switch datacenters

*Amsterdams **sustainable** datacenter operator & developer*

SWITCH DATACENTERS, since 2011

- Switch Datacenters is specialised in design, build and lease of ultra efficiënt carrier neutral wholesale datacenters for ISP's, Telco's and Cloud providers. We lead , are entrepreneurial and challenge the status quo.

  We own/run multiple leading datacenters in the Amsterdam region with a current total floor area of 25.000m2 (260.000 sq.ft.) and 8.500m2 (90.000 sq.ft.) of premium datacenter white space and are multiplying our whitespace and amount of datacenters rapidly year over year. Our AMS4 will be live Q4 2022 (AAA-location / max 18MW IT).

- As a 100% Dutch, privately owned, well financed technology company we focus on the design, build, operation and development of high end wholesale datacenters in the Netherlands with a strong focus on Amsterdam.

- We have a solid , ten year plus operational record , with a strong leading set of customers and business parnters. We are trusted by the biggest brands and host a.o. well known banks, insurance and hosting companies.

- We e.g. closed a sale/lease back with IBM datacenters, sold off our AMS1 to Equinix and are upgrading our AMS2 to 6MW and run/designed Amsterdam's only UTI III certified single tenant 8,5MW modular datacenter in Amsterdam South East.

- Switch has a stong R&D and innovation drive. Sustainability/efficiency is in our DNA, way before it became fashionable. Switch is an active member and contributor to many forward / leading industry associations .

DISRUPT OR BE DISRUPTED

28 september 2018

Rittal, Circle B en Switch Datacenters launching OCP Experience Center

With the first OCP Experience Center in Europe, Rittal, Circle B and Switch Datacenters show what OCP means in concrete terms.With the completion of this

Read More

Switch Datacenters AMS3 PuE 1,12 on year basis

"Switch Datacenters Pays Its Clients for Server Waste Heat"

Switch Datacenters scoort met dlc-koeling

Computable Awards 2021, categorie Duurzaamheid & MVO

Topic Datacenters

Switch Datacenters geeft als eerste datacenter in Europa een financiële incentive voor direct bruikbare restwarmte. Hiervoor maakt het gebruik van bestaande direct liquid cooling (dlc)-technieken om servers te koelen. Koelwater wordt opgewarmd naar een temperatuur van 40 tot 60 graden welke direct gebruikt zal worden voor de verwarming van kantoren en woningen. Klanten die voor dlc-koeling kiezen krijgen een korting tot 30 procent op de stroomkosten. Voor de algemene jury van de Computable Awards 2021 reden om Switch Datacenters te nomineren in de categorie Duurzaamheid & MVO.

Alle elektriciteit die een datacenter in gaat, wordt omgezet in warmte. Om praktische redenen staat koelapparatuur doorgaans ver van de warmtebronnen (processoren, geheugen en harddisks) opgesteld. Hierdoor is de temperatuur van het koelwater relatief laag bij 20 tot 25 graden. Dit is niet optimaal voor het verwarmen van bijvoorbeeld woningen. Bij de upgrade van het Switch-datacenter in Woerden is voor een oplossing gekozen waarbij restwarmte standaard met een hogere temperatuur mogelijk is van 40 tot 60 graden. In plaats van de servers met conventionele zaal-koelers te koelen, kiest men er voor zoveel mogelijk voor direct bij de server te koelen om de hoogste temperatuur uit de servers te kunnen 'oogsten'. Hoe meer bruikbare warmte geproduceerd kan worden hoe beter en hoe hoger de financiële compensatie.

Switch Datacenters hoopt met een financiële incentive grote cloudproviders te bewegen om gebruik te maken van dlc of andere vormen van hoge-temperatuur koeling. Tevens wil het een voorbeeld zijn voor andere datacenters om ook dezelfde strategie te volgen. Dit kan zeer positief uitpakken voor de datacenterbranche als geheel. Vandaag de dag zijn er meerdere varianten mogelijk voor dlc. Klanten kunnen gebruik maken van vloeistof-naar-de-chip modules maar ook andere koelmethodes zoals bijvoorbeeld immersion cooling. Dit zijn al jaren beproefde technieken die door meerdere partijen worden aangeboden. Dlc-oplossingen worden tevens steeds vaker kant-en-klaar aangeleverd door serverfabrikanten zoals Dell, Lenovo, Supermicro, Gigabyte en HPE.

7 april 2022

Webinar: "Data Center Liquid Cooling: So Many Options, But What's Right for Me?"

25 march 2022

Immersed Cooling: Is this the time to accelerate ?

10 march 2022

iXora B.V. boards Switch Datacenters for first testing phase

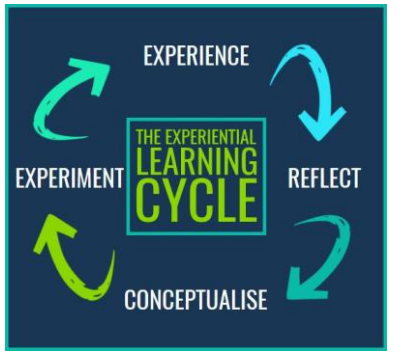
Sustainability is not marketing: it is doing!

Switch Datacenters has always experimented to achieve sustainable solutions and more efficient technologies. We lead by example. Not because it is "the thing to do" but because curiosity and challenging the usual way of working brings smarter, more efficient and greener ideas. Being an Amsterdam based company, we need to lead, not follow.

We believe the datacenter business is not a stand-alone IT-hotel business and our business is not limited to renting out secure / powered / cooled server space. We are part of a circular eco-system and as such, where possible, we contribute to the local community. District heating, circular economy, waste reduction are no topics for others to solve. We will contribute to solving the sustainability puzzle. It is our duty.

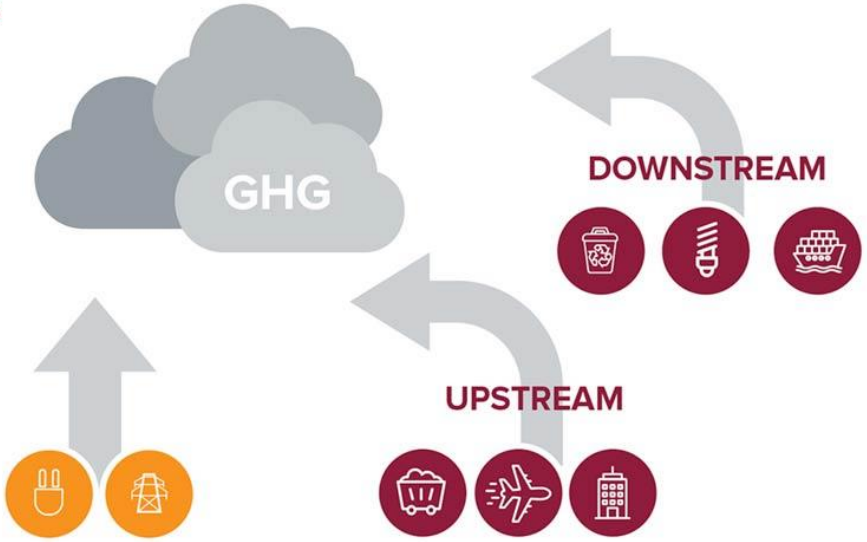
We continuously challenge all elements in the chain. We wonder why current datacenters still operate at fixed heat ranges, saving unnecessary and expensive cooling. We also wonder why customers still choose standard server blades without thinking to tick the 'DLC enabled' button when ordering or considering refurbished servers.. We question the usual datacenter power back-up habits, which are still based on technology from 20 years ago..

We experiment with new technologies in our own R&D environment. We build prototypes and test it out. We think, invent and implement ourselves, instead copying what others do. Being local and innovation driven experienced entrepreneurs means we can adapt to local needs faster and better.



Sustainability is most about scope 3!

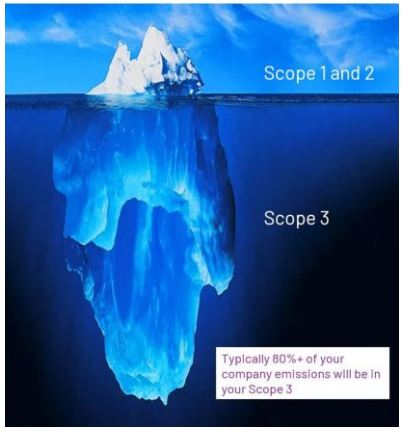
The GHG protocol categorizes a company's GHG footprint into three different scopes: Scopes 1, 2, and 3.



SCOPE 1
emissions are direct emissions from owned or controlled sources.

SCOPE 2
emissions are indirect emissions from the generation of purchased energy.

SCOPE 3
emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.



LOCATION MATTERS

ADDED VALUE TO LOCALS

ADDED VALUE OTHERS?

NEW BUILD vs REUSED CONCRETE SLAB

REUSE WASTE

SCOPE 3 RULES

NOT ONE SITE BUT BE CONSISTENT

BE CONSISTENT / OPEN

SHARE THOUGHTS & LEARNINGS

OPEN STACK DEV'T

SHARE / COOPERATE

DRIVE & LEAD CHANGE

SWITCH DATACENTERS portfolio

OPERATIONAL / UNDER CONSTRUCTION

AMS2 AMSTERDAM REGION (WOERDEN)

Total surface (m²):	5.500
White space build (m²):	1.250
Max potential white space (m²):	2.500
Installed Customer power (MW):	0,8
Max potential Customer power (MW):	6
10MVA to be installed in 2023-2024 ,	
Design PuE	1,1

AMS3 AMSTERDAM (SOUTHEAST)

Total surface (m²):	11.000
White space build (m²):	2.125
Max potential white space (m²):	3.400
Installed Customer power (MW):	4,5
Max potential Customer power (MW):	9
10MVA on site, AA location, tier III UTI certified	
Design PuE	1,1

AMS4 AMSTERDAM (SCIENCE PARC SOUTH)

Total surface (m²):	7.500
White space build (m²):	-
Max potential white space (m²):	5.000
Installed power MVA	10
Potential Customer power (MW)	18
10MVA on site 2*10MVA pending 2022	
RFS ph1 7MW IT Q2 22, Ph2 <18MW IT 22/23	
Design PuE	1,2

UNDER DEVELOPMENT

DEDICATED FOCUS ON AMSTERDAM MARKET

Switch Datacenters has the plan & financing to develop 1 large - hyperscale site per year

Switch aims to be the greenest Datacenter developer and operator in the Amsterdam region and therefor by nature being amongst the greenest (non-Nordic) datacenters in the world.

All new developments are done in close harmony with all stakeholder and have sustainability as a key design principle. Switch will set the new standard for datacenter development/ permitting in Europe.

AMS5 AMSTERDAM

Total surface (m²):	
White space build (m²):	
Max potential white space incl Ph2 (m²):	
Max Incoming power MVA Ph1	
Installed Customer power (MW):	-
Max potential Customer power (MW) :	

Large scale high temp heat recovery infrastructure

AMS X AMSTERDAM (North West) 1-3 yrs

AMS Y AMSTERDAM (SCHIPHOL) 1-2 yrs

AMS Z A'DAM AGRIPORT MIDDENMEER 1-2 yrs

Switch is actively driving green innovation

Greenit
amsterdam region

DUTCH
DATA CENTER
ASSOCIATION

PARTNER OF THE
SDIA
BUILDING A SUSTAINABLE
DIGITAL ECONOMY

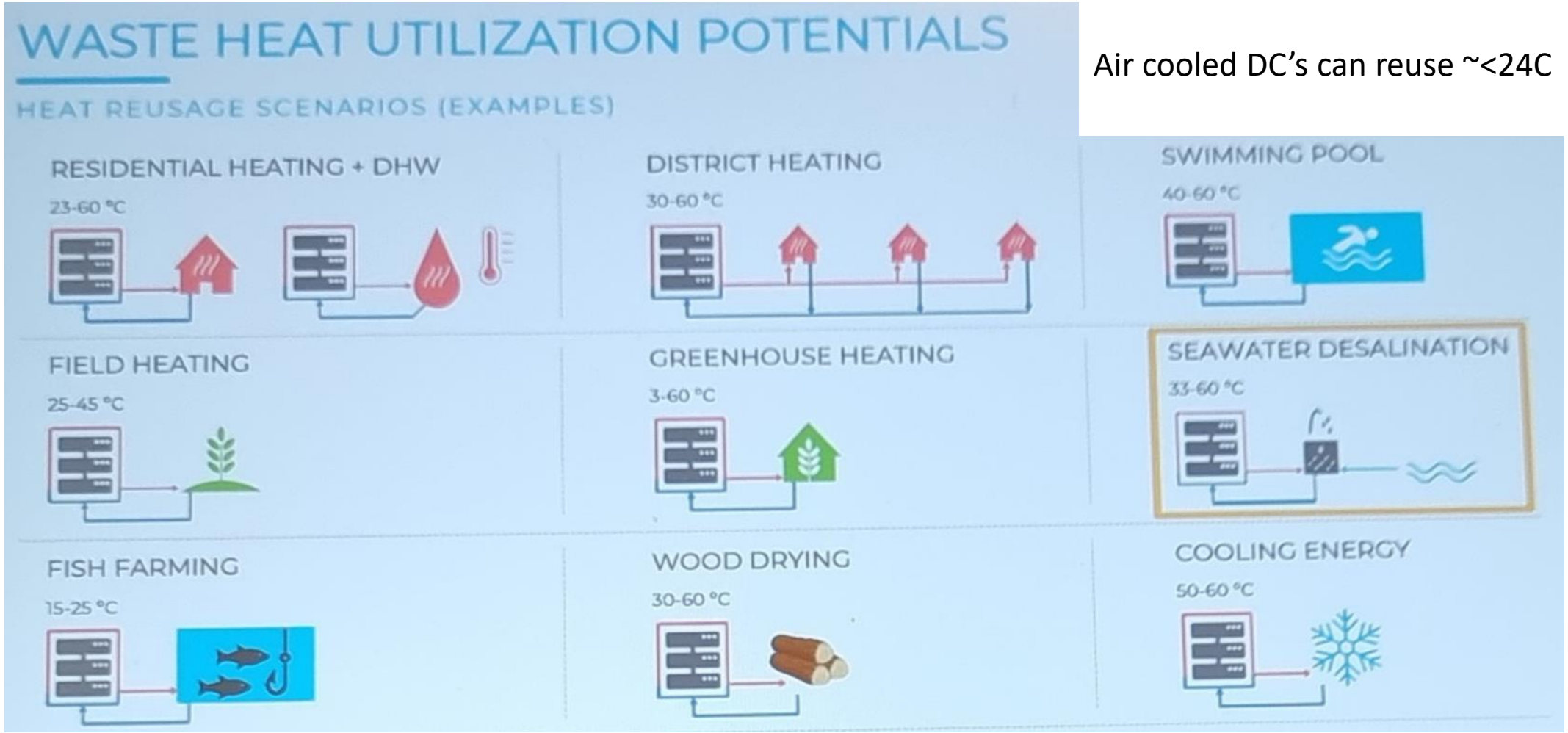
CLIMATE
NEUTRAL
DATA
CENTER

OPEN
Compute Project ®

Why bother about heat reuse?

- We are human & citizens in our own country ; We care about our own backyard
- Society is changing and business needs to change too if it wants to stay relevant
- By only looking at DC's as a silo, we completely disregard potential impact on others
- We believe current technology status quo will be changed (by e.g. regulations?)
- We think vision , challenge and leadership can move mountains / or e.g. phase out diesel cars
- We think (Amsterdam) EU can & should lead the way in smarter DC useage
- We think DC's are here to stay , so better make smarter use of their potential power

Sustainability is not marketing



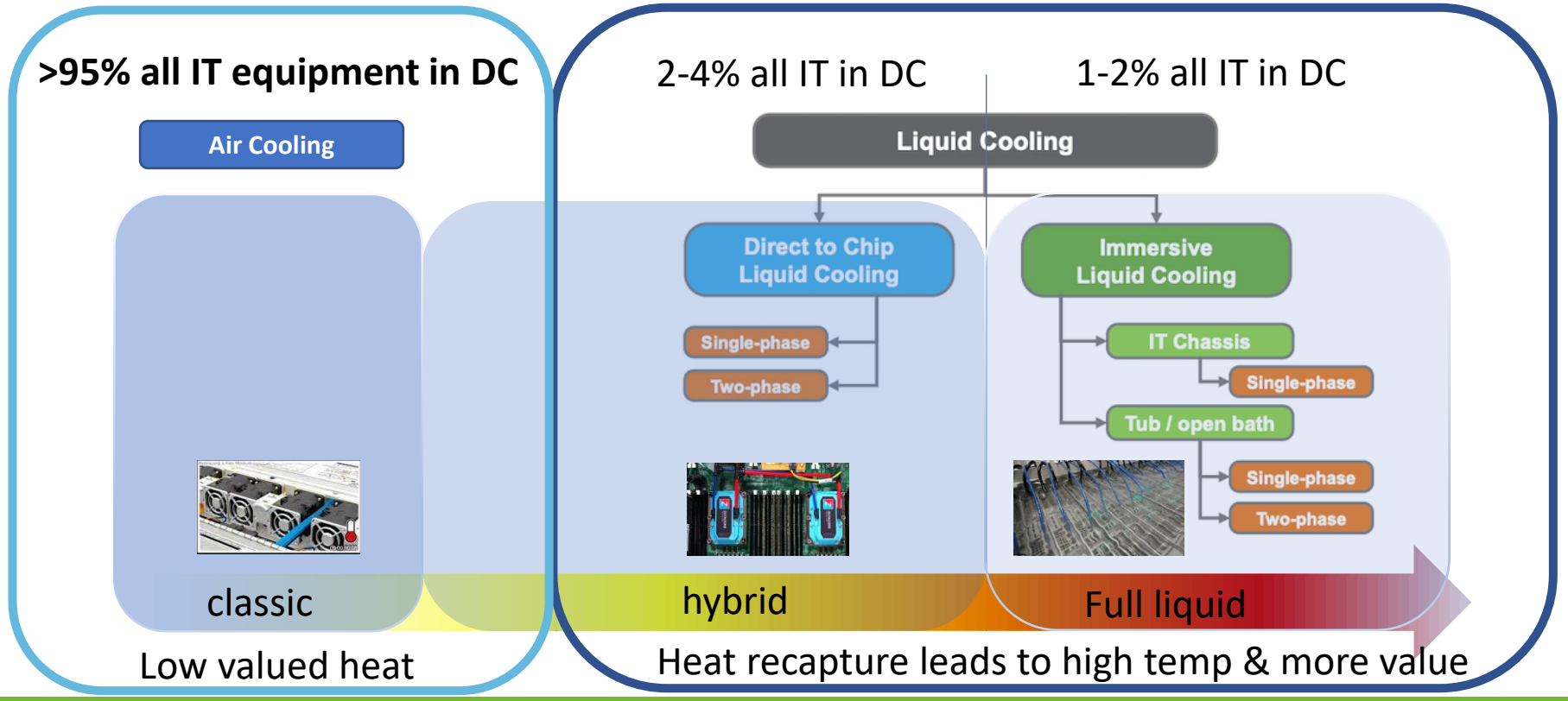
Air cooled DC's can reuse ~<24C

Heat reuse and DC techniques

Most IT customers in datacenters are still using air cooling for standard servers due to their fan-cooled servers choice

Average kW/rack density & average heat/rack is growing … AI, HPC etc already require mix of aircooled & DLC liquid

100 Million Dollar question : For how long will fan on a server/air-cooling be the ''norm''?



Switch Datacenters & heat reuse

Switch Datacenters has currently two active research projects for heat reuse, and more under development

1) AMS2 , Woerden

Delivery of heat to adjacent business / hospital building

The AMS2 DC used to be part of the same building complex with the neighboring building, owned by Fortis and lateron IBM. Currently the buildings are fully separated however the heating generator for the building next door is still in the technical basement of our datacenter. Since neighbours need to "green" their building a logical Project is to deliver residual server heat, pref high temp. AMS2 to become national showcase center for heat reuse.

2) AMS5, Amsterdam

Development of large scale datacenter to replace gas turbines of district heating net

For 3 years Switch Datacenters is cooperating in a joint team to develop a revolutionary next gen datacenter on a location where the produced server heat can be directly coupled / fueled into the district heating network of Amsterdam. Thereby rapidly contributing to a faster path to CO2 negativity of the district heating network. This datacenter would be ideally suited for large scale next gen cooling / liquid cooling recapture

MUNICIPAL HEAT NETWORKS Amsterdam

heat network East (Diemen-net):

— 113.000 houeholds (2016). Est 140k households 2022

— Vattenfall expects doubling households before 2040.

— total heat production ~6.000 TJ p/y in 2025 & growing

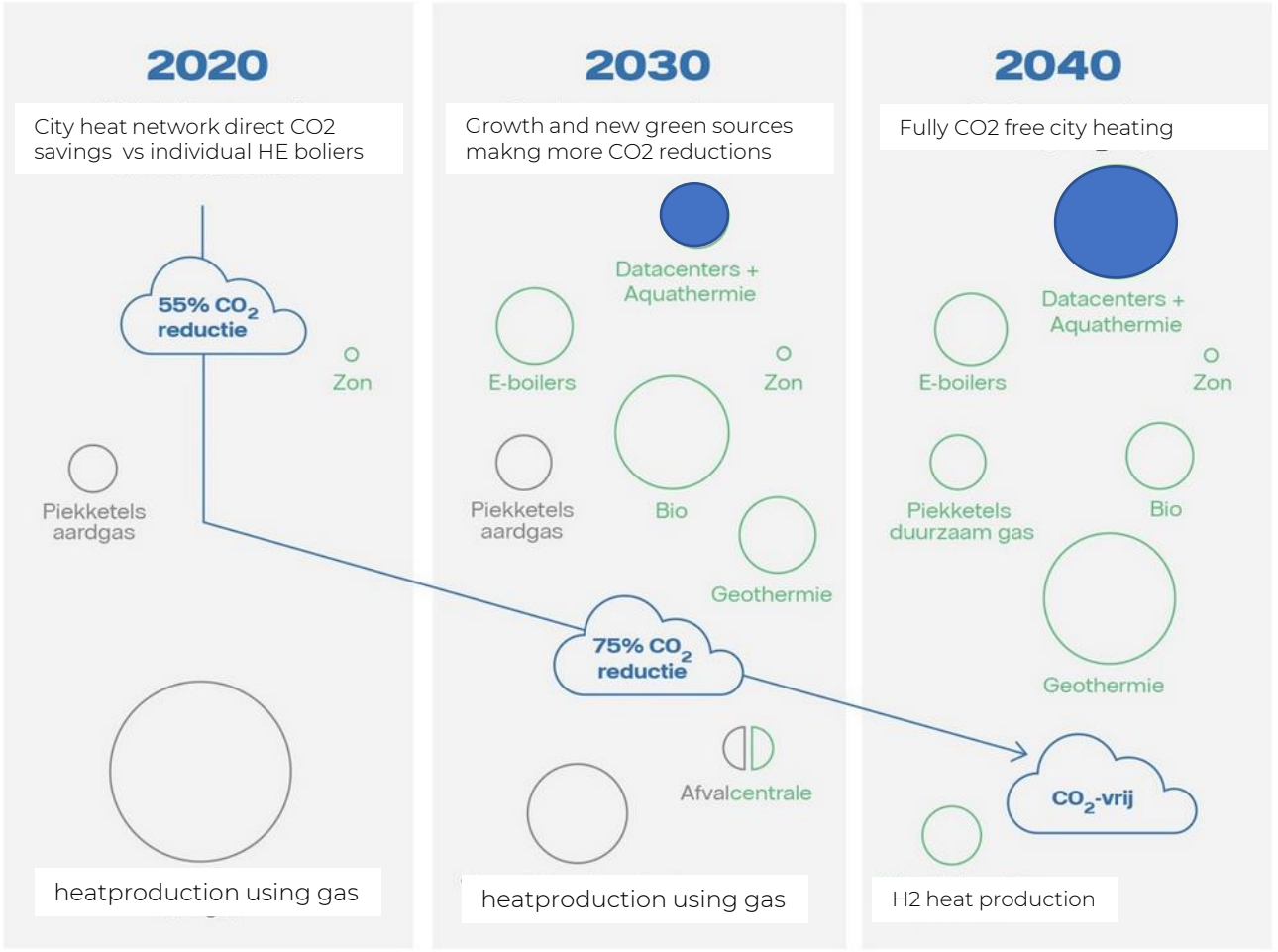
— Current heat ~90% from 2 gas-WKC's @ Vattenfall Diemen-(Diemen 33 en Diemen 34) , other 10% from other gas plants .

Figuur 1 - Warmtesysteem Amsterdam-Diemen-Almere

Beeld: Nuon-Vattenfall.

Roadmap to C02 free municipal heat Amsterdam

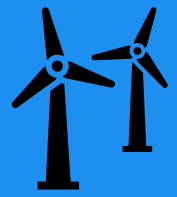
- target is fully CO2 free in 2040
- All parties (city/ Vattenfall) looking to new CO2 negative heat NOW



Municipal heat networks & datacenters
a sustainable marriage of two energy flows

Current DC 1.0

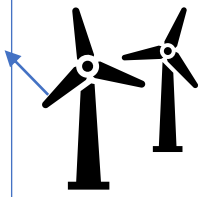
Fossil
heat plant



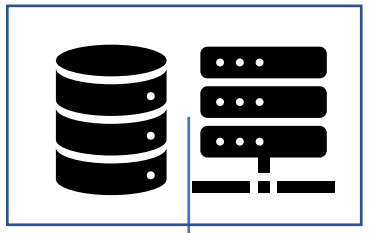
Wind
powered plant

Current situation, two energy flows in parallel to one generating heat for heat network & one to fuel DC

New DC 2.0

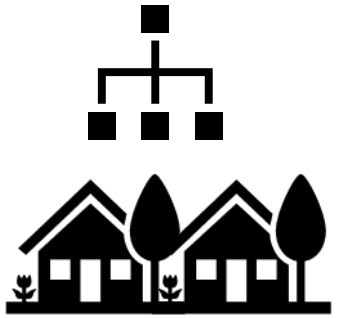


Green power in



MW heat
commitment

Green heat out



DC as a heater for city housing Instead of heat plant.

DC 2.0 situation, same energy flow to DC but now DC acts as green heat production for heat network & saving gas/energy

GLOBAL SHOWCASE:

Breakthrough proposition for next generation sustainable datacenters

THIS AMS5 DATACENTER WILL BE THE FIRST LARGE SCALE COMMERCIAL RESIDUAL HEAT PROJECT IN EUROPE / WORLD

Completely changing role / image of datacenter

From local FOE

- being seen as polluter and local power eating black box, not contributing to local society i.r.t jobs, local economy and sustainability plans

To local , sustainable FRIEND

- becoming an integral solution part of the green deal/ energy transition by sustainable producing/reusing heat for the local community
  Directly helping to avoid additional (gas)utility plants

THIS AMS5 DATACENTER WILL BE BUILT IN THE MOST “DEMANDING” DATACENTER TOWN OF AMSTERDAM

Being the first city in the world to issue a moratorium on non sustainable datacenters to be build (2020) , being able to launch this project in Amsterdam will make global headlines

From FOE

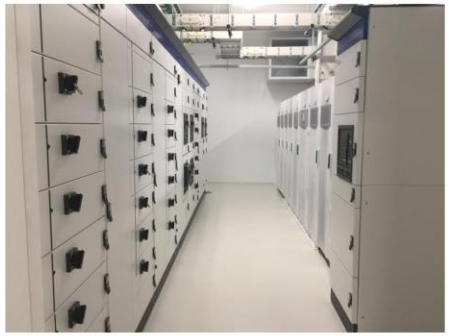
IT companies/ DC operators are not welcome in a modern city since they pollute, act as power parasytes to the local facilities, not contributing to the local environment /economy

To FRIEND

IT companies/ DC operators associated with this project can claim unique Sustainability image as well as contributing to local to the local environment /economy. Global PR/PA value

10 YEARS PROVEN DC CONSTRUCTION & OPERATION EXPERTISE

AMS1 :
sold to Equinix in 2019
AMS2 : ex-IBM DC,
sell / leaseback
AMS3 :
9MW wholesale since 2018
AMS4 :
7-18MW wholesale RFS Q4'22
AMS5 :
>100MW wholesale RFS 2025



In–house Engineering
Dedicated Teams
Rapid Deployment
Datacenter Focus
Custom Solutions
Ultra sustainable

AMS4 - UNIQUE CENTRAL LOCATION

NEW PREMIUM, SUSTAINABLE, LOW LATENCY DATACENTER

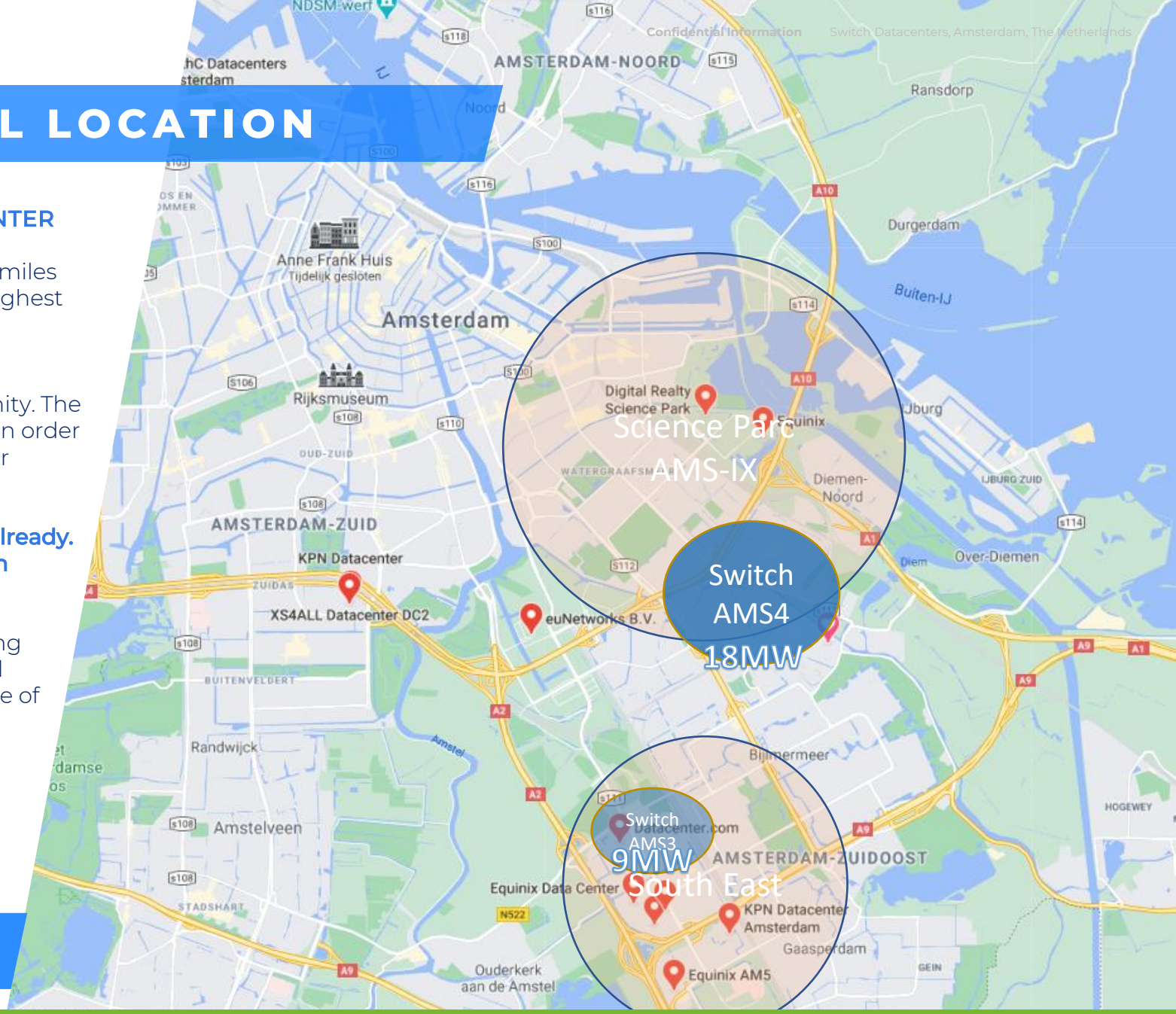
The AMS4 datacenter is located right in the AAA sweet spot 2 miles from Science Park/AMS-IX and 3 miles from South-East, the highest concentrated fiber and datacenter area in the Netherlands (highlighted area),

All major global carriers are on-route or in the immediate vicinity. The datacenter will be connected on the Amsterdam fiber routes in order to interconnect easily and cost effective with any datacenter or network in Amsterdam.

Build / Refurbishment started in 3Q21. 10 MVA power on site already. Currently the only new datacenter build in Amsterdam area in 2021/22.

AMS4 is currently being connected to the Amsterdam fiber ring by a digging Consortium led by Zayo, who will connect several large carriers through 2 separate fiber duct paths with multiple of dark & lit fibers to the ring, NIKHEF/AMS-IX as directly to the backbone of Zayo to Frankfurt. PoP's to be in place per 2H22.

AMS4 will be RFS in 4Q2022. starting with hyperscaler anchor Customer. Phased growth to 18MW IT



RFS 4Q2022 phase 1

AMS4 PROJECT INFORMATION; 2 MILES FROM AMS-IX

The AMS4 site is a fully owned free standing building that is being retrofitted into a premium state-of-the-art city datacenter. **Ready for service date : 4Q2022**

Current high level design specs:

- Current design up to **18MW IT load**
- Tier 3 UTI spec: modular capacity blocks, proven fast building concept, using respected brands
- Ultra efficient cooling units placed on the roof including heat recovery function for local heat network
- Current incoming power 10 MVA (2N) available
- Additional 2*10MVA incoming power pending
- low Scope 3 impact due to reuse concrete slab

original state of the fully stripped building

CONTACT INFORMATION

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