

Energy Optimization for Sustainability



Malaysia kWh to CO₂ Conversion

1kWh



~600gCO₂

Recent Headlines

Highlight (Updated)

Targeted electricity subsidy to be implemented from Jan 1; domestic users and small businesses exempted from tariff hike

Kamarul Azhar / theedgemarkets.com

December 16, 2022 18:04 pm +08



ICPT Tariff Hike (Dec 2022)

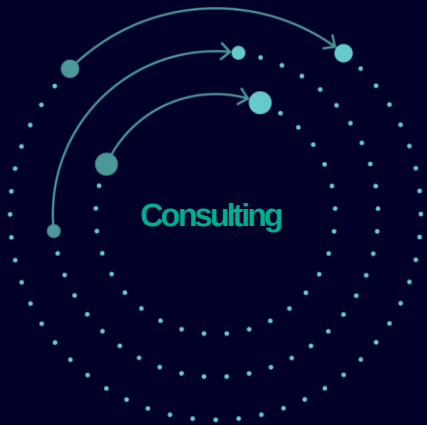
- From Jan 2023 – June 2023
- RM0.20 surcharge per kWh from RM0.037
- Impacted users: MV & HV users.



**~40% increase in
electricity cost**

Energy as a Service

End-to-end Consulting, Implementation and Optimization Framework Alignment



Energy as a Service

Energy Audit, Contract and Management



- Energy Performance Evaluation
- Level I / II / III energy audits compliant to the ST requirement
- Identify and evaluate energy conservation measures
- Propose energy saving projects with ROI calculation

- Customer can realize energy savings with **ZERO CAPEX**
- ROI via energy savings achieved from the measures implemented
- Guaranteed energy savings
- Contractual period (3 - 5 years)
- Includes Siemens energy efficiency products, instruments and maintenance services

- Real-time visualization / reporting with Siemens Energy Management System
- Benchmarking of energy systems to best practices
- Algorithm based optimization using data models and data science techniques
- Modular implementation
- Subscription based service (SaaS)

Potential Energy Saving Areas

Equipment / System	Potential Energy Savings*
Chillers	20% - 30%
Boilers	30% - 40%
Air Handling Units	30% - 50%
Cooling Tower	20% - 30%
LV Motors	10% - 20%
Air Compressors	20% - 30%
Fixed speed VSD/VFD Systems	30% - 50%
Heat Recovery Systems	40% - 50%

*Disclaimer: Above figures are based on typical savings for general reference only.
Actual guaranteed savings to be calculated after energy audit.

Typical Equipment in a Plant



Pump

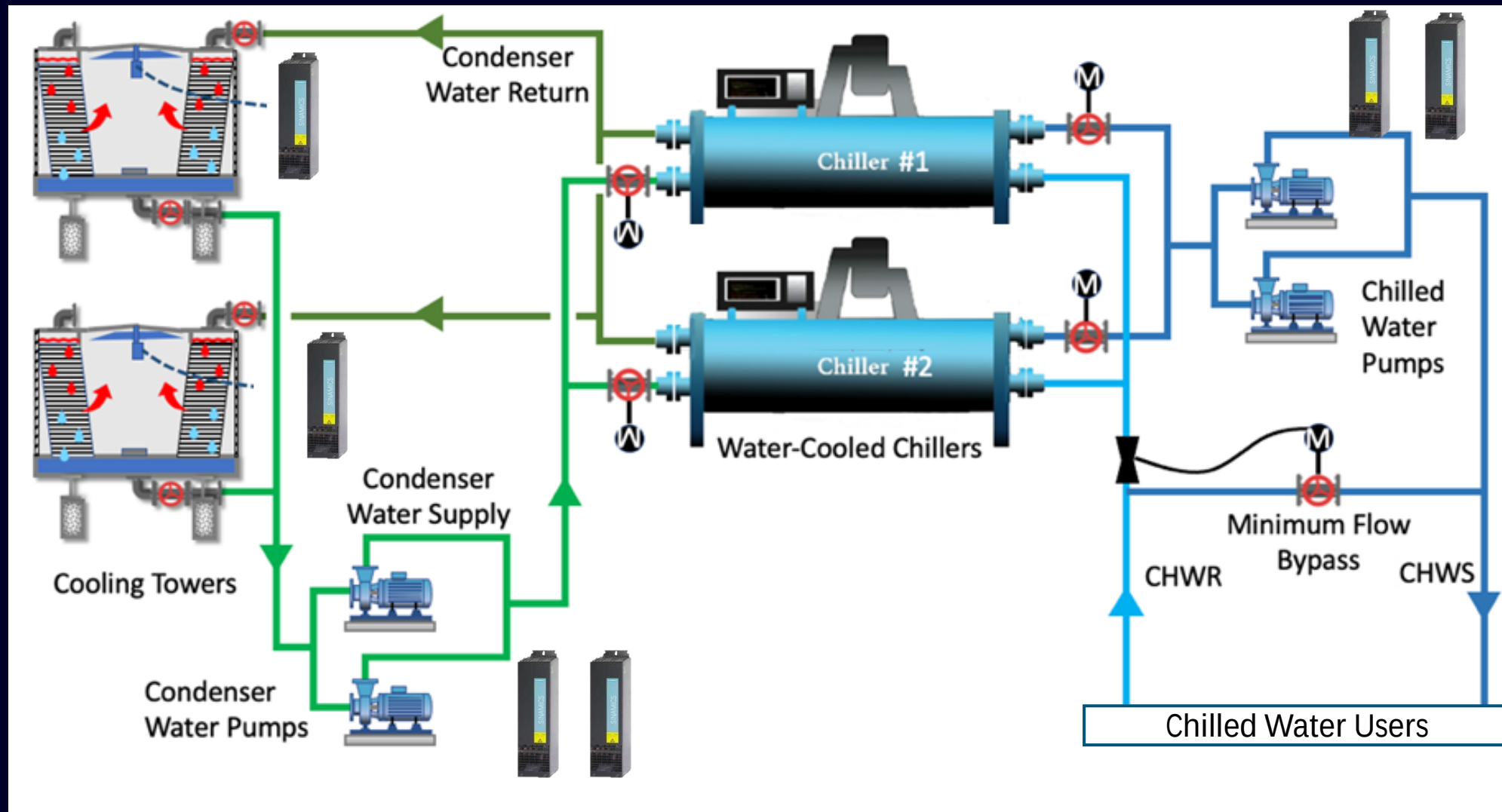


Fan

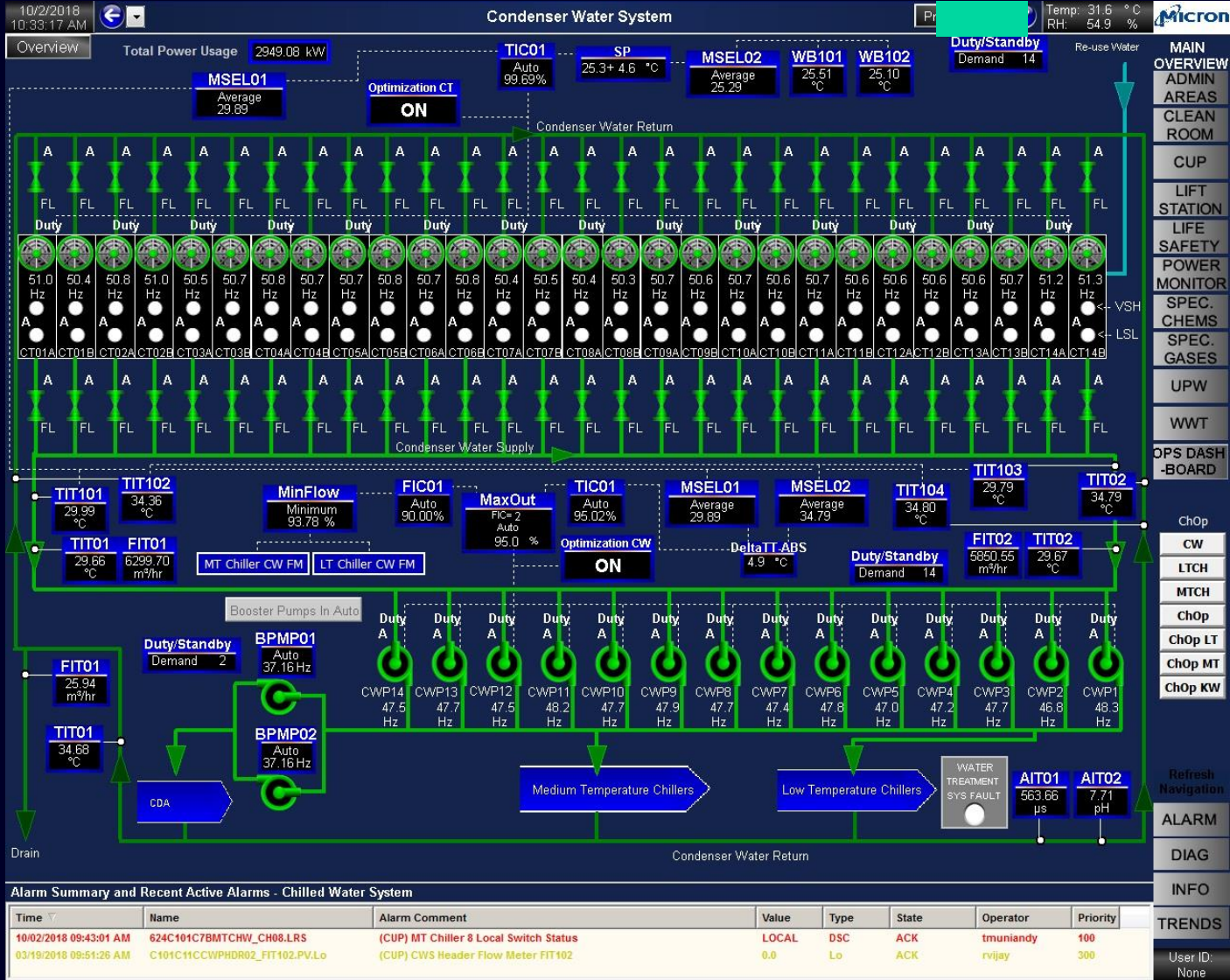


Compressor

Energy Saving possibility in a Chiller Plant

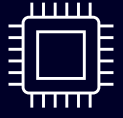


Pumps and Fans are controlled via PID loop



Energy Performance Contracting – Case Study

Leading Semi-conductor Company



Leading Semi-conductor Company

Savings

S\$700,000

per annum

Yearly Payment

S\$566,667

per annum

ROI / Contract Period

3 years

Project: Energy Efficiency through VFDs

Application: Chiller Plant Pumps and Fans

Completion Date: October 2020

Level 2 Energy Audit to Energy Performance Contract

Problem Statement

- To improve the Chiller Plant efficiency without replacing any old chiller equipment
- Plant didn't have a shutdown window to implement the solution – hardware installation and software programming had to be done while production was ongoing
- The energy savings should not compromise chiller plant robustness - there should not be any impact to the production

Solution

- We guaranteed the chiller plant efficiency improvement by installing 56 VFDs (variable frequency drives), high-accuracy instrumentation and running the drive through a control logic to ensure that there is no energy wastage
- The control program was robust enough to protect the chiller plant
- Project cost of S\$1,700,000 was recovered over 3 years on a monthly installment payment basis.

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