HOW OCP INNOVATIONS DECARBONISE DATA CENTRE FACILITIES?

OCP TECH TALK SERIES:

DATA CENTRE FACILITY

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CONTENT

What is Scope 1, 2 and 3 emissions in data centre?

How can be reduced environmental impact of data centre?

Decarbonisation of OCP ready data centres

WHAT IS SCOPE 1, 2 AND 3 EMISSIONS IN DATA CENTRE?

GHG EMISSIONS IN DATA CENTRE

Scope 1 (On site)

Scope 2 (Energy supply)

Scope 3 (Indirect)

SCOPE 1 (ON SITE)

GenSet

Compressor refrigerants

Gas boiler

Vehicles

SCOPE 2 (ENERGY SUPPLY)

Electricity

Chilled water

Fuel cells

WHAT IS THE ENERGY SOURCE IMPACT?

Source of the energy	CO_2e emissions per kWh for electric energy	CO_2e emissions per kWh for heating
Coal	820 g	330 g
Natural gas	490 g	245 g
Nuclear	12 g	4 g
Wind	11 g	-
Solar	45 g	-

SCOPE 3 (INDIRECT)

UPSTREAM

Capital Goods (CG)
Purchased Goods & Services(PG&S)
Transportation
Employee commuting
Business travel
Leased assets
Fuel and energy related
Waste generation

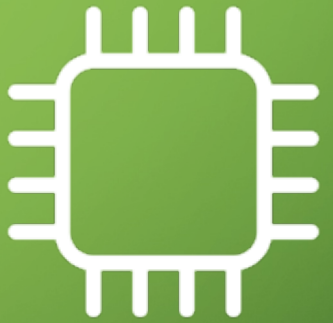
DOWNSTREAM

Transportation
Processing of sold product
Use of sold product
End of Live, Treatment of Sold Products
Leased assets
Franchises
Investments

SCOPE 3 (INDIRECT) UPSTREAM

Capital goods (CG)

Purchased Goods & Services(PG&S)



Fuel and energy related

SCOPE 3 (INDIRECT) UPSTREAM

Waste generation

Transportation

Employee commuting

SCOPE 3 (INDIRECT) DOWNSTREAM

End of Live,
Treatment of Sold Products

Transportation

HOW CAN BE REDUCED ENVIRONMENTAL IMPACT OF DATA CENTRE?

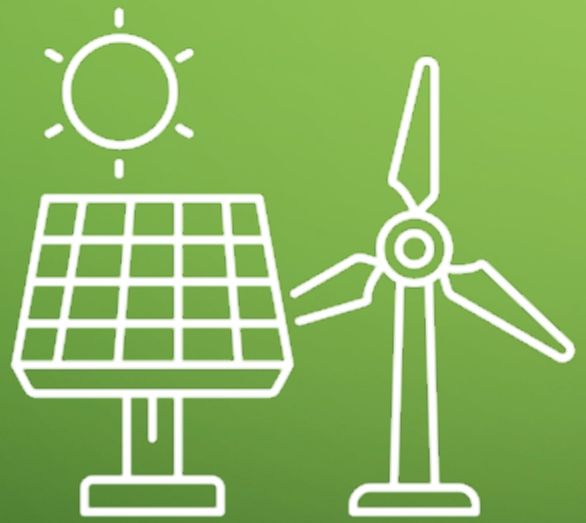
SCOPE 1 (ON SITE)

Natural refrigerants

Liquid heat transfer

SCOPE 2 (ENERGY SUPPLY)

Renewable energy



Sea water

SCOPE 3 (INDIRECT)

Second life servers

OCP prefab racks

DECARBONISATION OF OCP READY DATA CENTRES

DATA CENTRE ENERGY FLOW (INTERNAL AIR CIRCUIT)

Power grid | Servers | Cooling | Environment

1.3 MWh = 1 MWh + 0.3 MWh = 1.3 MWh

Cost

Electricity 1.3 MWh = 100€/h

Incl. Cooling 0.3 MWh = 23€/h

ENERGY FLOW FOR HEATING

Natural Gas

200 m3/h

Boiler house

0,5 ton CO2/h

Useful Heat

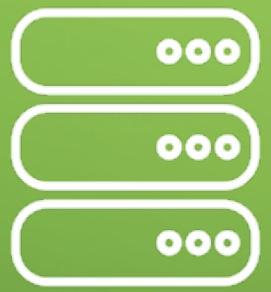
1.3 MWh

Cost

Natural gas 200 m3/h = 200-300€/h
Emissions 0,5 ton CO2/h=60€/h

CIRCULAR ENERGY FLOW

Power grid | Servers | Cooling & Heating | Useful Heat

1.3 MWh = 1 MWh + 0.3 MWh = 1.3 MWh

Cost reduction

Natural gas 200 m3/h = 200-300€/h
Emissions 0,5 ton CO2/h=60€/h

OCP READY DATA CENTRES (FRESH AIR FREE COOLING)

Servers

1 MWh

Exhaust Air

1 MWh

Environment

1 MWh

OCP READY DATA CENTRES (FRESH AIR FREE COOLING)

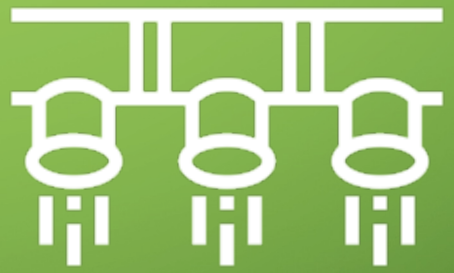
Servers

1 MWh

Exhaust Air

1 MWh

Distribution



1 MWh

Greenhouse

1 MWh

Cost reduction

Natural gas 150 m3/h = 150-225€/h

Emissions 0,4 ton CO2/h=45€/h

THANKS FOR YOUR ATTENTION.

Optimising Data Centres for

Heat Reuse & Decarbonisation

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