



**B.GRIMM**  
SINCE 1878

# B.Grimm Power Public Company Limited

*"Empowering the World Compassionately"*



# Target achievements

## Our target achievement

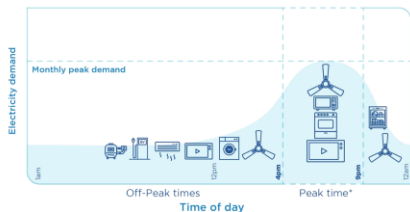
### IU Stickiness



Low switching cost to PEA due to

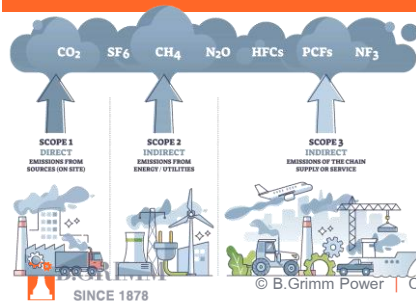
- Competitive price
- Comparative efficiency

### Efficient Energy usage



High peak demand due to operation process

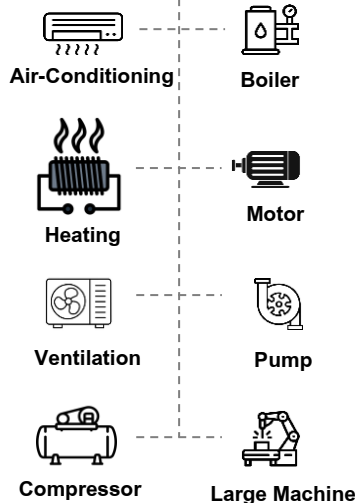
### Carbon Emission / Footprint



High electricity demand due to inefficient energy usage

Optimal energy saving solutions with minimal CAPEX and high system reliability as priority

### Energy Management (Information) System



Creating more solid customers loyalty by providing additional service



Shape peak demand, and reduce contracted capacity

Reduce Contracted capacity



Reduction of Peak Demand

More PPAs with new IUs



Power Purchase Agreements



Reduction of carbon footprint



Carbon footprint

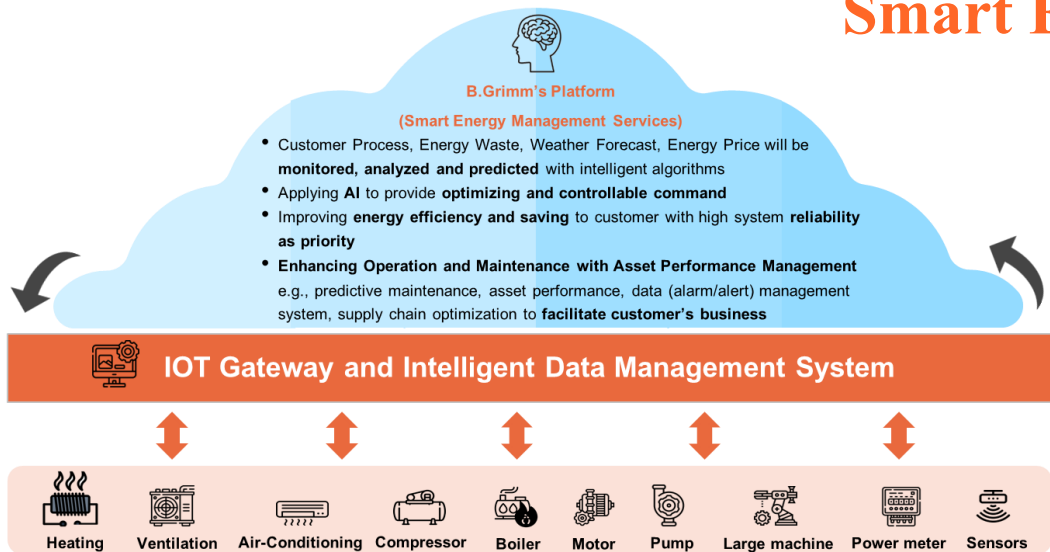


Revenue generation (Subscription, Shared Saving and Guaranteed Rebate)



Save Money & Time

# Smart Energy Management Services



## Improve Energy Performance and enhance Operation & Maintenance with B.Grimm's Services

One-Stop Service to provide **pro-active control of users' energy usage and related activities as part of a holistic energy strategy which improves energy performance and enhances O&M**. Harnessing data technologies can help to streamline this process and provide more accurate.

### Target Achievements



**Energy Efficiency and Saving**



**Reduction of Carbon Footprint**



**Enhancement of Operational and Maintenance Performance**

# B.Grimm's Platform – Smart Energy Management Services



## Energy Monitoring

- ❖ Provide holistic view of energy usage
- ❖ Realize potential short/long-term energy saving
- ❖ Greenhouse gas emission tracking
- ❖ Appliance performance tracking
- ❖ Identify operation and maintenance plan



## Asset Performance Management

- ❖ AI helps to check the performance of appliances supporting operation
- ❖ Improve overall appliance's reliability
- ❖ Alarm/alert message management system
- ❖ Facilitate customers to focus on core business



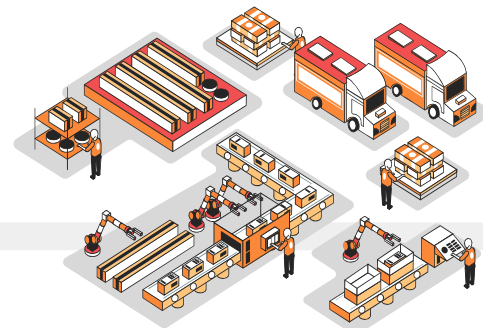
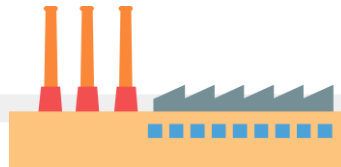
## Energy Efficiency

- ❖ AI monitors, analyzes, predicts, optimizes and controls the targeted system in real-time
- ❖ Powerful algorithm to identify inefficiency and action to improve energy efficiency
- ❖ Reduce carbon footprint
- ❖ Expand lifetime of appliances






## Predictive Maintenance

- ❖ AI analyzes data from sensors and measurements to predict
- ❖ Detect potential issues before becoming major problems
- ❖ Reduce downtime and minimize maintenance costs



# SEMS - Efficiency gain

This service is a platform that monitored energy uses and loss from customer processes, together with external factors data (e.g. Weather condition and energy price etc.). This will help customers to optimise their operation, gain energy efficiency and reduce their emission. The quantified impact of efficiency gains measurement is "MWh/month saving".

	Customers		B.Grimm Power
	 <b>Cost Reduction</b>	 <b>Emission Reduction</b>	 <b>Revenue Generation</b>
A	❖ <b>47.6k THB per month*</b> (*estimated 3.4 THB per kWh)	❖ <b>6.986 TonCO2e per month*</b> (*EF = 0.499 TonCO2e per MWh)	❖ <b>500k THB per year*</b>
B	❖ <b>510k THB per month*</b> (*estimated 3.4 THB per kWh)	❖ <b>59.625 TonCO2e per month*</b> (*EF = 0.3975 TonCO2e per MWh)	❖ <b>500k THB per year*</b>

*\*In 2022, This project is on pilot phase during 2022-2023. So that there was no fee charged to customers yet. We expected a revenue income for this service at 500,000 THB/year per customer starting from 2024 with 10 potential customers.*

# SEMS – Other impact

1. Enhance customers stickiness through tailored add on services
2. Promoting aspects of data analysis in the energy business landscape in Thailand which help B.Grimm Power to explore and expand its new businesses into this area in the future.
3. Support climate action by reducing GHG emissions from increased energy efficiency for both B.Grimm Power and our customers.





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# Project References



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## Warehouse



### Business Type

**Warehouse**



### Challenges

**Optimization in overall energy usage**



### Assets

**Lighting, Air Conditioners and Chargers**



### Service and Achievements

- ❖ Utilize AI to analyze the uncertain behavior of energy consumption to reduce peak demand in building
- ❖ Optimize energy time usage by shifting load to off-peak period
- ❖ Deliver monitoring system/dashboard for energy consumption of main processes
- ❖ Propose recommendation for energy efficiency and alert/alarm management system which can be done by customer

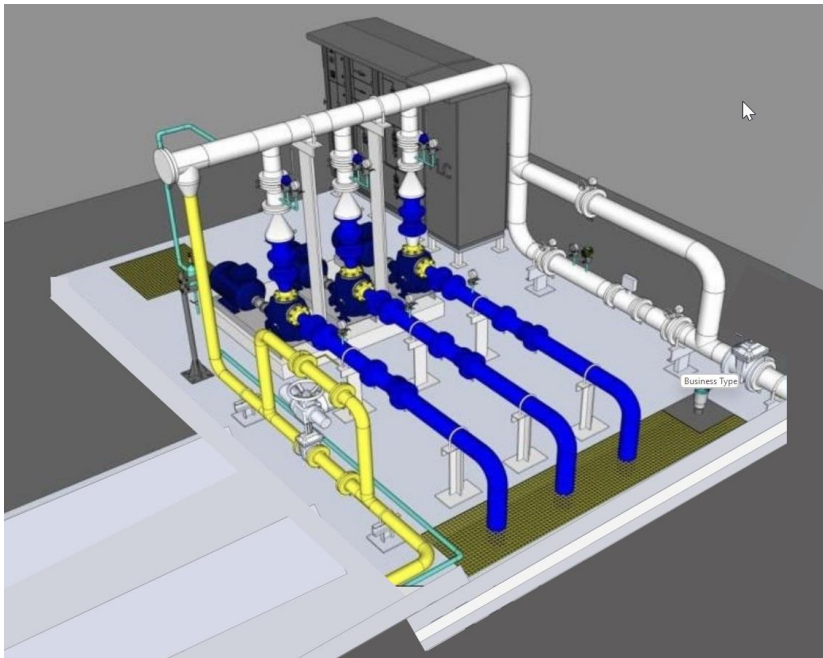


### Location

**Thailand**



## Pumps and Motors



### Business Type

Wastewater Treatment Plant



### Challenges

- ❖ Unknown efficiency of pumps and motors
- ❖ Optimization of operation
- ❖ Location of asset and maintenance access
- ❖ Maintenance risk



### Assets

Pumps and Motors



### Service and Achievements

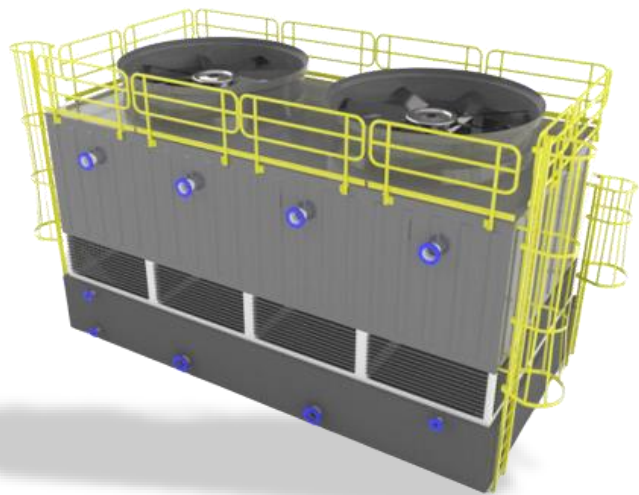
- ❖ Monitor pumps' efficiency and optimize assets operation
- ❖ Deliver monitoring system/dashboard for recycle water process to monitor Overall Equipment Effectiveness (OEE)
- ❖ Applying AI for predictive maintenance reducing maintenance time and risk



### Location

Thailand

## Cooling Tower



### Business Type

Power Plant



### Challenges

- ❖ High energy consumption
- ❖ Optimization of operation
- ❖ Energy loss during unloading



### Assets

Cooling Tower Fan



### Service and Achievements

- ❖ Utilize AI to optimize of motor speed setpoint
- ❖ Optimize assets operation and improve energy efficiency meaning CO<sub>2</sub> emission
- ❖ Reduce evaporation loss



### Location

Thailand