



WRI INDONESIA

Indonesia Sustainable Energy Week

# Turning Challenges into Opportunities: Energy Management and Efficiency in Boosting Industrial Competitiveness

Wednesday, 11 September 2024

# How can companies start their decarbonization pathway?

Introducing a corporate decarbonization journey, an end-to-end process to be taken by companies to reach an accountable & science-based net zero transformation.



**GREENHOUSE GAS PROTOCOL**

**90%** of companies who disclose GHG emissions use GHG Protocol

**GHG accounting framework**

**SCIENCE BASED TARGETS**  
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

**2,250+** companies have committed to setting SBTi targets, 1,000+ are approved

**The only internationally-recognized net zero target setting framework**



# Many abatement strategies are available, but options are limited for many industries due to the technological readiness levels and the substantial capital required

## Type of emissions:

### Scope 1

**Direct emissions** from sources that are owned or controlled by the reporting company. E.g., **stationary, mobile, process, and fugitive emission**

### Scope 2

**Indirect emissions** from purchase of energy from 3<sup>rd</sup> party. E.g., **purchased electricity, heating, cooling, and steam**

### Scope 3

**Indirect emissions** from other sources within company's value chain. E.g., **purchased goods, operational waste, transport and distribution, employee commuting, etc**

## Mitigation hierarchies:

### Abatement

Avoid, reduce, and substitute to abate emissions within value-chain

### Neutralization

carbon removed from the atmosphere through sequestration

## Decarbonization technology pillars:

### Energy related



Energy Efficiency & Recovery



Zero-emission electricity



Electrification



Fuel switching



RE direct use for heating



Energy Storage

### Non-energy related



Resource Efficiency



Product Change



Process Improvement



Feedstock change

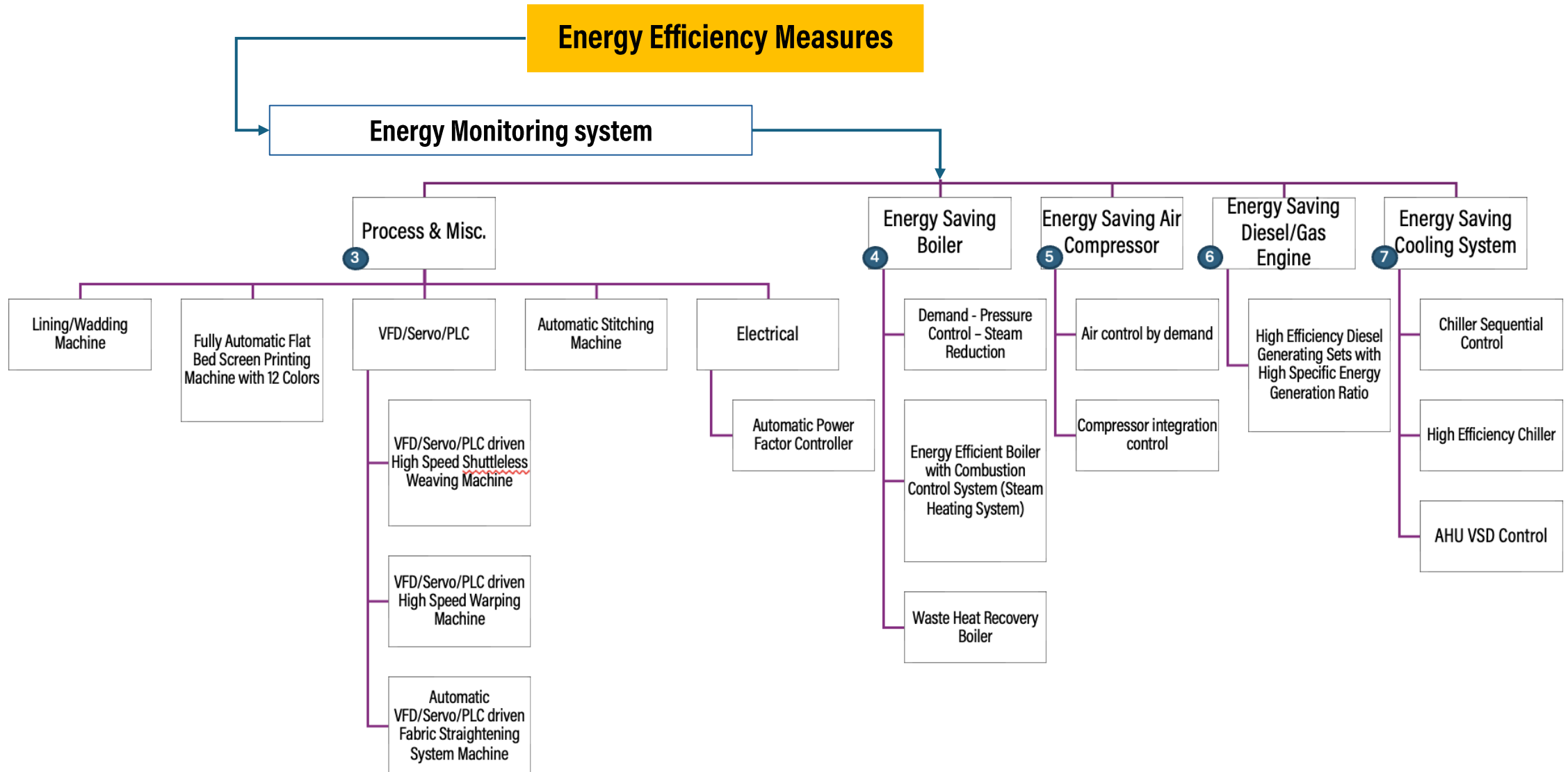


CCS/CCUS



Non-CO2 GHG capture

# Beyond changing our LEDs: Example of Energy Efficiency Measures in Industrial Context



# Beyond changing our LEDs: Example of Energy Efficiency Measures in Industrial Context

## Description of technology:

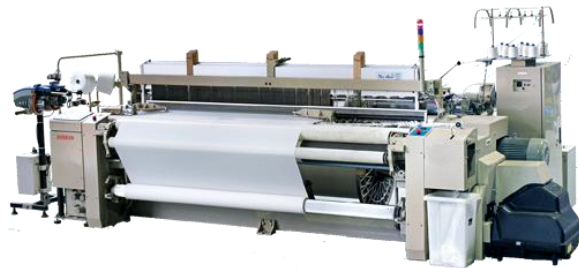
- Energy efficient technologies that can reduce energy consumption whilst producing the same/increasing output.

## Types of technology:

- Electrically consuming energy efficient technologies include energy efficient motors, pumps, compressors, chillers, specific sector technologies (e.g weaving loom), etc.

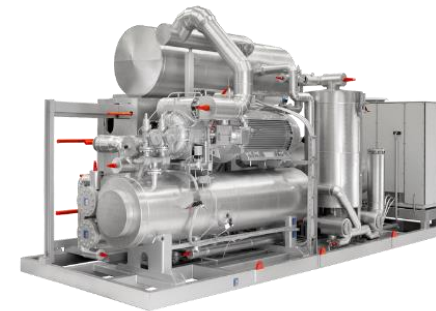
LCT	TRL	Cost	Impact	Sector Applicability
<b>Energy Efficiency – Motor Driven Systems</b>				
Replace inefficient motors with efficient motors	7-9	Depends on size	Reduce electricity consumption	All
Install variable speed drives	7-9	Depends on size	10-50% equipment electricity consumption	All
<b>Energy Efficiency – Cooling Systems</b>				
Install high efficient chillers	7-9	Depends on size and type	Reduce electricity consumption	All
<b>Energy Efficiency – Sector Specific Technology/Equipment</b>				

## Case study:



### Replacing inefficient looms with high efficiency looms in textile

PT. Nikawa Textile Industry inefficient looms with efficient looms, reducing 20% of compressed air consumption in 2018. **Estimated emission reduction: 430 tCO2/year.**



### Replacing inefficient chiller in the textile industry

PT. Primatexco Indonesia replaced a 230TR and 250TR chiller with a high efficient 500TR chiller. **Estimated emission reduction: 114 tCO2/year**

Source: Case study: Progress of JCM in Indonesia (2014), [JCM Project Database](#) LCT Mapping Source: compiled from various sources

Note: The applicability of these technologies and estimated savings may differ for different sites, thus, energy audit + techno-economic feasibility study should be performed first

# Beyond changing our LEDs: Example of Energy Efficiency Measures in Industrial Context

## Description of technology:

- Energy efficient technologies that can reduce energy consumption whilst producing the same/increasing output.

## Types of technology:

- Fossil fuel driven energy efficient technologies include energy efficient boilers, system optimizations of steam systems, waste heat recovery systems, etc.

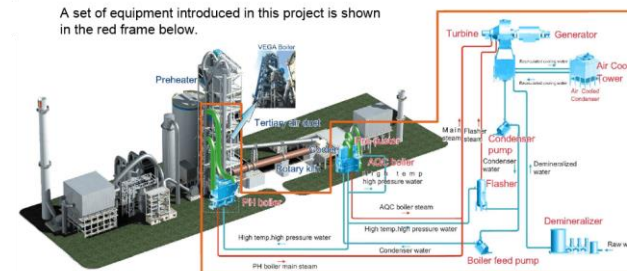
LCT	TRL	Cost	Impact	Sector Applicability
<b>Boiler Systems</b>				
Replace boiler with high efficient boiler	7-9	Rp 1.5B - Rp 4B	Depends on boiler efficiency	Pulp & Paper, Textile, F&B
Boiler blowdown optimization	7-9	N/A	Reduce energy consumption	Pulp & Paper, Textile, F&B
<b>Waste Heat Recovery</b>				
Combined heat and power (CHP)	7-9	N/A	Reduce energy consumption	Cement, Iron & Steel*
Install boiler economizer	7-9	Rp 300M - Rp 700M	Up to 10% boiler energy reduction	Pulp & Paper, Textile, F&B

## Case study:



### Replacing inefficient boiler in the chemical industry

PT. DIC Graphics is planning to replace their inefficient coal boilers with efficient natural gas boilers. Estimated emission reduction: 1.7 ktCO<sub>2</sub>/year



### Installing WHR power generation in cement industry

PT. Semen Indonesia installed a WHR boiler steam turbine generation system using waste heat. Estimated emission reduction: 122 ktCO<sub>2</sub>/year

Source: Case study: Progress of JCM in Indonesia (2014), LCT Mapping Source: compiled from various sources

Note: The applicability of these technologies and estimated savings may differ for different sites, thus, energy audit + techno-economic feasibility study should be performed first



WRI INDONESIA

Indonesia Sustainable Energy Week

# Turning Challenges into Opportunities: Energy Management and Efficiency in Boosting Industrial Competitiveness

Wednesday, 11 September 2024