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Artificial Intelligence for buildings to optimise cooling & heating and achieve Net Zero

Buildings HVAC is static, leading to energy waste

Inefficient Operations

Operations team tend to use the same HVAC* settings for the whole facility, while premises have multiple zones that require different cooling levels at different times.

No Optimisation

Operations team doesn't respond to a constantly changing environment inside & outside of the building, such as weather combined with the changing traffic.

HVAC - Heating, ventilation, and air conditioning

What others do

Long and expensive energy audit

Energy audit is a great step towards understanding the energy leaks in the building, despite the fact that its expensive and requires a lot of time. The problem is that it provides insights to energy leak fixes that will not be solved unless the operations team starts to act, which makes it highly inefficient.

Retrofitting with CAPEX

Building retrofitting is an essential, but very costly step for every building optimisation, however the key problem is still unsolved, **no dynamic management of the HVAC infrastructure**. Building might have the newest device, but it won't be efficient if its not properly managed

Data analytics without automation

Data analytics and rule-based machine learning systems can solve the problem, but it requires a huge amount of data, which is not available in buildings. Also, they provide insights rather than automation and rely on execution by the operations team, making the **solution inefficient**, **longer time to see first results** and **easy to replicate**.

The Solution

Artificial Intelligence that automatically chooses optimal HVAC settings based on comfort index calculations in real time

Building integration

Connect to any building's BMS using fast and non-intrusive way, without sensors or hardware installation

Building simulation

Separate the building by different zones and establish unique comfort indexes at the simulation level

Start saving

Save energy and carbon using AI that satisfies established comfort indexes in each zone by choosing least energy consuming HVAC settings

The Benefit

Up to 40%

Reduction in total energy and coolant/ heating cost

30-40%

Decrease in carbon footprint

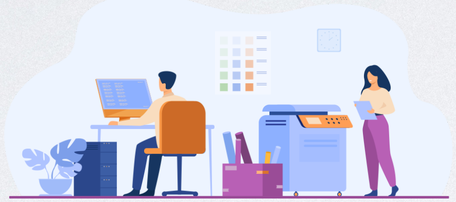
60%

Improve in building occupant comfort

Progress to date

10+ million sq.ft

Shopping malls



Office buildings

Education

Hotels

EMAAR

DEYAAR

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

MANSIONS GROUP OF COMPANIES

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How much does it cost?

40% from the actually saved energy every month in accordance with an established baseline*

$0 CAPEX from the building, since we work with existing infrastructure and install additional devices (if needed) at own cost

* Baseline - an actual building energy consumption over the last 12 months. It is calculated based on the real building data and then compared with the actual energy bills.

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Benefit calculator

Software as a Service

Building Description

Size : **150,000 sq.m.**

Annual energy consumption on HVAC: **23,400 MWh or AED 8.5M**

Annual energy savings

Energy reduction by Arloid (30%) : **AED 2.5M**

Monthly cost

From actually saved energy (40%) : **AED 85k**

Annual net savings for a building

AED 1,480,000

Calculations are based on Dubai market situation for energy only, without coolant, taking into account AED 0.38/KWh and Average Energy Utilisation Index 260 KWh/sq.m. yr. Energy saving results are indicative and can be changed based on building specifications.

Competitive advantage

Technology differentiation

Proprietary AI training method allows to work with limited or no historical HVAC data and **deliver results much faster**, after the first month of AI work in the building

Optimisation approach

Simulation allows seeing what AI will do in a building with **no commitment and risk**. While automatic HVAC control ensures high optimisation efficiency

Business model

No CAPEX, fast and non-intrusive connection allows to scale fast within the portfolio, no long contract lockup, payment from actual savings

Data analytics

Require a lot of data, provide insights, manual operations, can be replicated

demand logic

BBP Barghest Building Performance

SWITCH AUTOMATION

Rule-based AI

Automates rules based on past actions (not efficient), semi-automatics, can be replicated

BeeBryte Energy Intelligence & Automation

SENSOR FLOW

METRON

Dynamic AI

Dynamic controls, limited/no data required, automatics control, cannot be replicated

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36 team members in 4 countries

Our team

Sergey Shalunov
Chief Executive Officer | Founder

Built and exited four businesses in real estate and technology worth $152M.

GRENLAND RESIDENCE BY arloid.

DISCOM GROUP

Maxim Zubov
Chief Technology Officer

20 years in software development, MSc in Computer Science from St. Petersburg University.

epam

Bekitzur
We make a long story short.

MODERNSYSTEMS
an advanced company

Vladimir Pushmin
Chief Product Officer

Ex. business analyst in energy strategy consulting, London Cass Business School alumni.

CASS BUSINESS SCHOOL
CITY, UNIVERSITY OF LONDON
EST 1894

Mark Moloney
Head of Machine Learning Engineering

20 years in machine learning and data science. Experience includes both startup co-founder and enterprise leadership positions.

Deloitte.

Curig Johnston
Senior Advisor

Ex. Big Data and AI Executive at Telstra (Australia). 20 years deploying automated data analytics and AI solutions in telcos, utilities and gaming.

UNIVERSITY OF CAMBRIDGE

TELSTRA

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Appendix

How we do it

Simulation phase to show savings potential with no risk

- Assess the building remotely based on shared questionnaire;
- Identify best way of connection to the BMS, connect using fast and non-intrusive method;
- Create a building model with applied AI, show energy/coolant optimisation potential and baselines for the next 12 months, and insight on how AI achieves optimisation;
- Only data analysis, no change of HVAC parameters, no sensors/hardware deployment.

Commercial phase to start saving via automatic HVAC control

- Based on simulation results, assess the feasibility to start the commercial phase;
- Agree on baselines for the next 12 months;
- Provide access to Arloid dashboard and train building management and operations team;
- Initiate Arloid AI in the building where the algorithm extracts value from little changes to the HVAC infrastructure made regularly and automatically throughout the day, every day.

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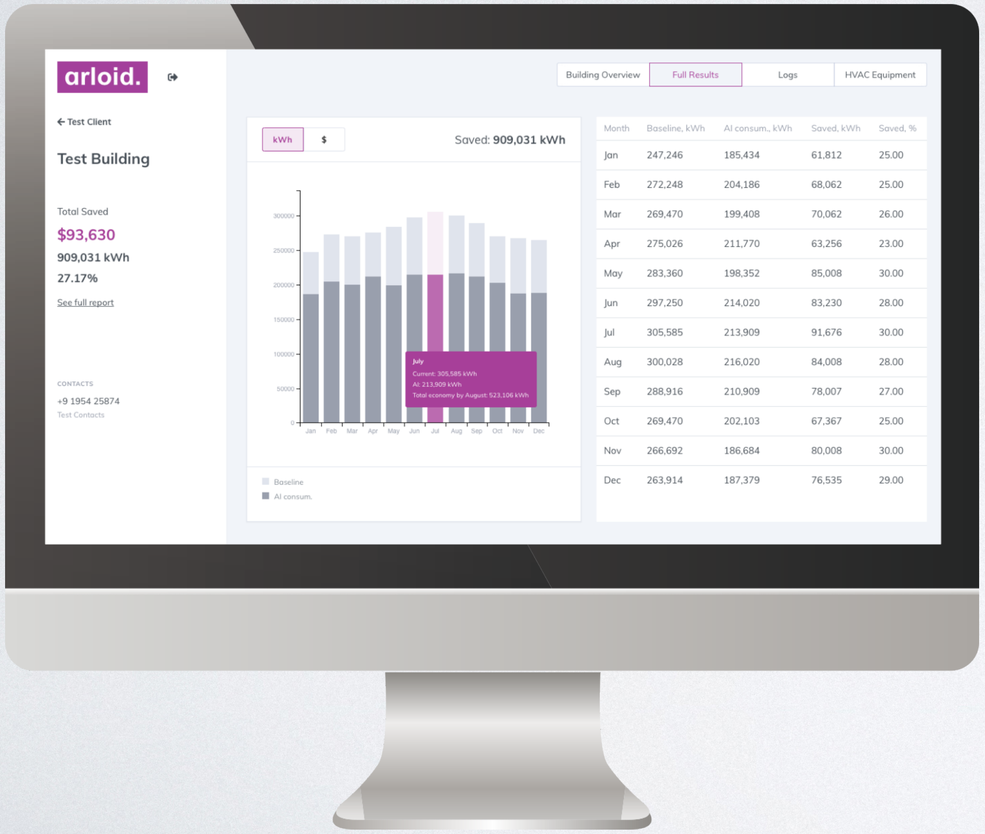
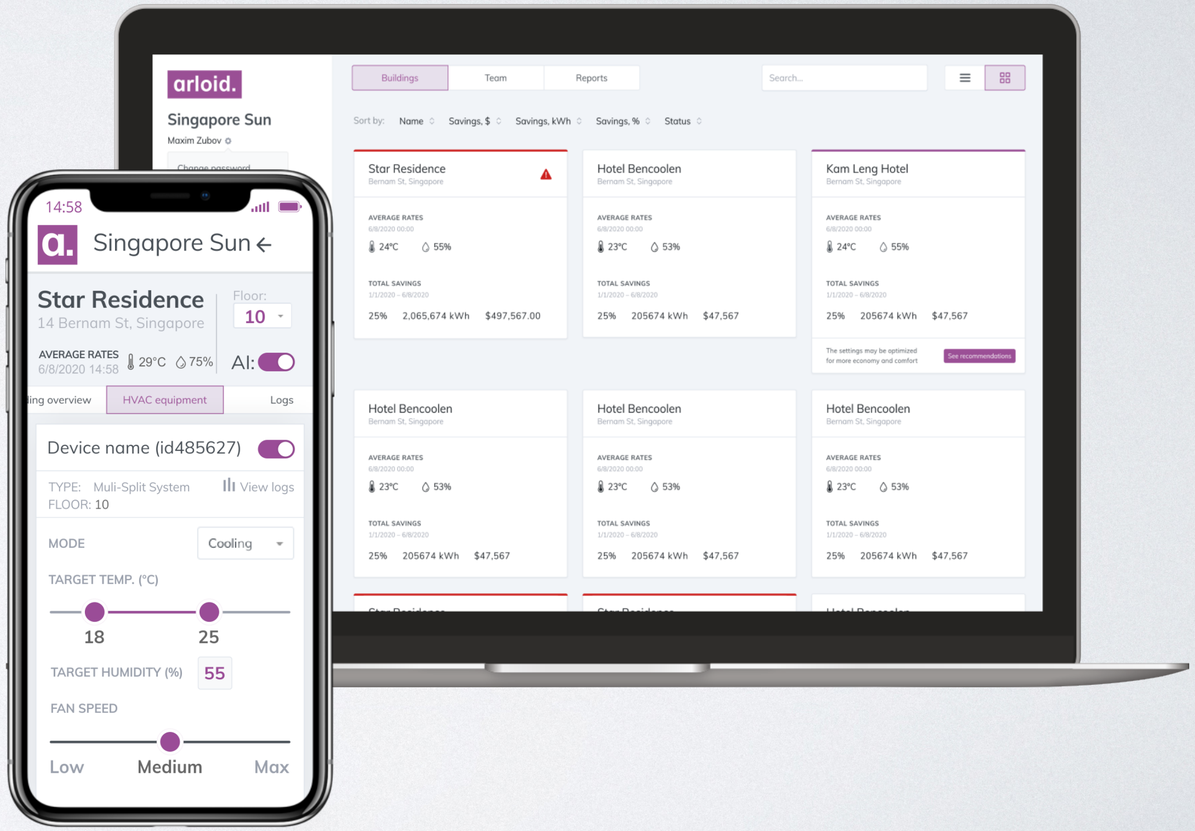
What will I see?

Simulator



Dashboard



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Elements of a simulation phase

What Simulation phase in the allocated building.

Goal Assess potential energy/coolant optimisation and baselines for the next 12 months with AI insights, while keeping an optimal level of comfort.

Steps

1) Sign NDA and collect requested information about the chosen building to start the remote building assessment process;
2) Connect to the building to start receiving HVAC data;
3) Collect HVAC data to prepare a building simulator to show potential energy/coolant optimisation, baseline & to train algorithm;
4) Present simulation results and an energy/coolant consumption baseline, discuss findings and agree on the next stage;
5) Start applying Arloid AI in the allocated building, which will regularly and automatically adjust HVAC settings based on a calculated comfort index.

Timeline 1 month from the start of receiving HVAC data.

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