 kW) with a photovoltaic plant (PV) and implemented smaller and new diesel generators (240 kW) to achieve greater fuel savings and renewable fraction. The integration of several energy generators requires special systems to improve grid stability and optimize energy usage.



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Sales Manager Sustainable Solutions
Rolls Royce Solutions Ibérica

Ingeniero Industrial por la Universidad de Zaragoza.

Executive MBA por IESE Business School.

Más de 17 años de Experiencia en el Sector de la Energía y la Cogeneración. He trabajado en los mercados de España, Portugal y Latinoamérica, desarrollando más de 100 proyectos de Energía

Desde 2019, soy el Responsable de Centrales de Cogeneración y Soluciones Sostenibles de Rolls Royce Solutions Ibérica.





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Engenheiro Industrial da Universidade de Saragoça.

MBA Executivo da Escola de Negócios IESE.

Mais de 17 anos de experiência no Sector da Energia e da Cogeração. Já trabalhei nos mercados de Espanha, Portugal e América Latina, desenvolvendo mais de 100 projectos de Energia.

Desde 2019, sou o Chefe das Centrais de Cogeração e Soluções Sustentáveis da Rolls Royce Solutions Ibérica.

