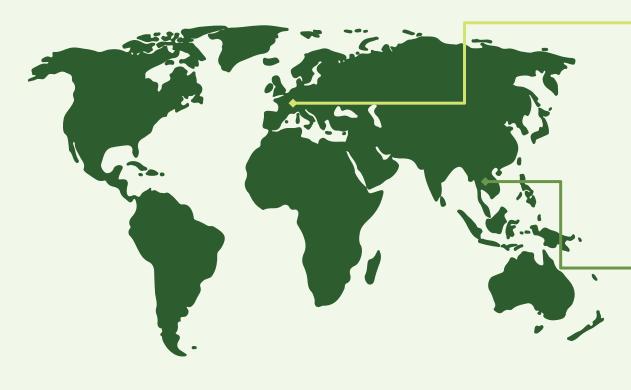


# Sustainability workshop

## Zero Carbon Program 04<sup>th</sup> October 2023

## Our Global Carbon Footprints



#### **PATTERER GMBH**



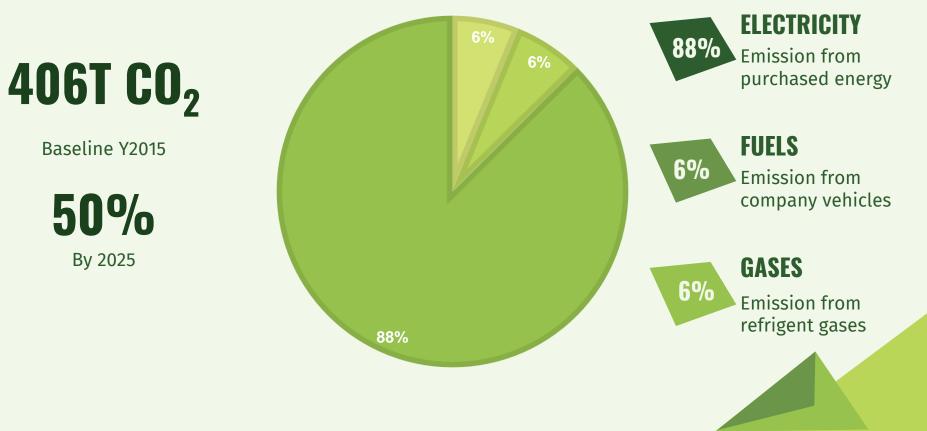
Im Tal 14, 87669 Rieden am Forggensee, Germany Phone: +49 8362 930870 https://www.patterer.de/

Patterer Technical Parts Co., Ltd.



Amata City Industrial Estate, 7/238 Moo 6,T. Mapyangporn, A.Pluakdaeng, Rayong 21140 Thailand http://www.patterer-thailand.com/

### **CO2 EMISSIONS**



## **IMPACT CALCULATION FORECAST**

	Base year: 2015				Last year: 2022				Forecast Calculated year: 2023					
			Unit of Measurement Emission Emission		Revenue/Sales		Unit of Measurement Emission		Revenue/Sales Emission /Financial		Unit of Measurement Emission Emissic		Revenue/Sales on /Financial	
Scope 1	Туре	Input - Example	Quantity (UOM	l) quantity Unit	Turnover Cur	rency	Quantity (UOM)	quantity Unit	Turnover	Currency	Quantity (UOM)	quantity Unit	Turnover	Currency
and the second s	Fuel	Diesel	6177 Ltr	16.7 Tons			2792 Ltr	7.6 Tons			2932 Ltr	7.9 Tons		
		Gasoline	3510 Ltr	8.2 Tons			2533 Ltr	5.9 Tons			2659 Ltr	6.2 Tons		
	Refrigerants	R22	15 Kg	26.4 Tons			2 Kg	3.52 Tons			5 Kg	8.8 Tons		
		R-407C	0 Kg	0 Tons			6.2 Kg	10.91 Tons			0 Kg	0 Tons		
	Process gasses	NF3	0 Kg	0			0 Kg	0			0 Kg	0		
	Sub total			51.32 Tons				27.91 Tons				22.95 Tons		
Scope 2														
	Purchased													
	energy	Electricity (non-renewables)	691,920 KWh	355 Tons			815,204 KWh	418 Tons			771,000 KWh	396 Tons		
		Heat/Steam/coolling	0	0 Tons			0	0 Tons			0	0 Tons		
	Sub total			354.95				418.20				395.52		
Scope 1+S	cope 2			406.28 Tons	149 MT	нв		446.11 Tons	24	2 M THB		418.48 Tons		235 M THB
Scope 1+ Scope 2 intensity Delta			2.719 Tons/M THB		_	1.84251 Tons/M THB -32%			1.780753 Tons/M THB -35%					

<u> </u>				Forecast Calculated ye	ar: 2024	Forecast Calculated year: 2025					
			Unit of Measurem	Revenue/Sales		Unit of Measurem	ent Emission Emissio	Revenue/Sales Emission Emission /Financial			
Scope 1	Туре	Input - Example	Quantity (UOM)	quantity Unit	Turnover	Currency	Quantity (UOM)	quantity Unit	Turnover	Currency	
and the second second	Fuel	Diesel	3078 Ltr	8.3 Tons			3232 Ltr	8.7 Tons			
-		Gasoline	1330 Ltr	3.1 Tons			1396 Ltr	3.3 Tons			
	Refrigerants	R22	5 Kg	8.8 Tons			5 Kg	8.8 Tons			
		R-407C	0 Kg	0 Tons			0 Kg	0 Tons			
-	Process gasses	NF3	0 Kg	0			0 Kg	0			
	Sub total			20.24 Tons				20.81 Tons			
Scope 2											
-	Purchased										
	energy	Electricity (non-renewables)	618,064 KWh	317 Tons			620,133 KWh	318 Tons			
-		Heat/Steam/coolling	0	0 Tons			0	0 Tons			
1	Sub total			317.07	_			318.13	_		
Scope 1+ Scope 2			337.31 Tons	242	2 M THB		338.94 Tons		249 M THB		
Scope 1+ Scope 2 intensity				1.39354 Tons/N	1 THB		1.359499 Tons/M THB				
Delta				-49%				-50%			



## PHASE-1 DECARBONIZATION ROADMAP





**2025** > CHANGE TO EV AND REDUCE

DIRECT CARBON EMISSION BY FUEL AND GAS

# DECARBONIZATION ACTIVITIES

#### **AIR COMPRESSOR**



Replaced low efficient air compressor by a new energy efficient model



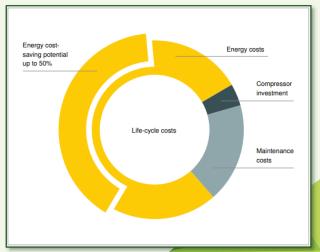
YEAR - 2019-2020

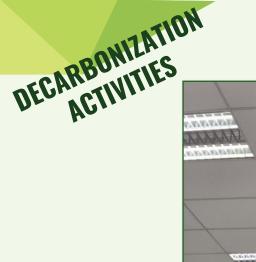


Power - 15kW



INVESTMENT – 21,600USD





## **FLUORESCENT TO LED LAMPS**



Fluorescent lamps were replaced by LED lamps and optimize the number of lamp



YEAR - 2017-2018



INVESTMENT – 5,703USD

ENERGY CONSUMPTION REDUCE BY 59,206 kWh

> ENERGY COST SAVING 6,766 USD

CO<sub>2</sub> EMISSION REDUCE BY 30 TON



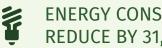
#### **COLD AIR LOSS**



Curtains were installed to reduce the loss of cold air by 80-90% compared to conventional door. YEAR - 2018



INVESTMENT - 1,500USD



ENERGY CONSUMPTION REDUCE BY 31,680 kWh

**ENERGY COST SAVING** 3.621 USD



CO<sub>2</sub> EMISSION REDUCE BY 16 TON



### **FUEL CONSUMPTION**



 NEGOTIATED WITH SUPPLIERS TO ARRANGE MILK RUN DELIVERY OF PRODUCTS.
OPTIMIZE THE FREQUENCY OF DELIVERIES AND ROUTES



YEAR - 2016-2020

- FUEL CONSUMPTION REDUCE BY 4,300 L
- \$
  - FUEL COST SAVING 3,686 USD



CO<sub>2</sub> EMISSION REDUCE BY 11 TON

#### **SOLAR ROOF TOP**



## **SOLAR ROOF TOP**



**Investment Cost** THB 5.9 M (USD 170,300.00)



Saving THB 30 M (USD 857,100.00) Over 25 years

## **SOLAR ROOF TOP**



#### CHALLENGES

- > Find right supplier with expertise at a reasonable cost
- Structure of the roof was not strong enough to take the load of solar panels



- > 88% of emission is from purchased energy Electricity.
- So, to switch to Green energy and thus to reduce our greenhouse gas emissions, Solar energy was the best choice.

## Total install Capacity 218.5 kWp



Install 380 Panels

~~

Reduce 143T/ Co2 Emission year

280 MWh Annual Energy Production

Equivalent to 11,900 trees planted /year



## **STRENGTHENING OF ROOF STRUCTURE**













### **PV INSTALLATION**





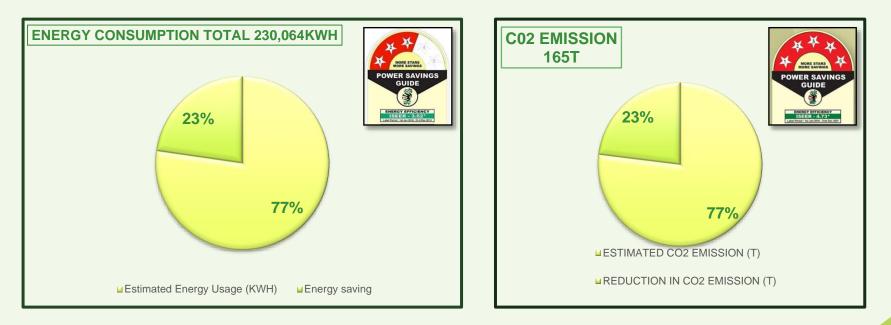








#### CHANGE THE EXISTING AIR CONDITION UNIT TO A MORE ENERGY EFFICIENT SYSTEM





## **AIR CONDITIONER SYSTEM**



#### **CHALLENGES**

- INVESTMENT COST 860,000 USD
- Sourcing high energy efficient model of air conditioners that suits our purpose.



30~35% of our electricity usage is from the consumption by air conditioners, which is second after consumption by machines.



