
MEGA
AUTOMATION
Buildings
Sustainability
Energy
MEGA
Automation

MEGA AUTOMATION

About Us

- Founded in 2013, a leading BMS system integrator in Hong Kong with clients including Swire Properties, Henderson Land, HAECO, HAESL etc.
- Develop AI & IoT technologies to enhance tenant comfort and achieve sustainable building operations

CEO

Abraham Lam

BSc, PhD (PolyU)

- PhD in Computer Science
- 10+ years of research interest in Smart Building, Thermal Comfort & IoT

CTO

Tom So

BEng (CUHK)

- BMS expert
- 15+ years of experience in Building Services Engineering & BMS system deployment
- Led over 50+ projects

COO

Patrick Siu

MPhil (Cambridge)

- Software product expert
- 10+ years of experience in SaaS platform implementation & consultancy
- 5+ years high-growth UK start-up experience

Advisor

Kevin Tam

B.Sc (UBC)

- Degree in Earth and Ocean Science
- Water Connoiseur

10+ years of experience in water research Mensa HK Board of Directors (2015-2017)

"Enhance **tenant comfort** & **save energy** by applying **data-driven technologies** to buildings."

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Our Clients

Property Developers

恒基兆業地產集團 HENDERSON LAND GROUP

太古地產 SWIRE PROPERTIES

Hongkong Land

TAK SHING INVESTMENT CO., LTD. (Since year 1939)

協成行發展有限公司 HIP SHING HONG (HOLDINGS) COMPANY LIMITED

鷹君集團 Great Eagle Group

Education Institutions

香港中文大學 The Chinese University of Hong Kong

CityU 香港城市大學 City University of Hong Kong

UNIVERSIDADE DE MACAU

HARROW INTERNATIONAL SCHOOL HONG KONG

VTC

Hotels

HYATT®

NOVOTEL HOTELS & RESORTS

ACCOR

hotel ease 旭逸酒店

Financial Institutions

GAW CAPITAL

Amundi ASSET MANAGEMENT

海通國際 HAITONG

Retail & Telecom

香港賽馬會 The Hong Kong Jockey Club

HKT

NTT

SWIRE COCA-COLA HK

Industrial & Organisations

HAECO

HAESL

CONSTRUCTION INDUSTRY COUNCIL 建造業議會

華潤 China Resources

機電工程署 EMSD

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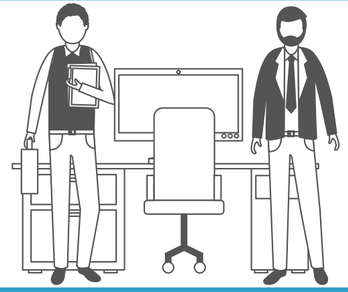
Solutions & Value Proposition

Mobile/Web App

- Human centric controls
- Space booking & payment
- System integration (access control, lift, robots)



Tenants & End-users

Enhance tenant experience and increase property value

Cloud Platform

- Device & tenant management
- Energy analytics
- Chiller plant optimization
- Automated scenarios based on IoT data

Facility manager

Improve operation efficiency & reduce energy consumption

Infrastructure & IoT

- IoT sensors network deployment
- Centralized (BMS & IoT) Control & Monitoring

Building equipment

Modernize building infrastructure to enhance control & data collection

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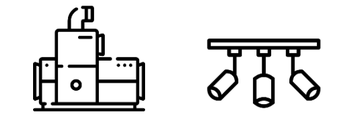
System Architecture

Secured Cloud Platform


Chiller Plant

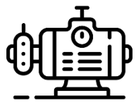
Lighting


Lift

ASHRAE BACnet

Modbus


Fire Service

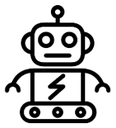

Motor & Pumps


BMS Control

Building Infrastructure & BMS


Wireless Sensors


Smart Meters


Robots


Cameras


Access Control

IoT / Wireless Sensor & Devices

Data Capture & Integration


Gateway / Router

Wi Fi

zigbee

5G

LoRa

JWT

Auth.js
Authentication for the Web.

kubernetes

Multiple Buildings


Analysis/Feedback /Control


Cloud Server

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Mobile APP


Cloud Building OS

Data visualization, Control & Analysis

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Scalable Software Architecture

Deeply integrated with major IoT ecosystems & brands with 3000+ products

Johnson Controls · SIEMENS · Schneider Electric · Honeywell


Lighting


Energy


HVAC


CCTV


Alarm


Access Control


Sensors

HIKVISION · tuya · LoRa™ · 八達通 Octopus

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Cloud Building OS (CBOS)

- Product Integration
- Device Management & Config
- Organisation & Distributor Management

Core Analytics Platform

- Dashboard
- User Management
- Data Analytics
- Charting & Reporting
- Alarm & Notifications

iBMS

- SCADA BMS Integration
- Energy Management
- Chiller Plant Optimisation & FDD
- Building Equipment Control & Automation

Smart Hotel & Hostel

- Guest Management
- Facilities payment
- Device Controls (Web / Mobile App)
- Energy consumption & bill payment

Smart Home

- Access Control
- Mailbox System
- Lift Calling
- Clubhouse Booking
- Device Controls
- Mobile app for tenants

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Mobile App

Fuse2

Download on the App Store

GET IT ON Google Play

www.mega-automation.com

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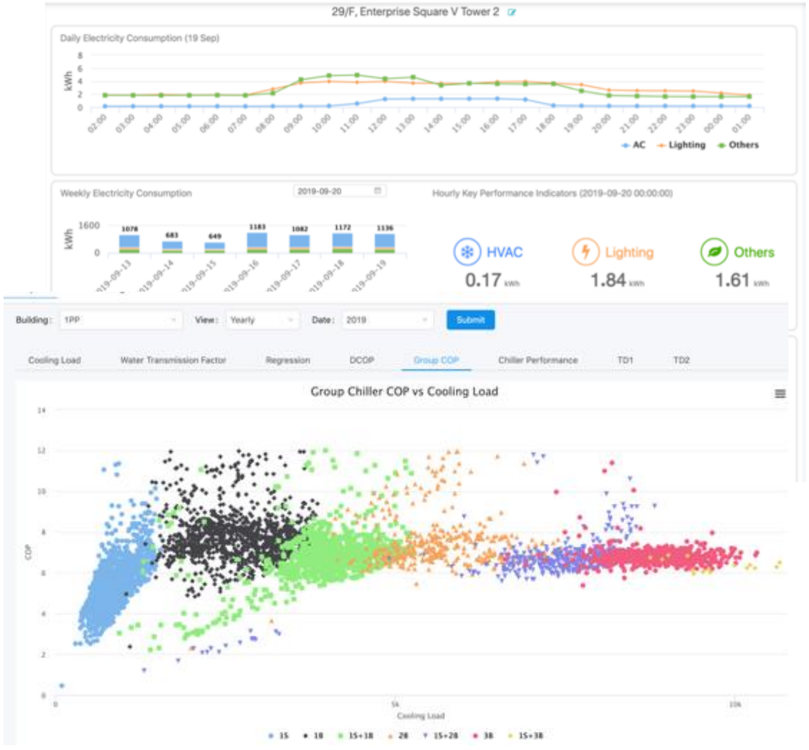
Dashboard & Reports

Energy Dashboard

View the building energy consumption with detail break-down by categories, generate alerts when abnormal usage is identified

KPI Dashboard

Configure company specific KPIs, visualize and track the performance across your building portfolio



Chiller Performance Dashboard

Enable engineers to evaluate the chiller plant performance and the cost-saving effectiveness on their optimisation plan

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Chiller Plant Optimization

Control + Machine Learning + Water Technologies

Real Time, Data Driven Chiller Plant Optimization

Optimization Formulation

Minimize Energy Consumption

Controls

- Optimal number of chillers
- Chilled Water Flow Rate
- Chilled Water Supply Temperature

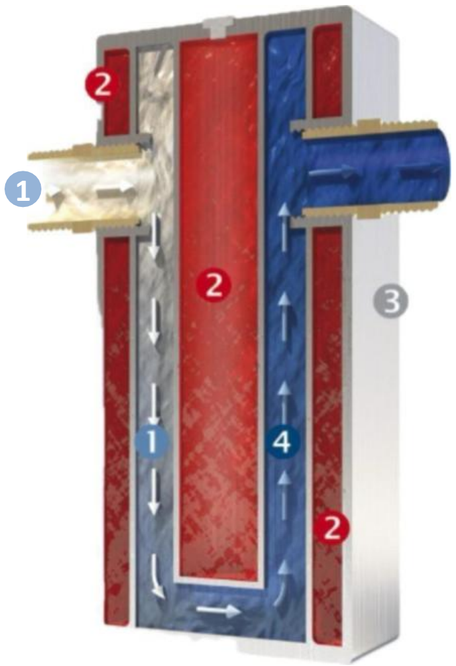
Satisfies

- Cooling Demand
- Design Constraints and Specification such as flow rate

Revitalise Chilled Water System

- Reduce the approach temperature of the cooling tower
- **Pipes require less chemicals and scales become softer**
- **Reduces maintenance & cleaning frequency**

1. **tap water unrevitalized**
2. **water core**
3. weakly magnetized metal housing
4. **revitalized high-quality water**



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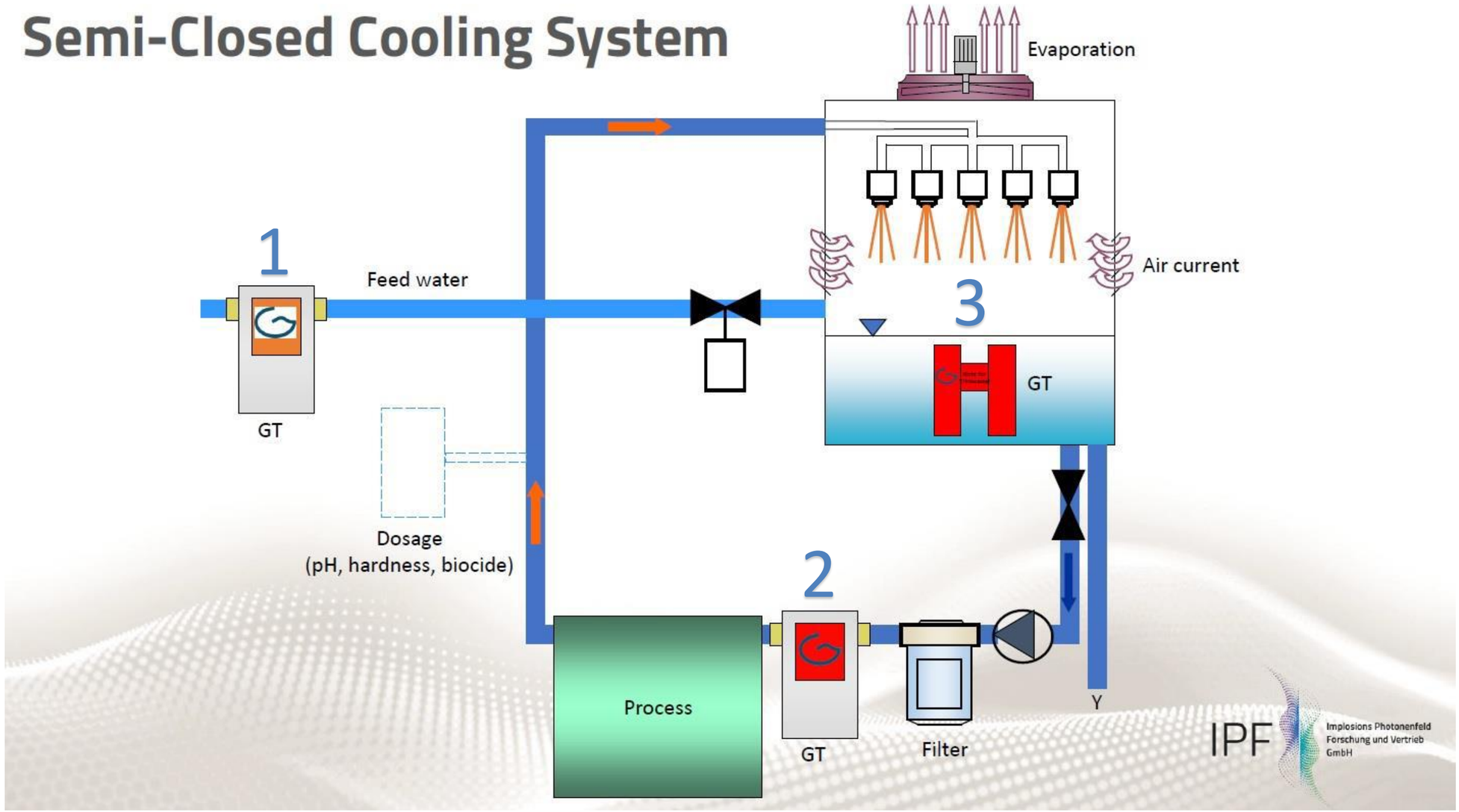
Chiller Plant Optimization

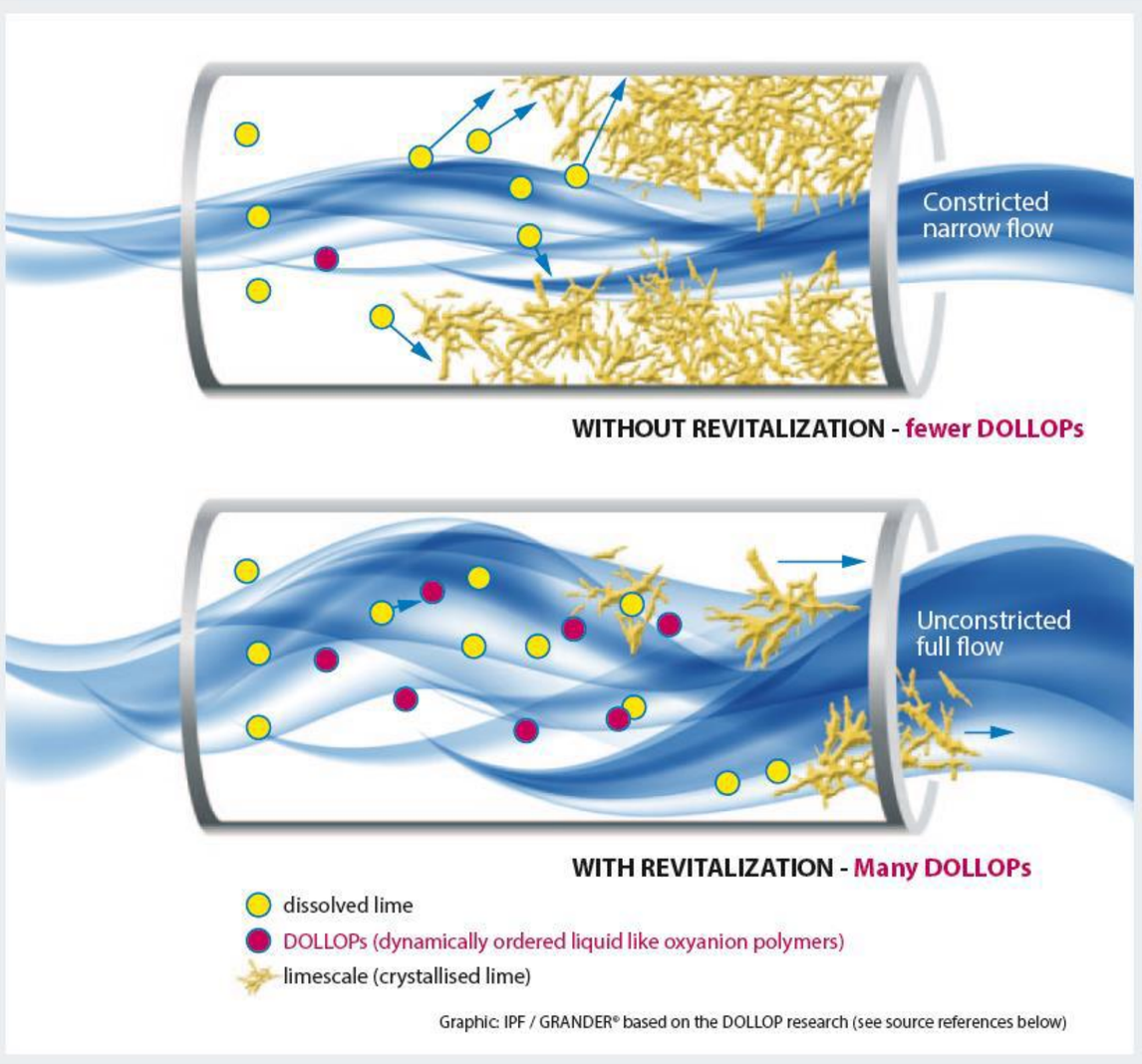


1. Fresh water or Feed Water
2. Circulation Water
3. Stationary Water for sedimentation

Theoretical Foundations of Magnetic Water Treatment

Research at WETSUS verified that “Strong Gradients in Weak Magnetic Fields Induce DOLLOP Formation in Tap Water.”

wetsus
european centre of excellence for sustainable water technology



Without revitalization: fewer DOLLOPs
Dissolved lime crystallizes on the pipe walls and reduces the cross-section.

With revitalization: many DOLLOPs
Dissolved lime crystallizes through the DOLLOPs in the water and is washed out.
When DOLLOPs are highly concentrated in water, crystallization starts immediately in the water and very slightly on the pipe walls. So these crystals no longer adhere to the pipe but are washed out with the water stream.

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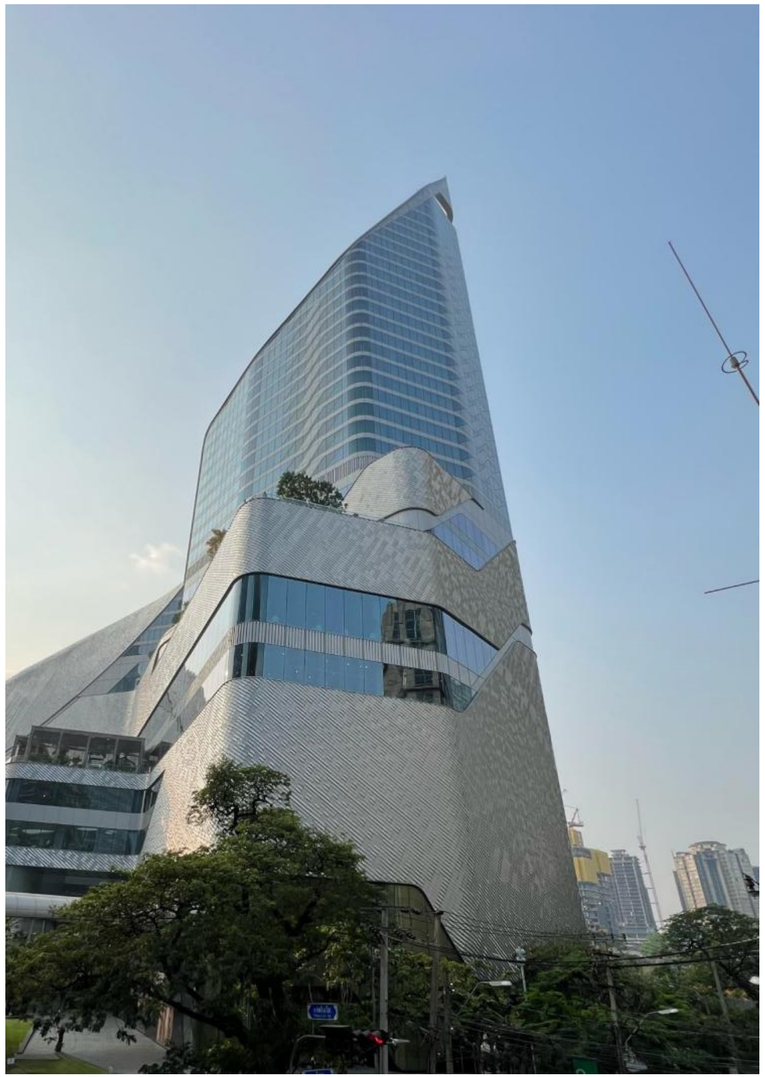
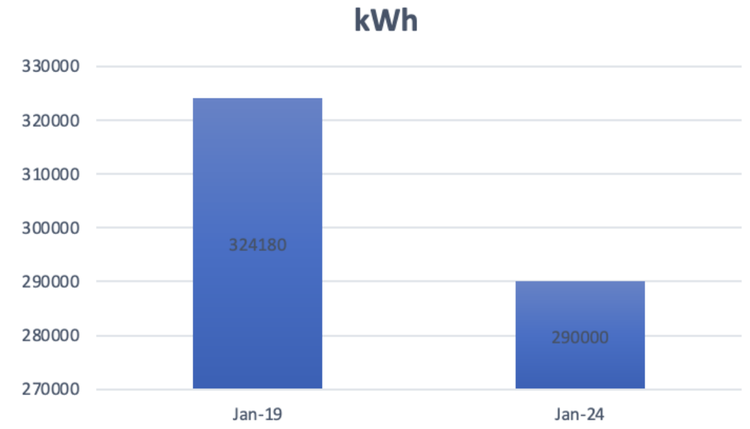
Case studies – Chiller Plant Optimization

Park Hyatt Hotel Bangkok



- Rewrote chiller plant operation program to achieve energy savings
- Achieved **10.5%** monthly savings, **34,000 kWh** per month
- ROI **<1.5 years**



Year 2019 Jan	Year 2024 Jan
324180 kwh	~290000kwh

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Case studies – Chiller Plant Optimization

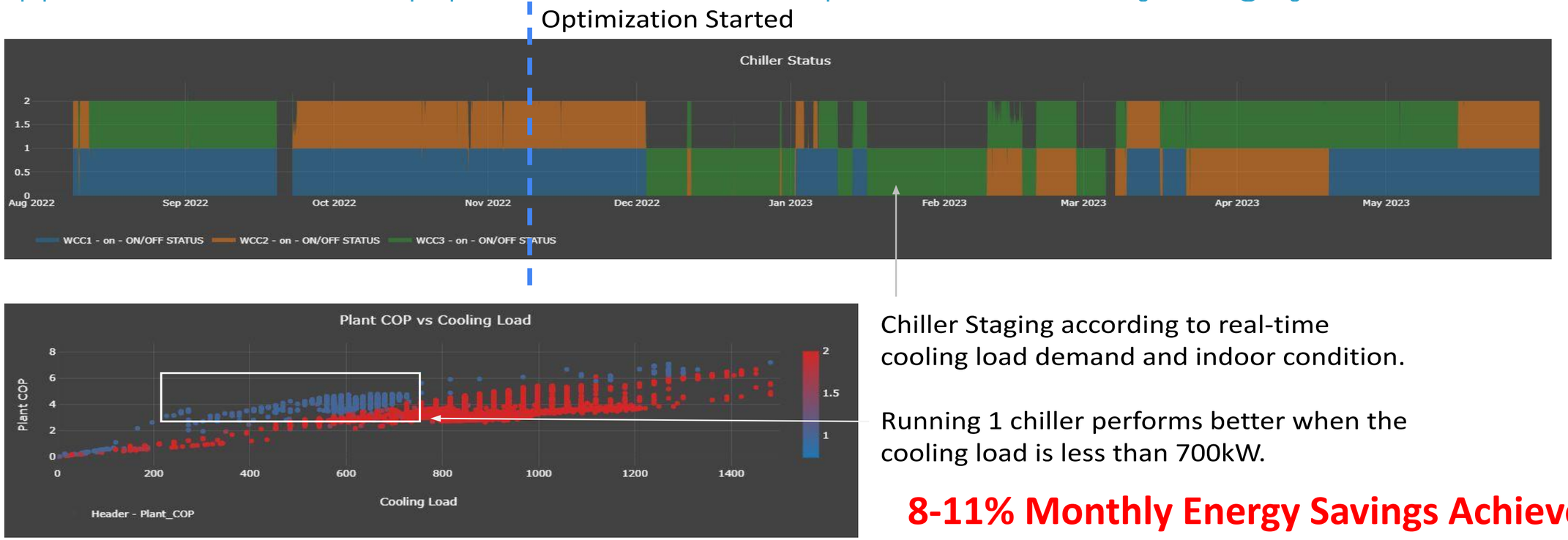
Tipco Tower Bangkok

- Installed water technology to the chiller plant system
- Improved chiller efficiency from 1.15kW/TR to 0.8kW/TR
- Scale came off from the pipe surface, reduce maintenance cost
- ROI **<1.5 years**

Case studies – Chiller Plant Optimization

HKT Jordan Exchange

- Replaced the antiquated BMS equipment and software with a state-of-the-art SCADA system
- Expanded chiller plant data acquisition & control opportunities
- Supplemented with IoT equipment to monitor temperature & humidity in highly critical areas



Chiller Staging according to real-time cooling load demand and indoor condition.

Running 1 chiller performs better when the cooling load is less than 700kW.

8-11% Monthly Energy Savings Achieved

- Adjust the number of chillers, pumps & cooling towers, water supply & return temperatures, and fan speeds according to optimized calculations in real-time
- Fallback mechanism from AI operation to standard BMS operation

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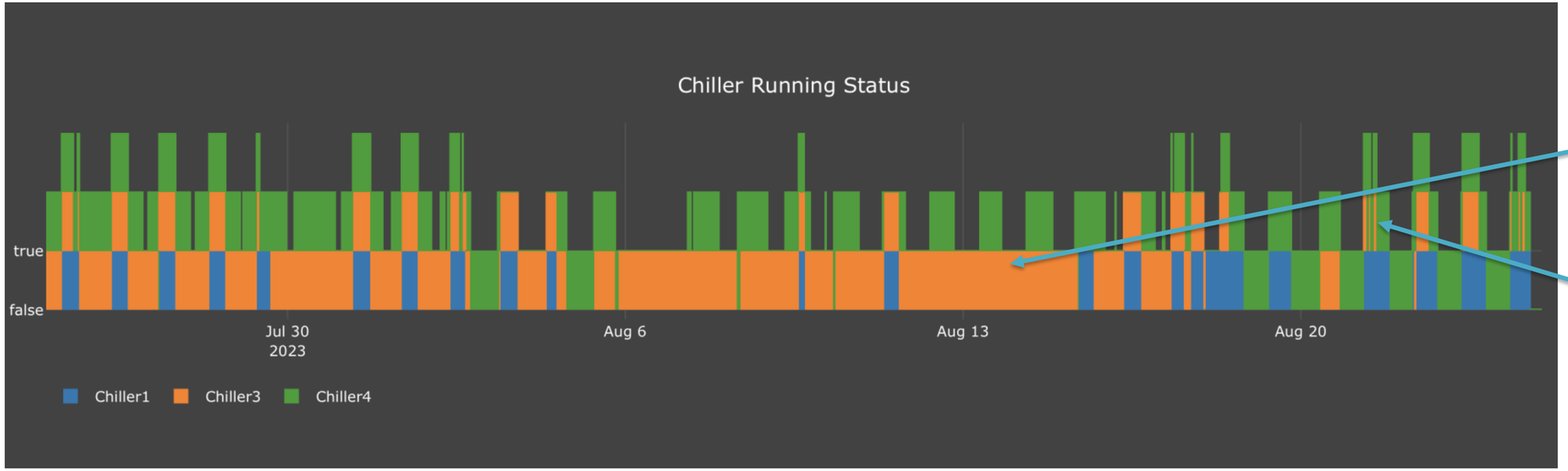
Case studies – Chiller Plant Optimization

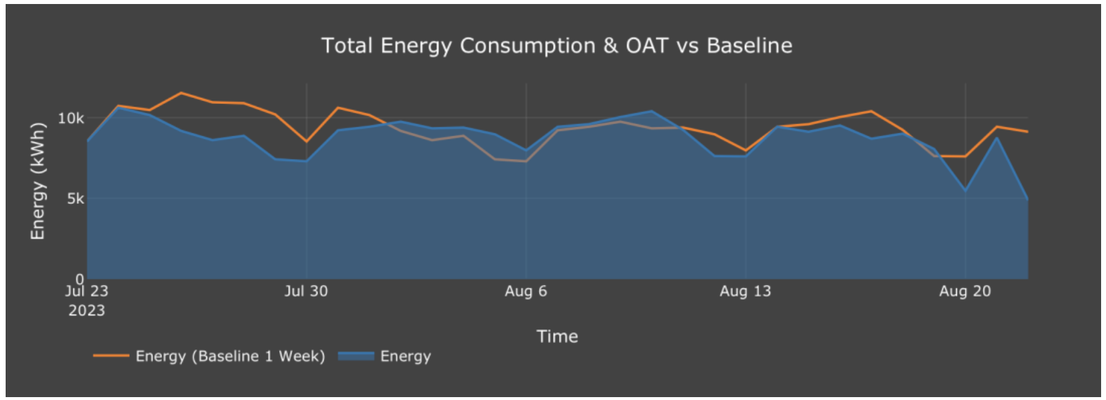
HAECO TKO

- Connect with Trane chiller plant to gain full control on chiller on/off, pumps & cooling towers, water supply & return temperature and fan speeds



Switching off 2 chillers when demand is low

Switching on 3 chillers with part-load when demand is high



13% Average Monthly Energy Savings Achieved

- Optimize chiller plant operation based on real time cooling demand, outdoor conditions and equipment performance

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Awards & Recognition

- TechConnect Global Innovation Award 2017
- Gold medal of Asia Exhibition of Invention Hong Kong with PolyU HK 2019
- Champion of Hong Kong Value Creation for Technology 2019
- Administrative Measures for Determination of High & New Tech Enterprises 2020 & 2023
- WCEYA Innovation Award 2021
- HKICT Awards Gold Medal 2023


高新技术企业
证书
企业名称:深圳凝方科技有限责任公司
证书编号:GR202044206884
发证时间:二〇二〇年十二月十一日
有 效 期:三年
批准机关:

MEGA AUTOMATION

Patents

15 patents

on IoT hardware design and software platform

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Thank You

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