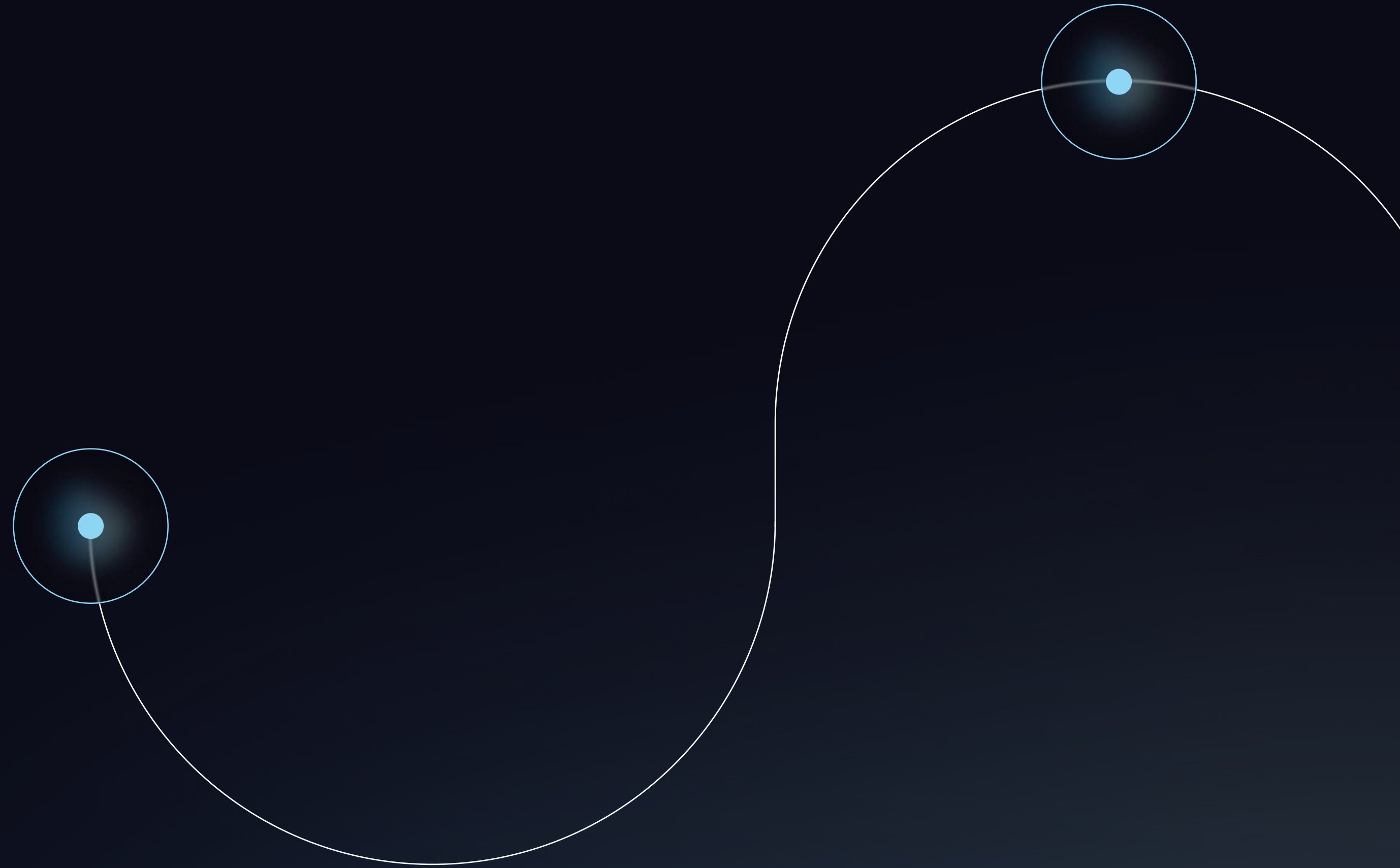


# Breakthrough Technology

Delivering Paris Proof 2050 efficiency  
decades ahead of schedule.



# Recent Awards



**seai** SUSTAINABLE  
ENERGY AUTHORITY  
OF IRELAND

**WINNER 2023** Sustainability via Digital  
Technology Award



**KPMG**  
Irish Independent 

**PROPERTY INDUSTRY  
EXCELLENCE AWARDS**  
Technology Innovation Award

**WINNER 2023**



**seai** SUSTAINABLE  
ENERGY AUTHORITY  
OF IRELAND

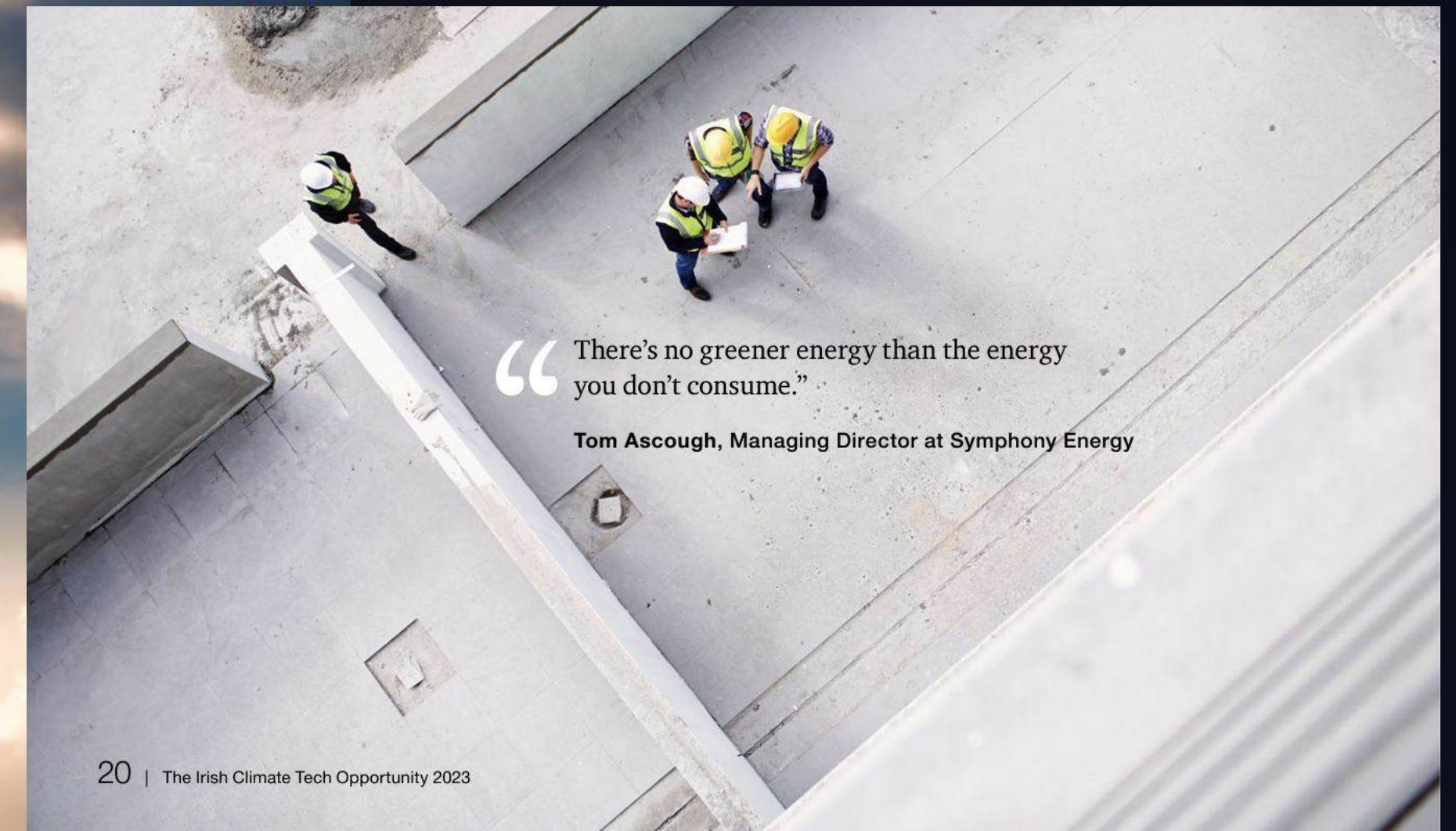
**WINNER 2024** Best Energy  
Services Company



Europe  
**PropTech  
Innovation  
Challenge  
2024**

# The Irish Climate Tech Opportunity Report 2023

Symphony Energy showcased by PwC and Sustainability Works as a climate tech company poised for scale.



Identified by PwC as a leader to watch in building energy efficiency

## The Challenge

How can we achieve Paris  
Proof 2050 efficiency?

And **how much** will it cost?

## The Problem

Retrofitting to current best practice is **expensive** and still does **not achieve** the target efficiency

“€90 to €300 per sq ft”

The multi-million euro bills that office landlords face to go green

Huge retrofit expense, but will it deliver Paris Proof 2050 efficiency?

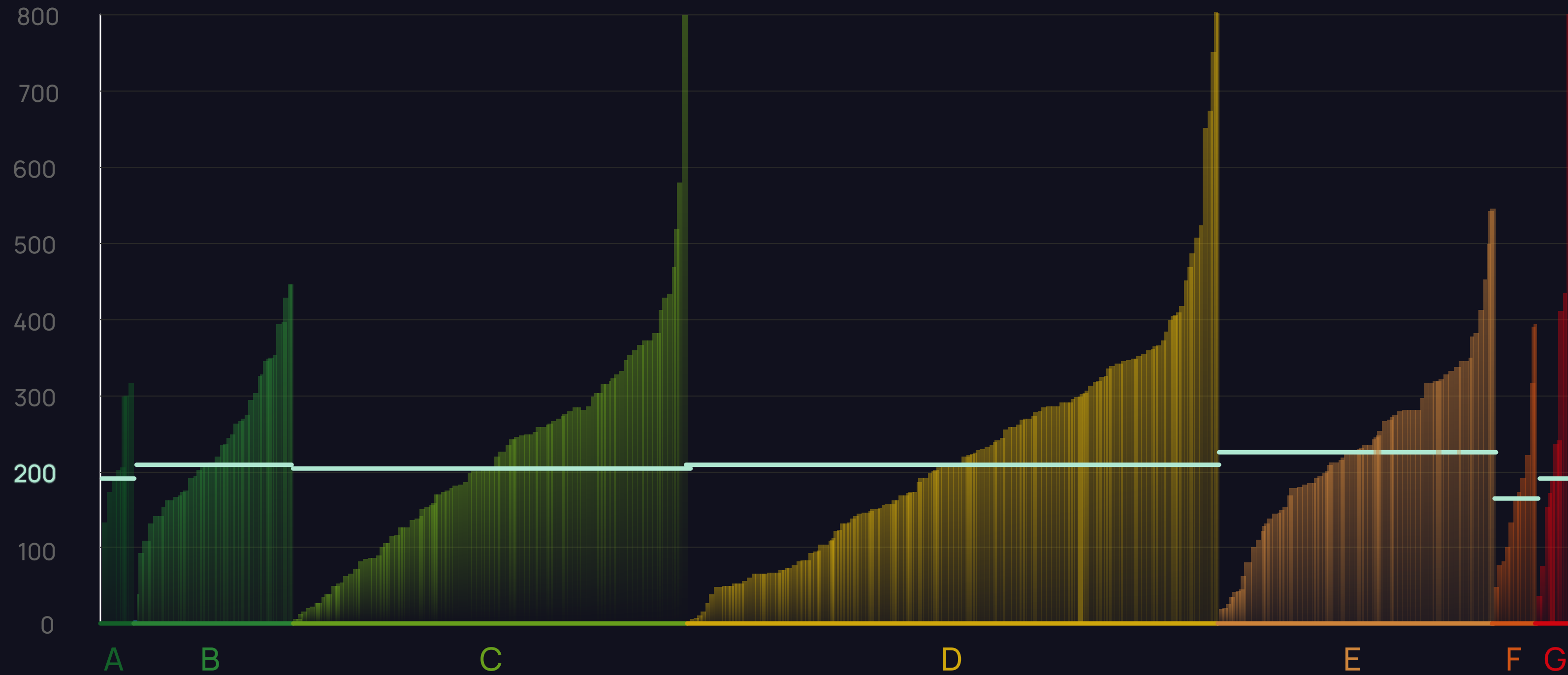


Savills research (May 2024) has shown it will cost more than €7 billion to bring office stock in Dublin up to new environmental standards

# Focusing on in-use energy performance

Energy Intensity  
(kWh<sub>elec.eq.</sub> per m<sup>2</sup> per year)

— Median Value  
(Approx 200)



EPC Ratings

No!

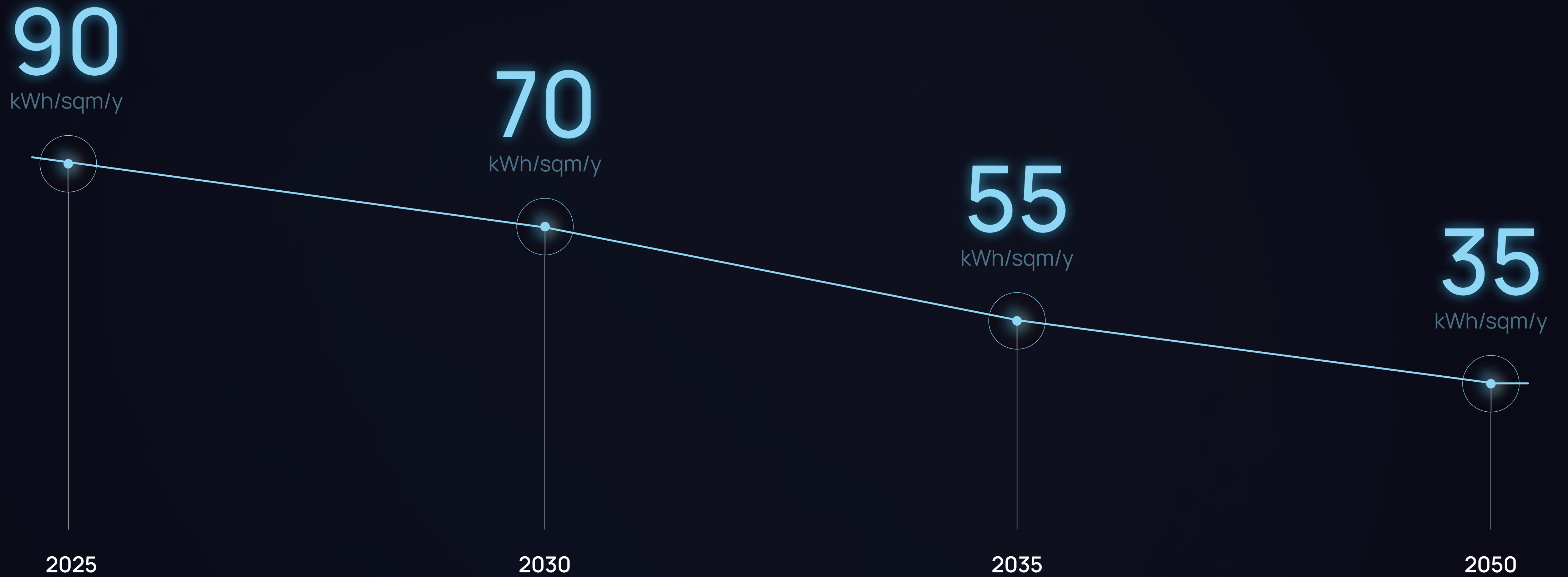
The in-use median consumption of BER A rated buildings is far from the target and about the same as the poorer rated buildings

SOURCE: BETTER BUILDINGS PARTNERSHIP, REAL ESTATE ENVIRONMENTAL BENCHMARK 2017

EACH BAR REPRESENTS A SINGLE OFFICE BUILDING'S ENERGY INTENSITY OVER THE COURSE OF A YEAR

THE 2023 REEB PROVIDES THE FINDINGS IN SUMMARY FORM. OVERALL AVERAGES REMAIN THE SAME AS THE 2017 DATA, POINTING TO LITTLE CHANGE ACROSS THE BER LEVELS

# UKGBC Paris Proof Targets





# UKGBC Paris Proof Targets

90  
kWh/sqm/y



Many new A-rated buildings are not even achieving the 2025 interim target



2025



35  
kWh/sqm/y

The median in-use consumption of BER A-rated buildings at almost 200 kWh/sqm/y needs to instead be 35



2050

These challenging targets  
were set for 2050 because the  
technology to get there had  
not been discovered yet

Retrofitting to current regulations  
is therefore **not just expensive,**  
but neither is it achieving the  
required targets

An affordable breakthrough  
technology is needed to fix  
this global problem

**Symphony** has developed  
and proven this breakthrough  
technology **decades ahead**  
**of schedule**

# Achieving Paris Proof 2050 Targets

After 10 years of development, these  
3 emerging technologies are now proven

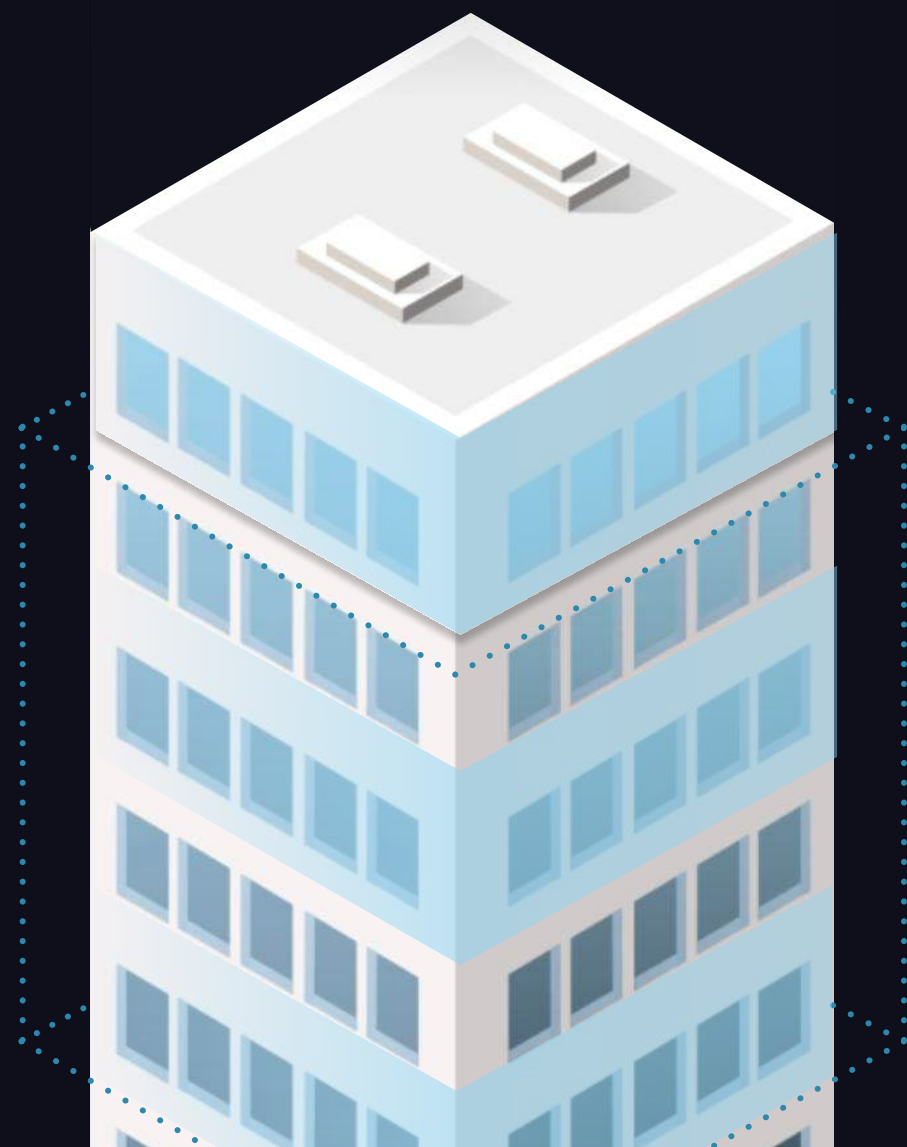
**1** **Performance Algorithms**  
Optimise HVAC Operation

**2** **Symphony Cycle**  
Eliminate Cooling Demand

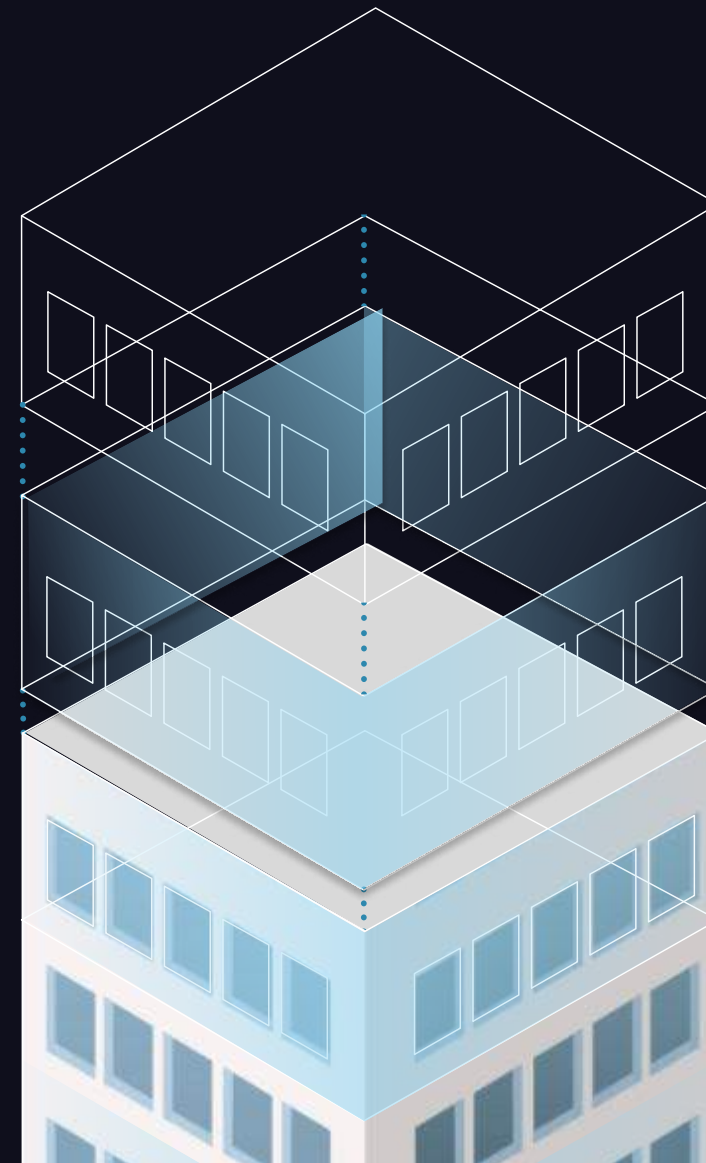
**3** **Symphony WellTech**  
Dynamic Demand Ventilation

# 1. Performance Algorithms

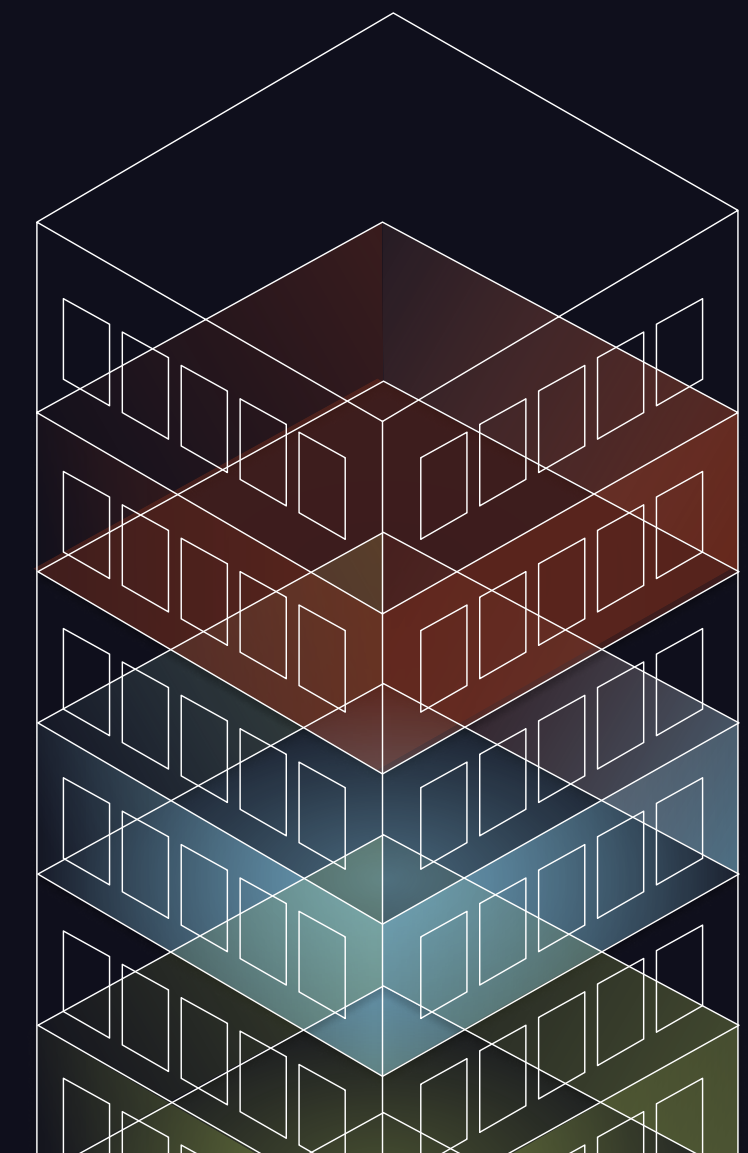
Deep dive into the building design and existing operation



Map the unique environmental signature of the building with the building's operating signature



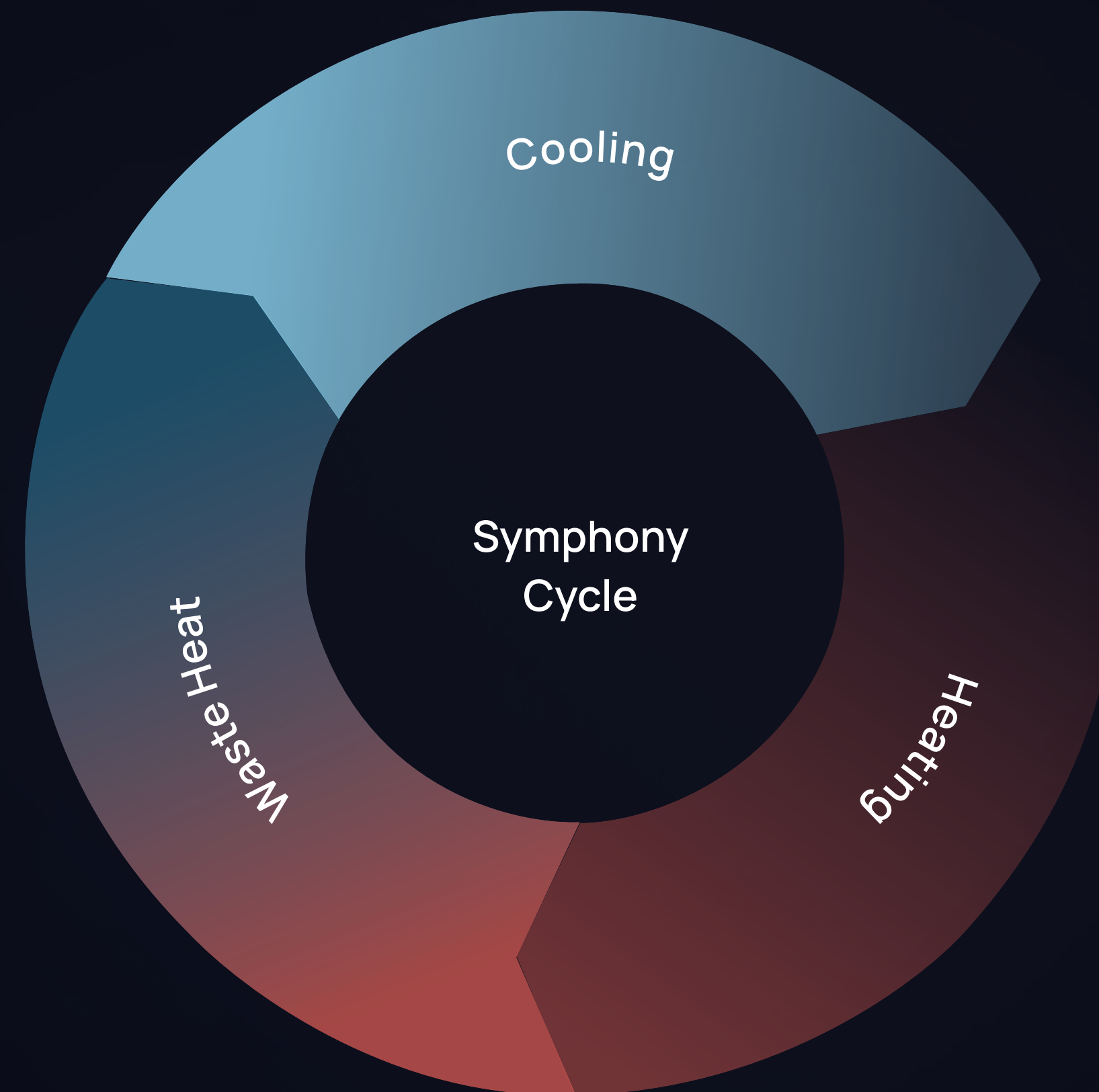
Continuously predict, monitor and respond to real-time fluctuations in energy demand delivering automated and optimised HVAC performance



## 2. Symphony Cycle

A patented technology that uses HVAC pumps and fans to substitute the use of the chiller and heater for much of the year

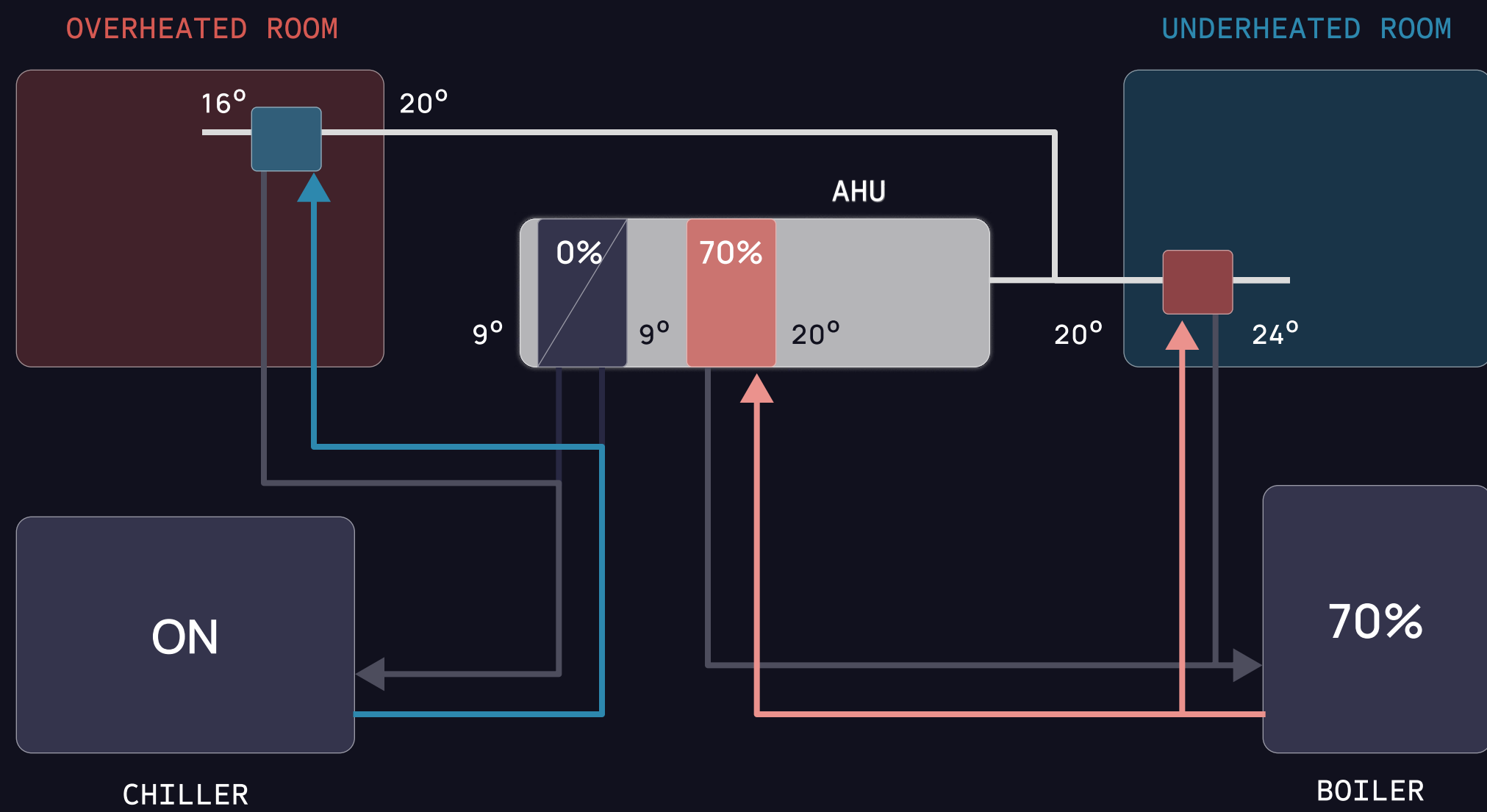
- ✓ Outside of Summer, cooling loads can be satisfied with higher temperature chilled water
- ✓ Chilled water is typically cooled using outside air temperatures below 17 °C
- ✓ By cooling the chilled water with the incoming fresh air, the need to preheat fresh air is reduced or eliminated entirely



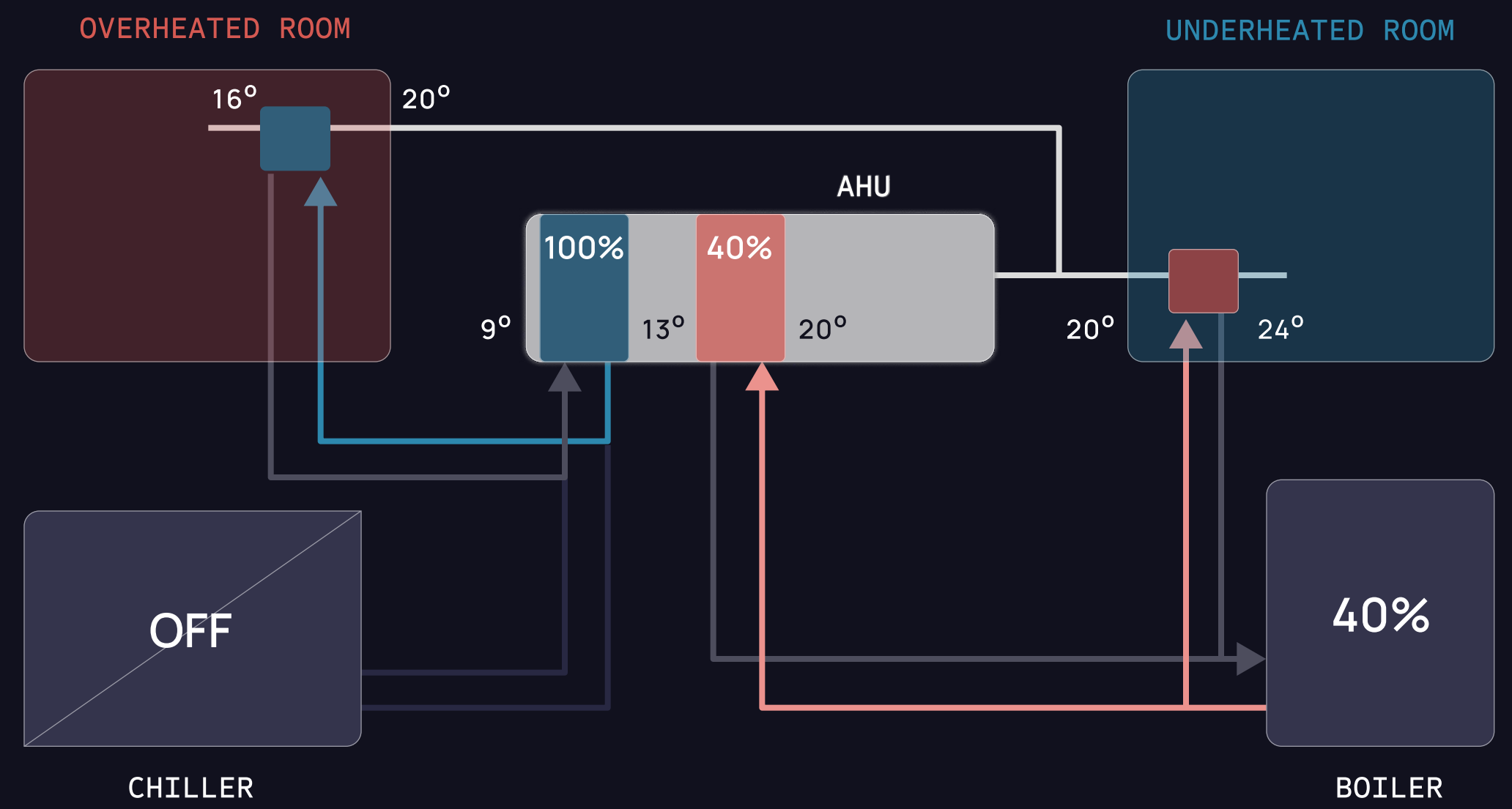


# Symphony Cycle I Outline Concept

Autumn/Winter/Spring  
Normal Mode



Autumn/Winter/Spring  
Symphony Cycle



# Symphony Cycle is **key** to achieving Paris Proof 2050

Symphony Energy  
has patented the  
Symphony Cycle HVAC  
waste heat recycling  
process across most  
of the developed world



# Symphony Cycle can be implemented **under license** by others

No physical changes are needed to the HVAC plant,  
simply the addition of an algorithm to the existing BMS

# 3. Symphony WellTech

Precise Dynamic Demand Ventilation:

- ✓ Diagnosis: Welltech monitors IAQ
- ✓ Cure: Welltech controls local equipment to deliver IAQ
- ✓ Air follows the people controlled by demand
- ✓ Quality IAQ with low energy expenditure



Designed by  
Symphony and  
manufactured  
in Europe

# Symphony Cloud provides:

 Client visualisation

 Control over the  
3 technologies

 Analytics

 IAQ monitoring

 Energy metering  
integration

 Other features

Chilled Water HVAC + Symphony Tech → the only technology **proven** to deliver Paris Proof 2050 for air-conditioned buildings

# Scalable

## 1 Performance Algorithms

formed into **building** blocks that can be readily configured to suit more applications

## 2 Patented Symphony Cycle

available in a pre-programmed controller or simply programmed into the existing BMS by other under **license**

## 3 Symphony WellTech

**manufactured by others** with no scale limits



# Affordable

**1** All 3 technologies together can typically be implemented for **€6-8/sqft** - equivalent to about 6-8 weeks of rent in city office buildings

**2** Symphony Cycle can be licensed at **15c/sqft/y** for offices or an equivalent rate for other building types

**3** Ongoing **maintenance** of all 3 technologies is typically 15c/sqft/y.

# Case Study: 1 Cumberland Place

12k m<sup>2</sup> Office Building

Already a highly energy efficient building, 1 Cumberland Place achieved a LEED Platinum rating in 2018 after the building underwent extensive refurbishment.



OWNER

hibernia

TENANT



LOCATION

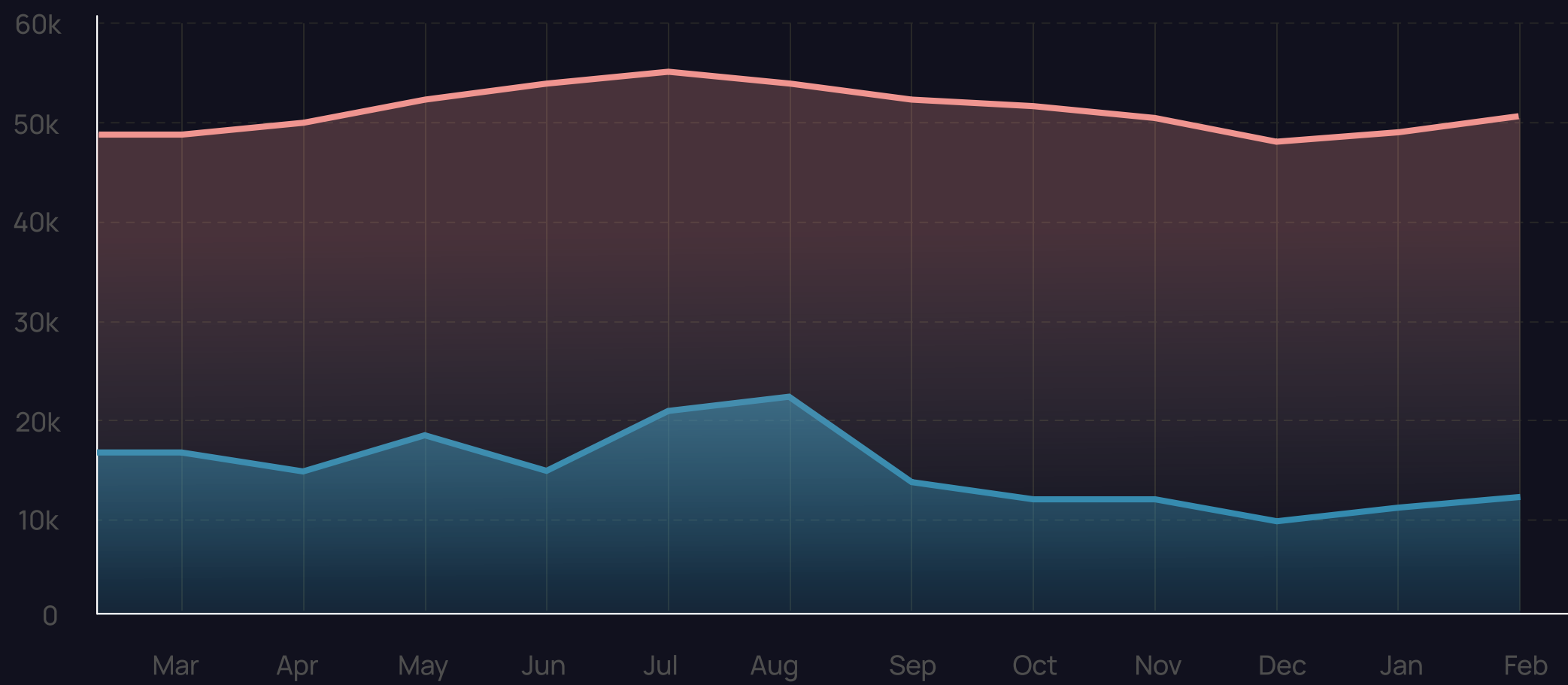
Dublin, Ireland

# Impact on Energy Use

● Before ● After

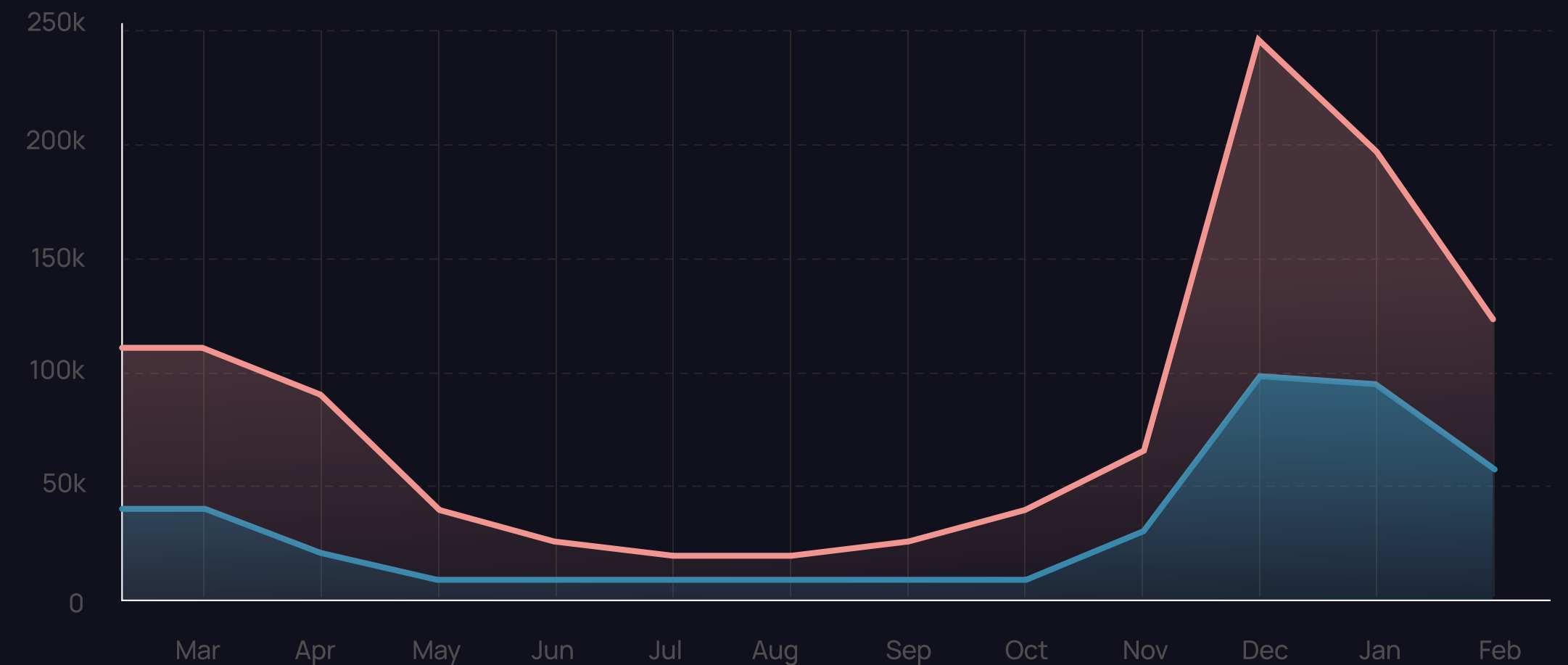
### HVAC Electricity Consumption Before & After

kWh HVAC Electricity



### Gas Consumption Before & After

kWh Gas



# The Results

Smart Optimisation achieved remarkable energy usage reductions and a new EUI of 44.

Stats:

Annual Carbon Savings

295t

HVAC Electricity Savings

75%

EUI Reduction

121 to 44

HVAC Gas Savings

76%

Payback

4.75 yrs

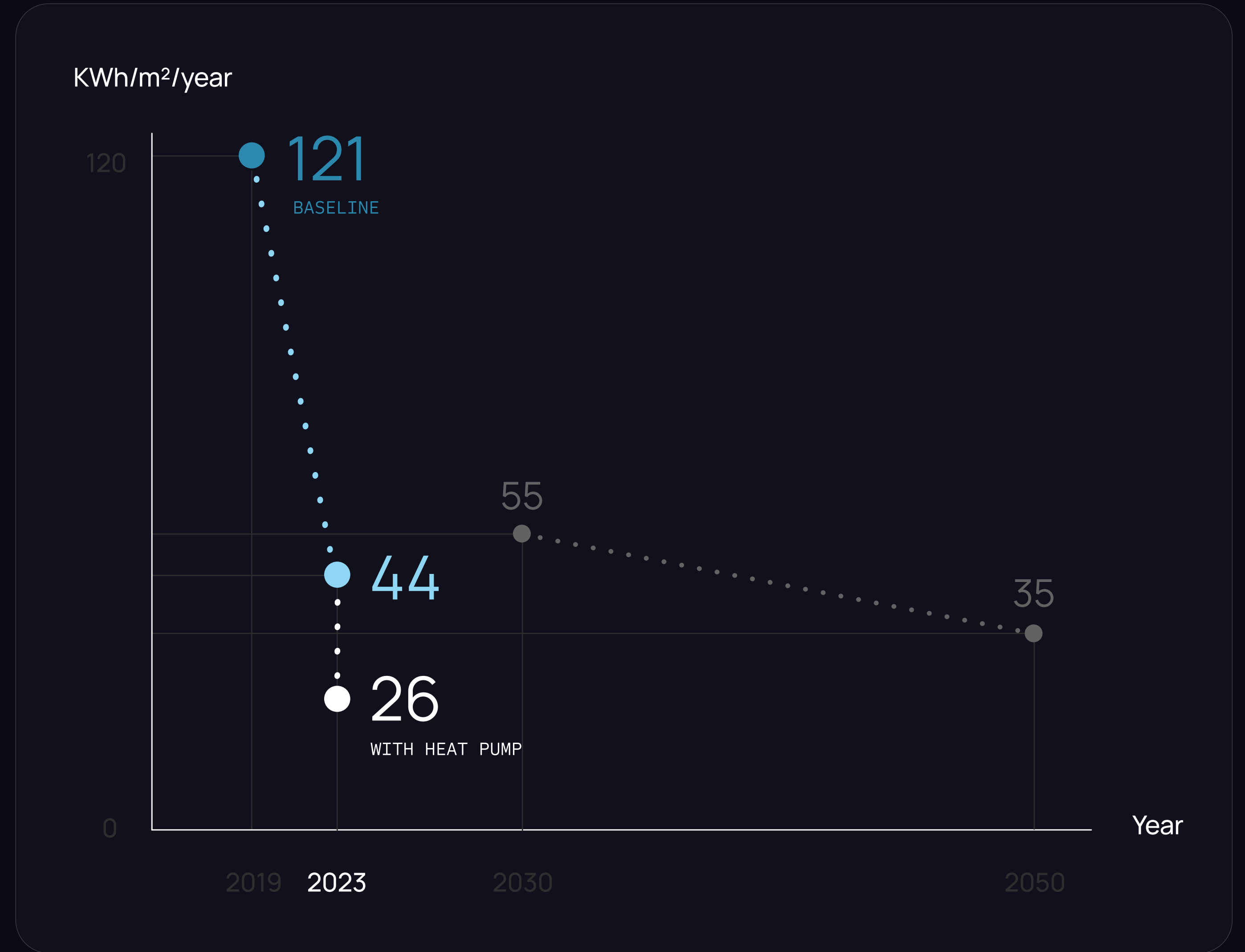
# Achievable EUI

Baseline EUI: 121

New EUI: 44

EUI with heat pump: 26

Replacing the current boiler with an energy efficient heat pump will achieve and surpass 2050 targets



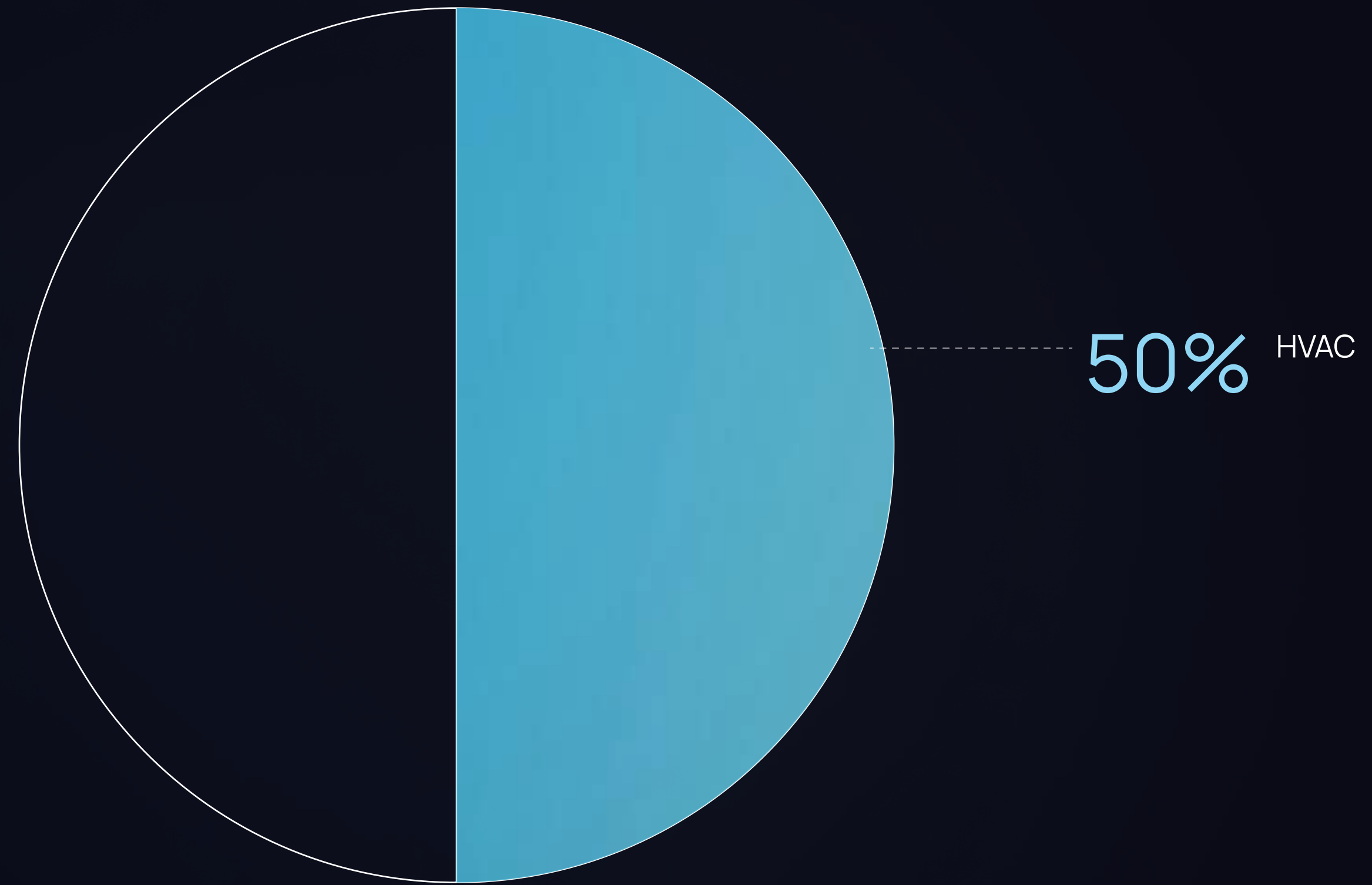
If we don't get  
HVAC right



we don't get  
Paris Proof 2050

# HVAC is Responsible for Up to **50%** of Building Energy Consumption

Commercial buildings are amongst  
the heaviest consumers of energy  
on our planet.



● BUILDING ENERGY CONSUMPTION

Symphony's smart energy  
optimisation technology makes  
the journey to Net Zero more  
**achievable and affordable**

Symphony has identified a 4-Step process →



# Net Zero Roadmap





# Step 1: Energy Optimisation

Steps	Net Zero Roadmap Offices with Fan Coil Units or Chilled Beams	Action	Estimated HVAC Savings	UKGBC Paris Proof 2025 Target	UKGBC Paris Proof 2030 Target	UKGBC Paris Proof 2035 Target	UKGBC Paris Proof 2050 Target	Notes
1	EU Directive 2023/1791 Energy Efficiency First Principle Apply to all buildings	a. Deploy HVAC Heat Recycling ( <b>Symphony Cycle</b> ) with annual license at 15c/sqft plus once off installation cost of €15,000	10 - 20%	90 kWh/sqm/y	70 kWh/sqm/y	55 kWh/sqm/y	35 kWh/sqm/y	Applicable to most buildings less than 10-years old of good design  Fix load imbalances and apply Smart Optimisation to achieve Paris Proof 2035 efficiency (or for some Paris Proof 2050 efficiency)
		b. Identify cooling load imbalance via Symphony Cycle		< €1/sqft	€7-13/sqft	€7-13/sqft	€7-13/sqft	
		c. Fix Load Imbalances should they exist	0 - 10%	€0-4/sqft				
		d. Deploy <b>Smart Optimisation</b>	40%	€6-8/sqft				

# Step 2: HVAC Plant Enhancement

Steps	Cost Efficient Path to Net Zero Offices with Fan Coil Units or Chilled Beams	Action	Estimated HVAC Savings	UKGBC Paris Proof 2025 Target	UKGBC Paris Proof 2030 Target	UKGBC Paris Proof 2035 Target	UKGBC Paris Proof 2050 Target	Notes
1	EU Directive 2023/1791, 'energy efficiency first' principle Apply to ALL buildings	a. Deploy HVAC Heat Recycling (Patented Symphony Cycle) Annual license at 15c/sqft plus once off installation cost of €15,000	10 - 20%	90 kWh/sqm/y  <€1/sqft	70 kWh/sqm/y  €7-13/sqft	55 kWh/sqm/y  €7-13/sqft	35 kWh/sqm/y  €7-13/sqft	Applicable to most buildings less than 10-years old of good design  Fix load imbalances and apply Smart Optimisation to achieve Paris Proof 2035 efficiency (or for some Paris Proof 2050 efficiency)
		b. Identify cooling load imbalance via Symphony Cycle						
		c. Fix Load Imbalances should they exist	0 - 10%	€0-4/sqft				
		d. Deploy Smart Optimisation	40%	€6-8/sqft				
2	HVAC Plant Enhancements Apply to older buildings	Variable temperature heating, AHU heat recovery, pump and fan speed control	10%		€1-4/sqft	€1-4/sqft	€1-4/sqft	

# Step 3: Electrification

Steps	Cost Efficient Path to Net Zero Offices with Fan Coil Units or Chilled Beams	Action	Estimated HVAC Savings	UKGBC Paris Proof 2025 Target	UKGBC Paris Proof 2030 Target	UKGBC Paris Proof 2035 Target	UKGBC Paris Proof 2050 Target	Notes
1	EU Directive 2023/1791, 'energy efficiency first' principle Apply to ALL buildings	a. Deploy HVAC Heat Recycling (Patented Symphony Cycle) Annual license at 15c/sqft plus once off installation cost of €15,000	10 - 20%	90 kWh/sqm/y  <€1/sqft	70 kWh/sqm/y  €7-13/sqft	55 kWh/sqm/y  €7-13/sqft	35 kWh/sqm/y  €7-13/sqft	Applicable to most buildings less than 10-years old of good design  Fix load imbalances and apply Smart Optimisation to achieve Paris Proof 2035 efficiency (or for some Paris Proof 2050 efficiency)
		b. Identify cooling load imbalance via Symphony Cycle						
		c. Fix Load Imbalances should they exist	0 - 10%	€0-4/sqft				
		d. Deploy Smart Optimisation	40%	€6-8/sqft				
2	HVAC Plant Enhancements Apply to older buildings	Variable temperature heating, AHU heat recovery, pump and fan speed control	10%		€1-4/sqft	€1-4/sqft	€1-4/sqft	
3	Heat Electrification Apply to buildings without heat pumps	Replace/augment boilers with heat pump sized for newly optimised load	15%			€4-10/sqft	€4-10/sqft	Some millennial buildings will achieve Paris Proof 2035 without needing heat pumps

# Step 4: Fabric Upgrade

Steps	Cost Efficient Path to Net Zero Offices with Fan Coil Units or Chilled Beams	Action	Estimated HVAC Savings	UKGBC Paris Proof 2025 Target	UKGBC Paris Proof 2030 Target	UKGBC Paris Proof 2035 Target	UKGBC Paris Proof 2050 Target	Notes
1	EU Directive 2023/1791, 'energy efficiency first' principle Apply to ALL buildings	a. Deploy HVAC Heat Recycling (Patented Symphony Cycle) Annual license at 15c/sqft plus once off installation cost of €15,000	10 - 20%	90 kWh/sqm/y	70 kWh/sqm/y	55 kWh/sqm/y	35 kWh/sqm/y	Applicable to most buildings less than 10-years old of good design  Fix load imbalances and apply Smart Optimisation to achieve Paris Proof 2035 efficiency (or for some Paris Proof 2050 efficiency)
		b. Identify cooling load imbalance via Symphony Cycle		<€1/sqft	€7-13/sqft	€7-13/sqft	€7-13/sqft	
		c. Fix Load Imbalances should they exist	0 - 10%	€0-4/sqft				
		d. Deploy Smart Optimisation	40%	€6-8/sqft				
2	HVAC Plant Enhancements Apply to older buildings	Variable temperature heating, AHU heat recovery, pump and fan speed control	10%		€1-4/sqft	€1-4/sqft	€1-4/sqft	
3	Heat Electrification Apply to buildings without heat pumps	Replace/augment boilers with heat pump sized on optimised load	15%			€4-10/sqft	€4-10/sqft	Some millennial buildings will achieve Paris Proof 2035 without needing heat pumps
4	<b>Fabric Upgrade</b> Apply to older buildings	Unlikely necessary for buildings less than 15-years old	10%				<b>€150+/sqft</b> negated or reduced by Smart Optimisation	By taking Steps 1-3, many older buildings will not need an expensive fabric upgrade or will only need to do so closer to the year 2050

Goal:

Only replace  
or renew at **End of Life**

Symphony's NET Zero Roadmap allows many existing buildings to achieve Paris Proof efficiency today. Older buildings can yield current, interim in-use energy targets now such that expenditure on bigger ticket items such as HVAC replacement or fabric upgrades is deferred until they have reached their **end of life**.

## More than energy efficiency

- The Net Zero Roadmap made possible by Symphony contributes to the circular economy as plant can be retained until **end of life**
- A building's **embodied energy** is minimised as less renewal and replacement is necessary
- There is less pressure on the stretched **labour market** as fewer physical works are required to achieve the energy efficiency targets
- Symphony's breakthrough technology unties the hands of architects so they can design beautiful, comfortable and **cost-efficient buildings** without the constraints necessitated by less effective measures

# Circular Economy

- The reduced energy consumption means less equipment wear and lower maintenance costs
- Reduced equipment wear means longer plant lifespan
- HVAC optimisation allows for smaller, less costly plant replacement costs
- Symphony's breakthrough technology can deliver better energy performance compliance than more expensive traditional measures
- Much of the aged HVAC equipment can be overhauled and reused rather than replaced



## Guaranteed Performance Model

- For many projects, Symphony can guarantee the energy savings performance of its technology under an **Energy Performance Contract (EPC)**
- A typical payback is **5-years** if client financed, or **6-years** for a Symphony financed **Pay-As-You-Save EPC**
- Either way, the client is guaranteed to receive the results they have paid for

# Appealing to Tenants in Multi-Let Offices

Some tenants are already [demanding better](#) building performances than their landlords

Some tenants [won't rent](#) a building unless it is deemed to be energy efficient

[2 out of Symphony's 3](#) technologies can be implemented on the Landlord's central HVAC plant without need to enter a tenancy or access a tenant's BMS

Symphony WellTech can be implemented in 'lite' form as a battery wall fixed device to effect general demand control ventilation within a tenancy. More precise control applies using [24V wired WellTechs](#). Especially where ceiling services are exposed, this retrofit is relatively non-invasive.

The tenant BMS systems should ideally [interface](#) with the landlord's BMS for a best overall performance

[Deep savings](#) are still achievable with minimal or no participation from the tenants

Symphony helps both landlord and tenants on [Scope 1, 2 & 3 emissions](#) so it's in everyone's interest to collaborate on maximising building performance

# Approach to Market

Maximise what others in the industry can do for themselves so we can focus on what others can't

To date, Symphony has self-financed its growth through successful project delivery, while continuously advancing its expertise and technology.

A decade of lean development has paved the way for rapid, high-performance project delivery, ensuring robust profit margins.

Symphony outsources the limited onsite project work to specialised external partners.

In the 4-Step Net Zero Roadmap, local consultants and contractors handle the majority of time and resource-efficient tasks, allowing Symphony to focus on the unique contributions only it can make.

Symphony plans to maintain its centre of excellence in Ireland focused on tech development and remote engineering while establishing operational hubs in each key market.

Symphony will focus primarily on the office market sector, as its uniformity allows for scalable solutions. Other market sectors will be pursued as a secondary priority.

Symphony can achieve rapid, organic growth due to the initial development costs of its technology already being covered. As project scale expands, profit margins increase, further accelerating growth.

Symphony's turnover is projected to increase by approximately 300% in 2024.

Symphony is pursuing external investment to accelerate the scaling of its technology.

Symphony has pioneered an affordable, scalable breakthrough technology designed to meet and exceed the Paris Proof 2050 efficiency targets.



The property industry now has the opportunity to embrace it.

The greenest energy is  
the energy we don't use

Tom Ascough  
Managing Director

Connect with me on [LinkedIn](#)