



International District Energy Developments

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Cooling Demand is Booming

≈30%

space cooling's share of
total buildings electricity's use
by 2050

70%

of the population
is expected to live in cities
by 2050



300%

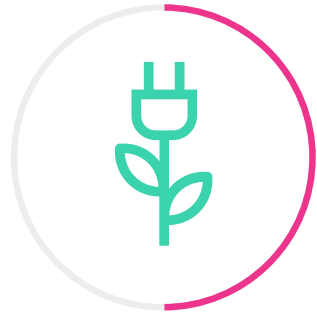
the energy requirement for
cooling demand to jump by
300% by 2050

625%

Only for Asia and
Latin America region

Why District Cooling

Common Benefits



50% Improvement in energy efficiency



50% Less CO₂ emissions



80% Less usage of chemicals



65% Less water consumption

Benefits of Brownfield District Cooling



Minimize the risk of offtake

Capacity of chilled water production and length of network are **sized to meet the exact demand of the buildings**. This will ensure customers would not be overcharged for any oversized systems. And it limits the risk for the developer.



Minimize environmental impact right in the city centre

The more densely populated the areas are, the greatest the impact of DCS is.



Attract new business into the area

Freeing up of building space and **creating a commercial edge on more developed areas in the city** and attract new businesses into the area. Existing tenants can also enjoy immediate benefits on cost savings from day 1.





ENGIE – A Global Energy & Utility Company

Leading

Independent power producer

Renewables

District Energy

 9.0 billion euros EBIT in 2022	 96,000 Worldwide highly skilled team members
 101 GW of installed power production capacity	 34.4 GW Installed Capacity of Renewables



ENGIE – Leader in District Cooling and Heating networks

N°1

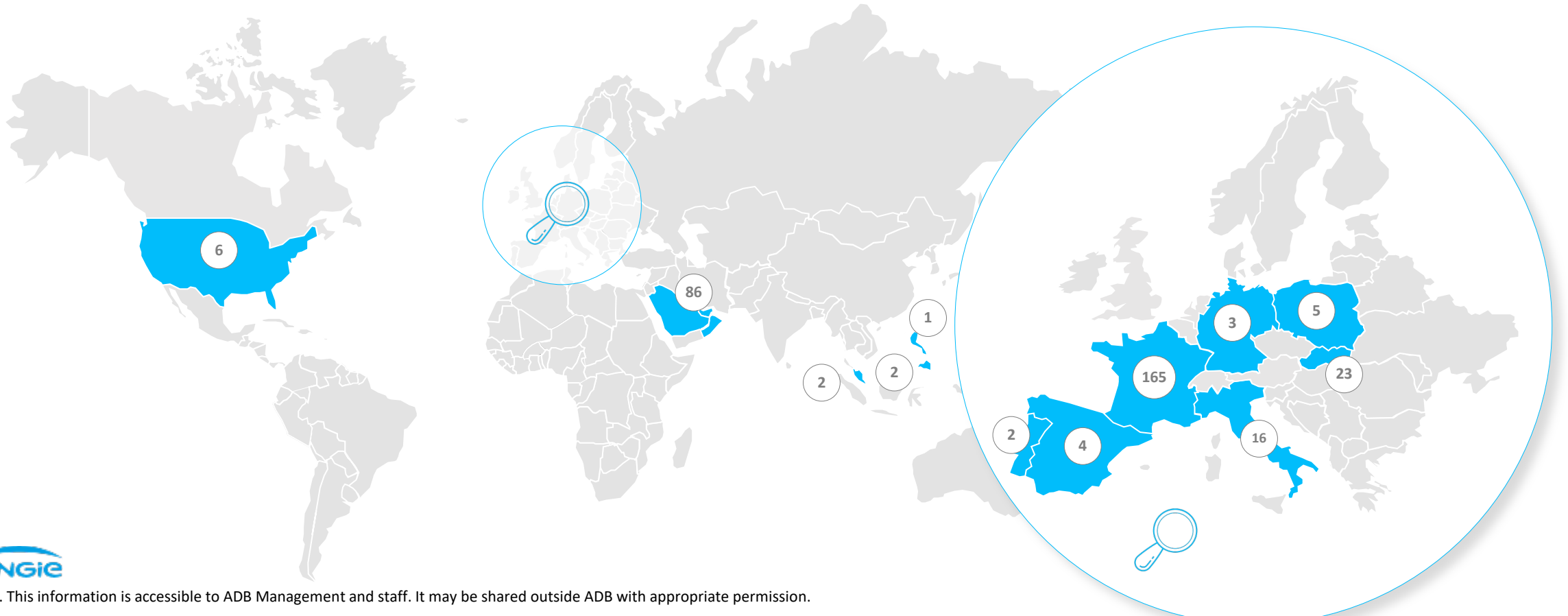
independent developer in cooling distribution networks worldwide

over **100** district cooling networks

N°3

Independent developer in heating distribution networks worldwide

over **300** district heating networks



District Cooling – Our References in Southeast Asia

Singapore is home to **1 of 5 centers of expertise worldwide** with the objective of developing local DCS expertise in the region

Across Southeast Asia, there are currently **5 networks** – 2 in operation and 3 under construction



64,000 RT delivered to clients



Over **20KM** of distribution network



20,000 tons of CO2 emission avoided per year



Northgate Alabang DCS

1st Brownfield District Cooling project in the Philippines

60% savings on cooling and electrical capacities per year

Megajana DCS

47 Buildings

97,500 RTh of thermal storage

Sunway City

Sunway South Quay CP2 DCS

20% reduction of energy consumption and CO₂ emissions

Punggol Digital District - JTC DCS

1 plant under development

30% reduction of energy consumption

Punggol Digital District - SIT Campus DCS

1 plant under development

30% reduction of energy consumption

Largest District Cooling in the Philippines

Northgate Alabang District Cooling Scheme



8,000 RT (+ 4,000 RT)
Cooling capacity



With 61% of the existing load being connected

Brownfield



First and largest DCS in the Philippines

KEY METRICS

11,500 tons
of CO2 savings / year

13% savings
for the client

60% savings
of cooling & electrical capacities



39% reduction
of electricity consumption / year

3.4km
of underground network

16 buildings
connected

District Cooling – Partnership as a major enabler

Partnership with Tabreed

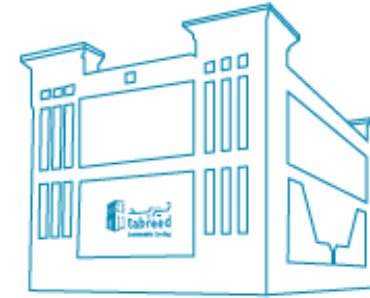
ENGIE formed a strategic partnership with Mubadala in 2017 by acquiring **40% stakes in Tabreed**, with the ambition to

- 1. Optimize the current operation** leveraging on ENGIE's expertise in District Energy, and
- 2. Fast track the growth** of Tabreed in Middle East and Asia, leveraging on ENGIE's experience to develop projects globally

ENGIE grows its presence worldwide by partnering with energy asset owners, and positioning ENGIE as the **key technical shareholder** of these partnerships.

83

plants in
5 countries



1.3m RT

delivered to clients

Equivalent to cooling

109

towers the size of Burj Khalifa



1.53 billion kWh

annual reduction in energy consumption in the GCC through Tabreed's DC services



768,000 tons

annual elimination of CO₂ emissions

District Multi-Utilities under 40-year Concession

London Olympic Park District Energy Scheme



Scope

18 km network
2 energy centres
200 MW heating
64 MW cooling
30 MW electricity

KEY METRICS

Client

London Legacy Development Corporation

Location

England, London

Model

Concession

Duration

40 years (from 2010)

Upfront payment

£ 115 million

District Multi-Utilities under 40-year Concession

London Olympic Park District Energy Scheme

Energy Centre 1 (Olympic Park)

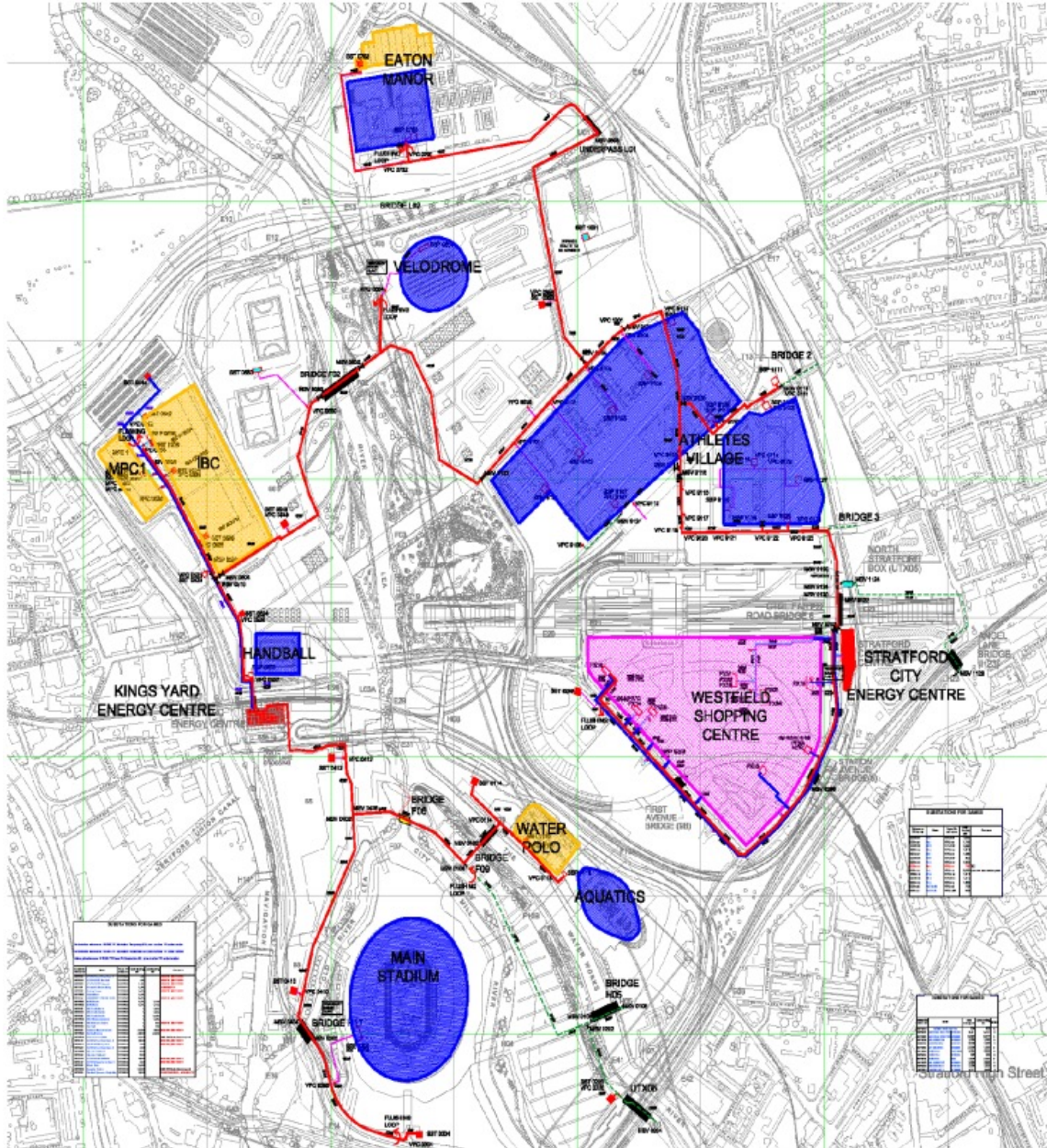
- 3.1 MWe CHP
- 4.0 MW Absorption Chiller
- 3.5 MW biomass boiler
- 40 MW conventional boilers
- 14 MW Chillers

Energy Centre 2 (Westfield Stratford)

- 6.2 MWe CHP
- 4.0 MW Absorption Chiller
- 40 MW conventional boilers
- 35 MW Chillers

Distribution

16 km of buried pre-insulated pipe installed across the site providing heat & chilled water, plus fibre network for metering/monitoring



District Multi-Utilities under 50-year Concession

Ohio State University District Energy Scheme



Building

485 buildings

Surface area

2,000 acres

Daily occupancy

100,000 people

Key target

Achieve at least 25% reduction in Energy Use Intensity, by July 2028

KEY METRICS

Client

The Ohio State University

Location

US, Columbus, Ohio

Model

Concession (with Axium)

Duration

50 years (from 2017)

Upfront payment

1.2 bUSD

District Multi-Utilities under 50-year Concession

Ohio State University District Energy Scheme

Combined Heat & Power, and Cooling production

- 100MW - Two Siemens SGT700 gas turbines and one Siemens SST400 steam turbine
- 285 kpph of steam (connected to geothermal plant)
- 13,000 ton of cooling – electric chillers
- Electrical tie into Ohio State Substation

Distribution

- Steam connection with existing network
- Hot Water (supply/return)
- Chilled Water (supply/return)
- Natural Gas
- Demineralized Water/Condensate Return

Centre of Expertise

Construction of a new Energy Advancement and Innovation Center for energy research: a laboratory where faculty, students, alumni, entrepreneurs, industry experts, and ENGIE researchers can collaborate on next-generation technologies and services in areas such as smart energy systems, renewable energy, and green mobility.



Thank you!

Let's stay connected

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