ORGANIZER

HAUHOUSE Engineering & Construction

SPONSOR

WWF H&M BAJ VUPHONG Energy Group

SCAN FOR MORE INFORMATION ABOUT THIS PROJECT

ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

Ha Noi, 4th December 2025

PRESENTED BY

Mr. Nguyen Tien Huy

Mr. Richard Scotney

Ms. Anna Zhan

Mr. Wang Ji Shan

Dr. Ha Anh Tung

Mr. Hau Bui

Mr. Pham Dang An

ORGANIZER

HAUHOUSE Engineering & Construction

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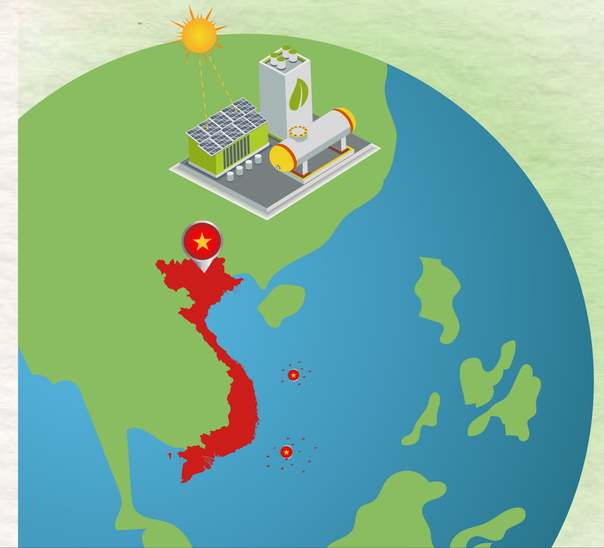
ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

Ha Noi, 4th December 2025

Mr. Richard Scotney

ELECTRIFYING THE TEXTILE AND APPAREL SECTOR IN VIETNAM



Mr. Richard Scotney

Global Energy Efficiency Head

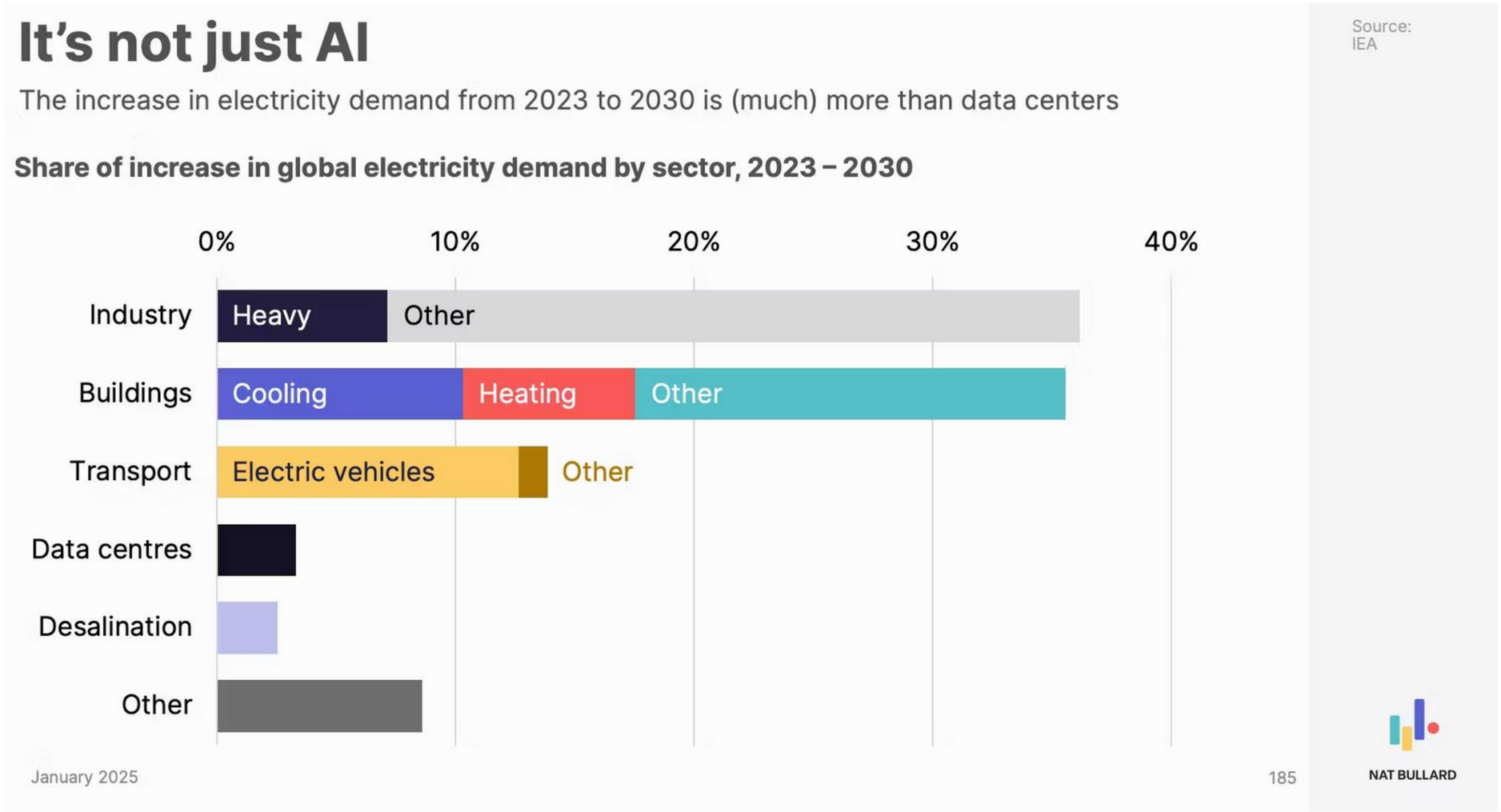
WWF International

Promoting water stewardship and taking action against climate change and biodiversity loss throughout H&M Group's value chain and beyond

Electrifying the Textile and Apparel Sector in Vietnam

CONTENTS

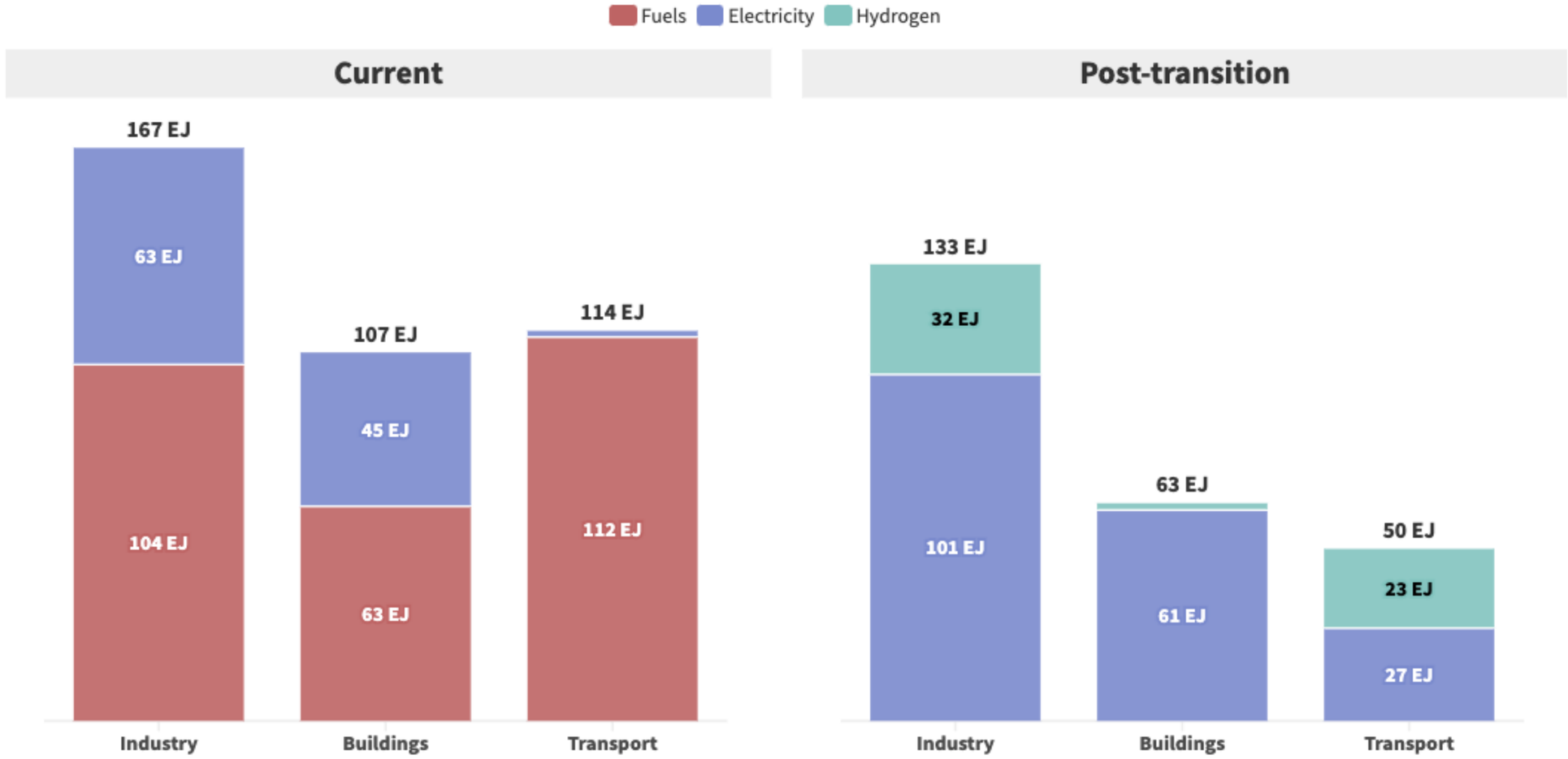
ELECTRICITY DEMAND IS EXPECTED TO GROW MOST IN INDUSTRY (MUCH MORE THAN DATA CENTRES WHICH GET MORE ATTENTION!)



AN ESSENTIAL PART OF THE ENERGY TRANSITION WILL BE SWITCHING INDUSTRIAL PROCESSES FROM FUEL-BASED TO ELECTRICITY

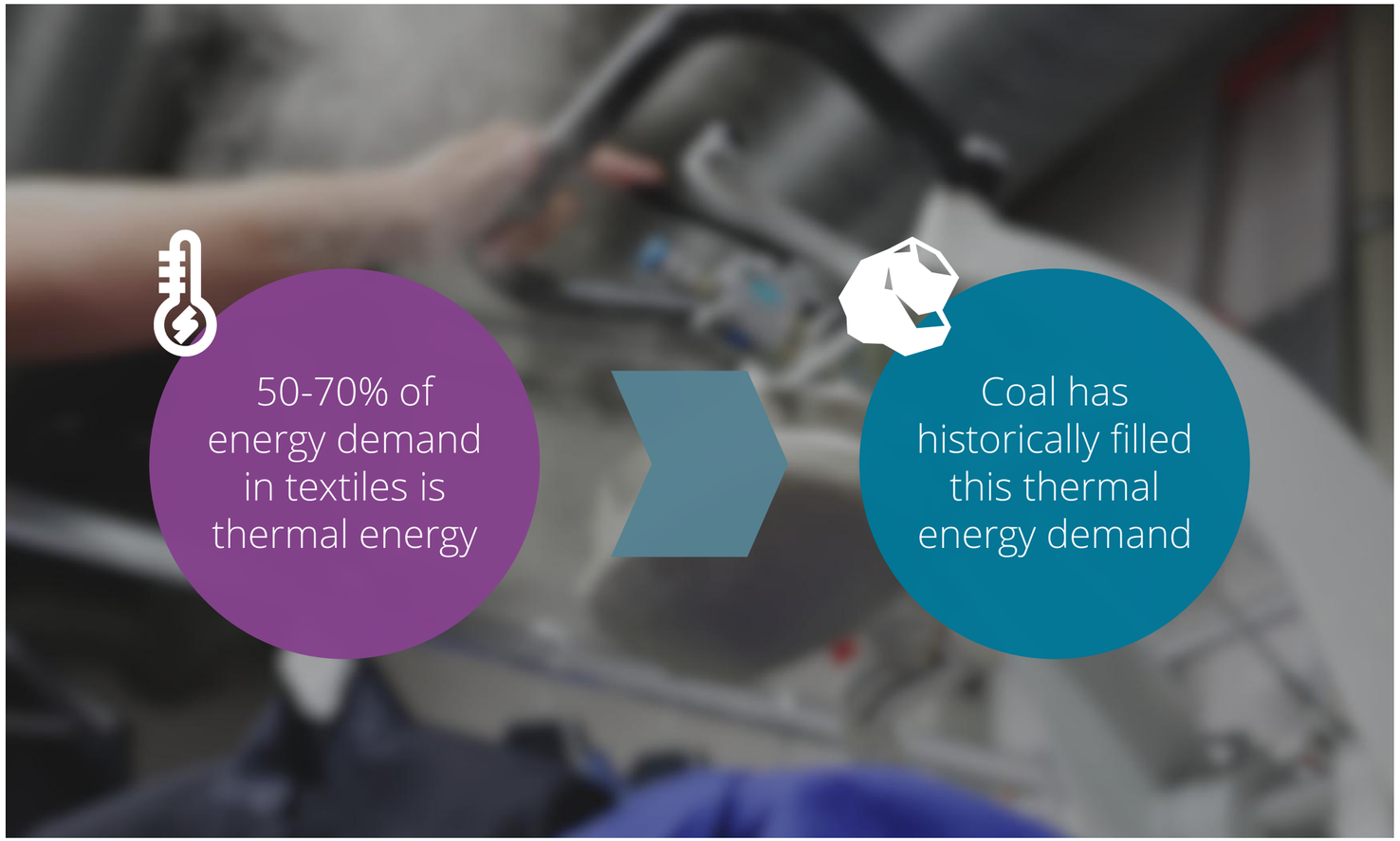
Breakdown of global final energy demand pre- and post- energy transition

Where energy comes from in our global energy system today versus a system that's electrified as much as possible, with the remainder supplied by hydrogen.



Source: Nick Eyre (2021). From using heat to using work: reconceptualising the zero carbon energy transition. • Author: Hannah Ritchie

THERMAL ENERGY REPRESENTS OVER HALF OF ENERGY DEMAND IN THE TEXTILE & APPAREL (T&A) INDUSTRY



THERMAL ENERGY IS USED TO MAKE HOT WATER AND STEAM, USED FOR:

- Dyeing
- Washing
- Bleaching
- Mercerising
- Rinsing

- Steam fixation
- Finishing
- Heat setting
- Ironing
- Shrinkage Control

MANY BRANDS, INCLUDING H&M GROUP, HAVE COMMITTED TO PHASE OUT COAL WITHIN THEIR SUPPLY-CHAINS

Fashion for Climate
Fashion Industry Charter for Climate Action

80+ apparel groups have signed the **UNFCCC Fashion Industry Charter for Climate Action**, which includes commitments to:

- No new coal power by January 2023, and
- Phase out coal as soon as possible but at the latest by 2030.

Example signatories of the UNFCCC Fashion Charter

H&M Group, leading the industry transition, has committed to:

- No new coal by January 2022
- Phase out coal from our garment supply chain (tiers 1, 2 and 3) by 2026

H&M Group

GLOBAL EXPERTS AGREE THAT TO KEEP 1.5° COMMITMENT, LOW-HEAT INDUSTRIES MUST ELECTRIFY. H&M GROUP ALSO PLANS TO ELECTRIFY PROCESS HEAT

Major organizations support a shift to electrifying low-temperature heat…

NRDC
NATURAL RESOURCES DEFENSE COUNCIL

Decarbonization: Why We Must Electrify Everything Even Before the Grid Is Fully Green

April 2020
McKinsey Quarterly

By 2030, more than 90 percent of the abatement for mid- to low-temperature industries depends on electrifying production with power sourced from clean-energy sources.

apparel impact institute

Electrification technologies, when tied to renewable electricity, have the best potential to decarbonize the textile industry.

…including H&M Group

H&M Group

Climate Transition Plan

"**Transitioning from thermal energy to electricity in production** is key to reaching our goals [….] " there is a need to decarbonise heating for current processes **by using heat pumps,** or by adding hot-water storage solutions to reduce energy requirements."

DIFFERENT ELECTRIFICATION OPTIONS EXIST IN THE TEXTILE SECTOR, FROM HEAT PUMPS TO THERMAL STORAGE

1

Source: Yuanda boiler

Centralised
Electric Boiler

2

Source: GEA heat pump

Centralised
Heat Pump

3

Source: Enerteam

Decentralised systems (end-use process electrification)

4

Solar Thermal

5

Source:

Thermal storage

A combination of these technologies is likely to be optimal

AMONG THESE, HEAT PUMPS ARE MORE EFFICIENT BUT HAVE HIGHER CAPEX AND REQUIRE INTEGRATION. DECENTRALISED SOLUTIONS ARE ALSO PROMISING

Different electrification types and their benefits. Sample costs from one small H&M factory in Vietnam

		Integration & Complexity	CAPEX	OPEX (electricity cost per year)	Main Benefits	Challenges
0	**Biomass**		**100K**	**90K**	Business as usual	Environmental integrity, price volatility
1	**Electric Boiler**		**88K**	**99K**	Easy to integrate into existing systems; Can turn down during low use	Expensive electricity
2	**Heat Pump**		**440K***	**59K**	Highly efficient	Best with steady process load
3	**Decentra-lised**		**170K**	**68K**	Highly modular (can turn off and on).	Requires production changes
4	**Solar Thermal**		**N/A**	**~0 electricity cost**	No electricity costs	Requires large space
5	**Thermal Storage**		**N/A**	**Dependent on tariffs**	Take advantage of low electricity prices	Requires very large

Key: Great Good Fair, Challenging

*Does not include installation and electricity upgrade investments

Source: Enerteam analysis of tier 1 1 factory

CONTENTS

Case 1: Hangzhou Hangmin Meishida

Printing & Dyeing Pioneer

Product: Dyeing of cotton, linen, and polyester fabrics.

Scale: 60 acres, 800+ employees, 200 million meters annual capacity.

Pilot Project: First application of an electric heat pump to replace coal-fired (supplied by industrial park) steam in the dyeing process.

Key Partner: Project supported by H&M GFI direct investment.

Case 1: Hangzhou Hangmin Meishida

‘City steam’ – Combined Heat and Power Thermal Plant

Dyeing

Drying

Finishing

Case 1: Hangzhou Hangmin Meishida

System & Economics

Electric Heat Pump Integration

The project recovers waste heat from 90°C condensate water (from stenter steam) to generate 120°C steam.

It operates 24/7 using green electricity (Solar + PPA), producing 20 tons of steam daily (5% of total usage).

Investment: 5 Million RMB

Case 2: Wuxi Shilead

Yarn Spinning & Dyeing

Product: Sweater yarn spinning, dyeing, and packaging.

Scale: 60,000 sqm area, annual production >10,000 tons.

Sales: Annual sales surpassing 450 million RMB.

Pilot Project: Waste heat recovery for hot water production, powered by rooftop solar.

System & Economics

Waste Heat Recovery

Recovers waste heat to produce 70°C hot water, replacing steam heating. This saves 12,000 tons of steam annually (20% of total).

Carbon Impact: Reduced CO2 emissions by 4,290 tons.

Financials: 10M RMB investment with a rapid 2-year payback period.

Both factories have roadmap to move to fully electric production

Efficient Motors

Transitioning to permanent magnet motors to reduce electricity consumption by 30%, freeing capacity for more solar.

E-Boilers

2026-2027: Installing electric boilers reaching 170°C to replace 35% of coal-fired steam, utilizing off-peak power.

Thermal Storage

2028-2029: Implementing thermal storage systems to achieve complete electrification and maximize renewable energy use.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ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

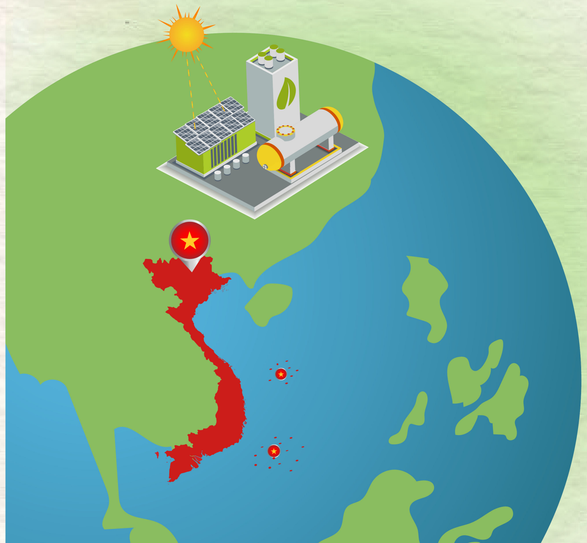
Ha Noi, 4th December 2025

Dr. Ha Anh Tung

Head of the Heat & Refrigeration Engineering Department
Ho Chi Minh City University of Technology (HCMUT)

Dr. Ha Anh Tung

HEAT PUMP TECHNOLOGY
"THE PIONEER SOLUTION FOR THE LOW-CARBON CENTURY"



HEAT PUMP TECHNOLOGY

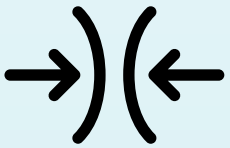
"The Pioneer Solution for the Low-Carbon Century"

1. MANDATORY TRANSITION CONTEXT: HEAT & CARBON IN VIETNAM'S INDUSTRIAL SECTOR

Industrial heat–related emissions (Scope 1) account for more than 50% of the total carbon footprint in many sectors.

Rapid growth in renewable electricity is paving the way for electrification.

Fossil-fuel boilers remain the backbone of industrial heat in Vietnam → leading to continued dependence on LPG, diesel oil, fuel oil, and coal.



Pressure from the EU's CBAM, with requirements on the carbon intensity per product.

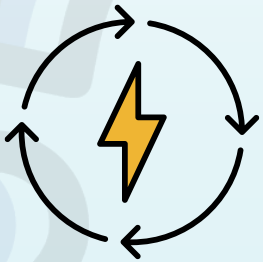
THE KEY QUESTION IS...

We now need a technology that can deliver heat

Without combustion

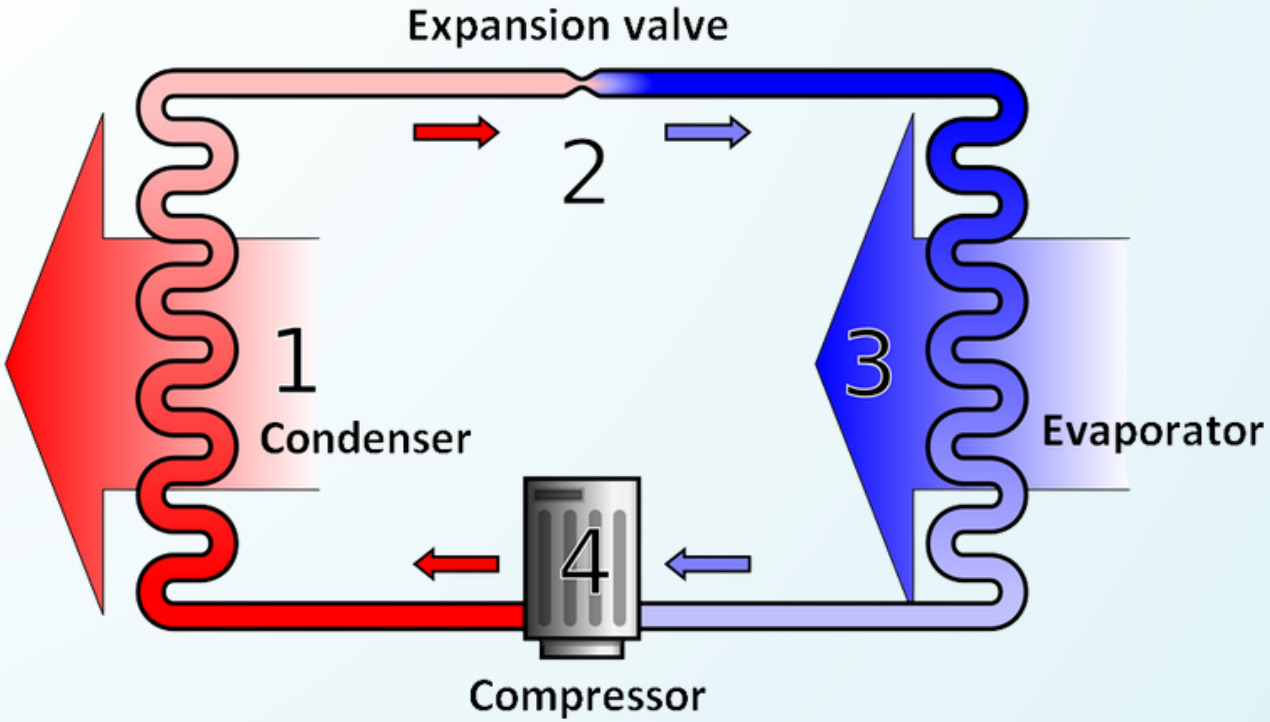
With high efficiency

Using waste heat



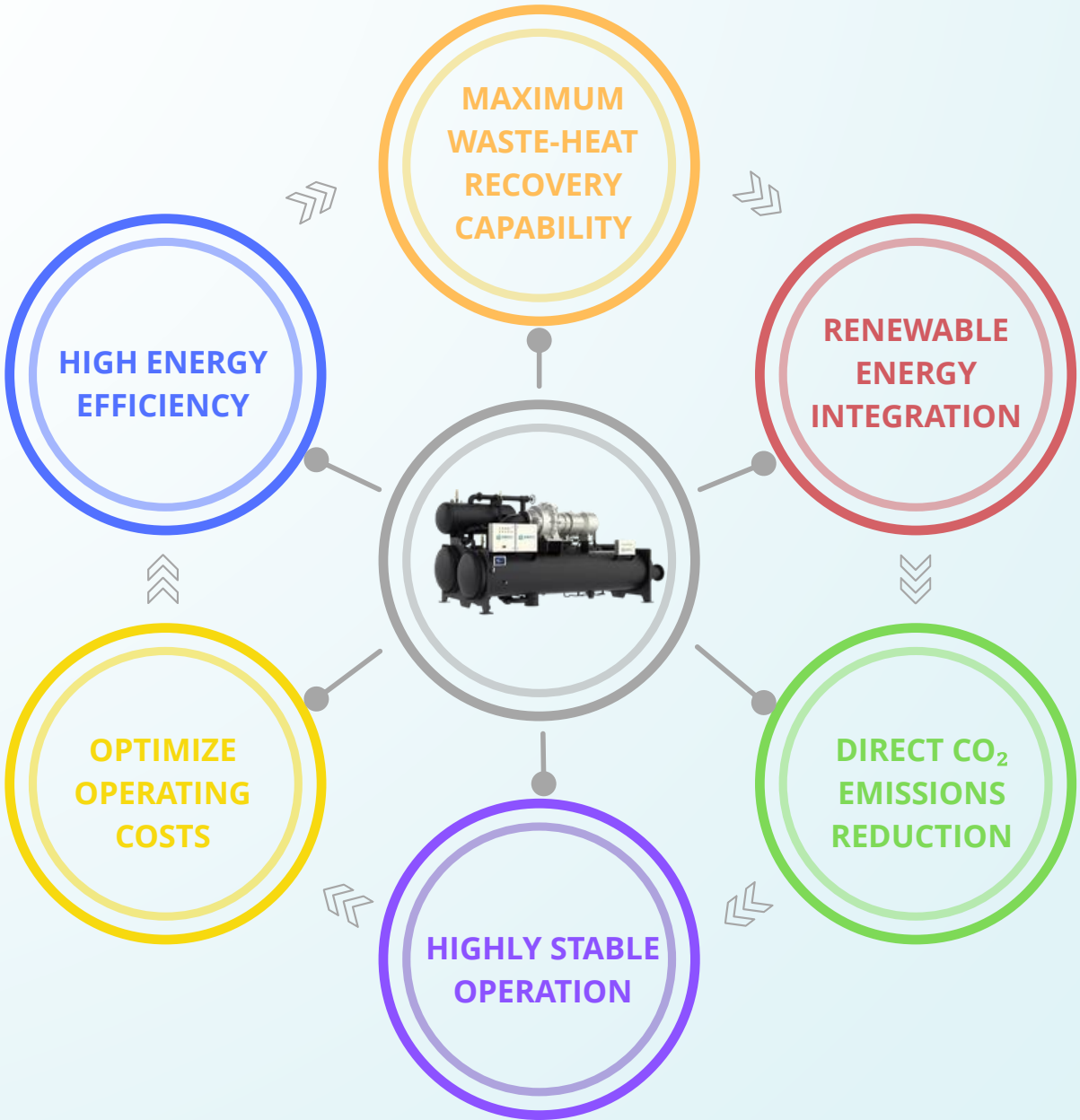
2. TECHNOLOGY CORE: A HEAT PUMP IS A SYSTEM FOR "UPGRADING HEAT"

Principle of heat pump technology



- No fuel combustion → No generation of NOx, SOx, or PM2.5 fine particulates
- Recover dispersed waste heat → compress → upgrade it to a useful temperature level

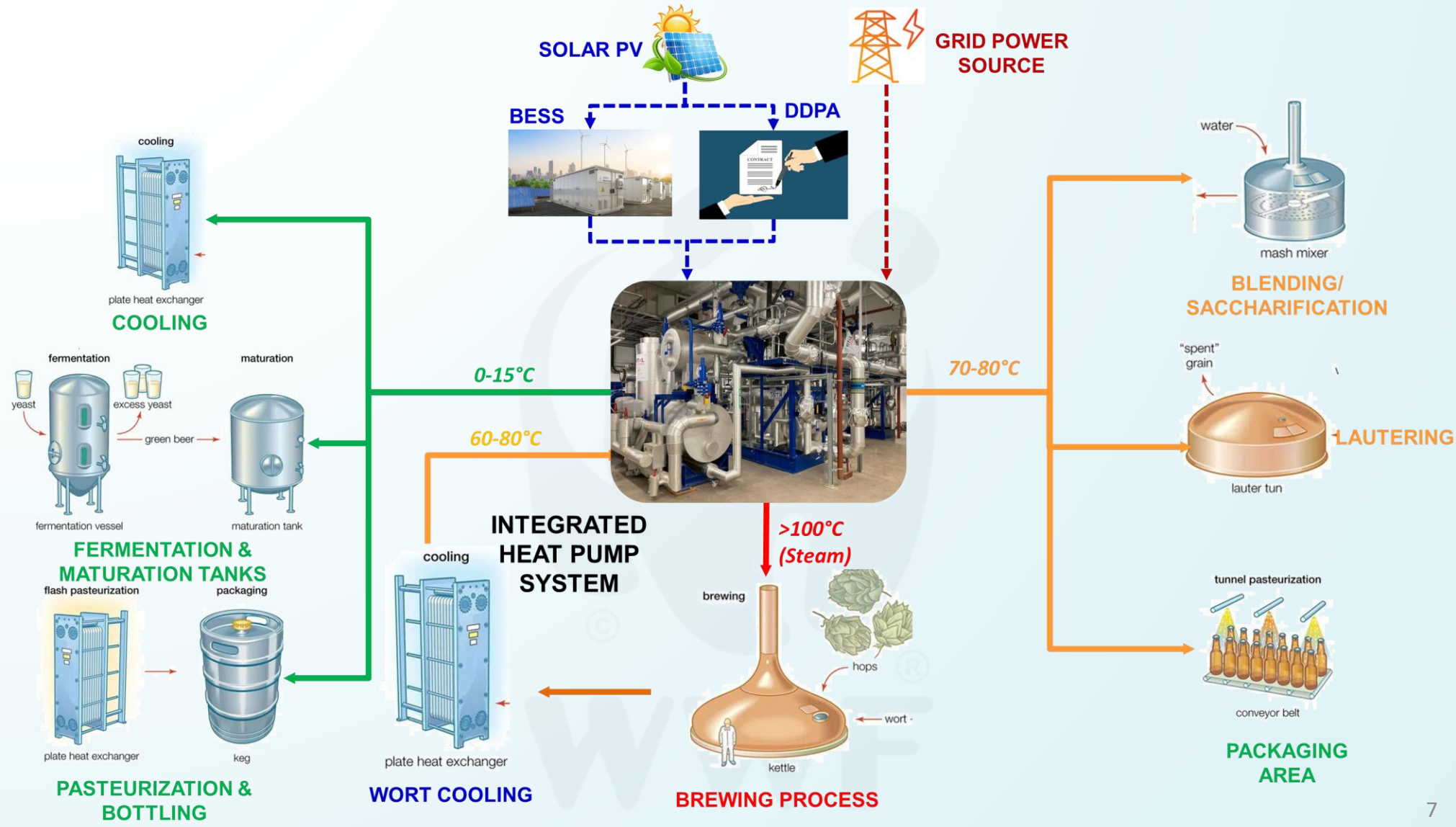
3. POTENTIAL OF HEAT PUMP TECHNOLOGY



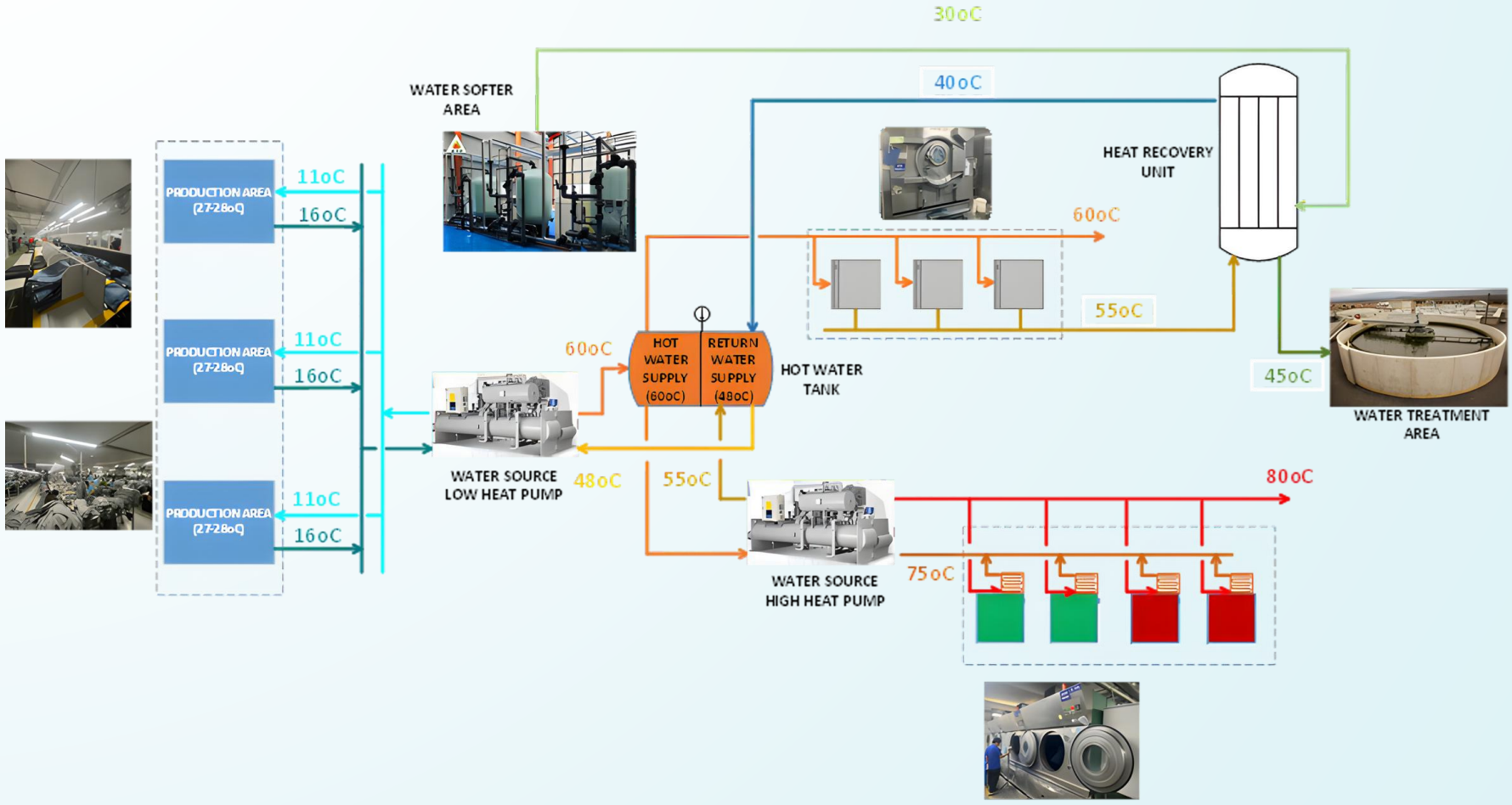
4. OPPORTUNITIES FOR HEAT PUMP APPLICATION

SECTOR	PROCESS	TEMPERATURE (°C)									
		20	40	60	80	100	120	140	160	180	200
Food & beverages	Drying										
	Evaporation										
	Pasteurization										
	Sterilization										
	Boiling										
	Distillation										
	Blanching										
	Scalding										
	Concentration										
	Tempering										
	Smoking										
Textiles	Coloring										
	Drying										
	Washing										
	Bleaching										

Energy Transition Model for Brewery Factories



Energy Transition Model for Garment - Washing - Drying Factories



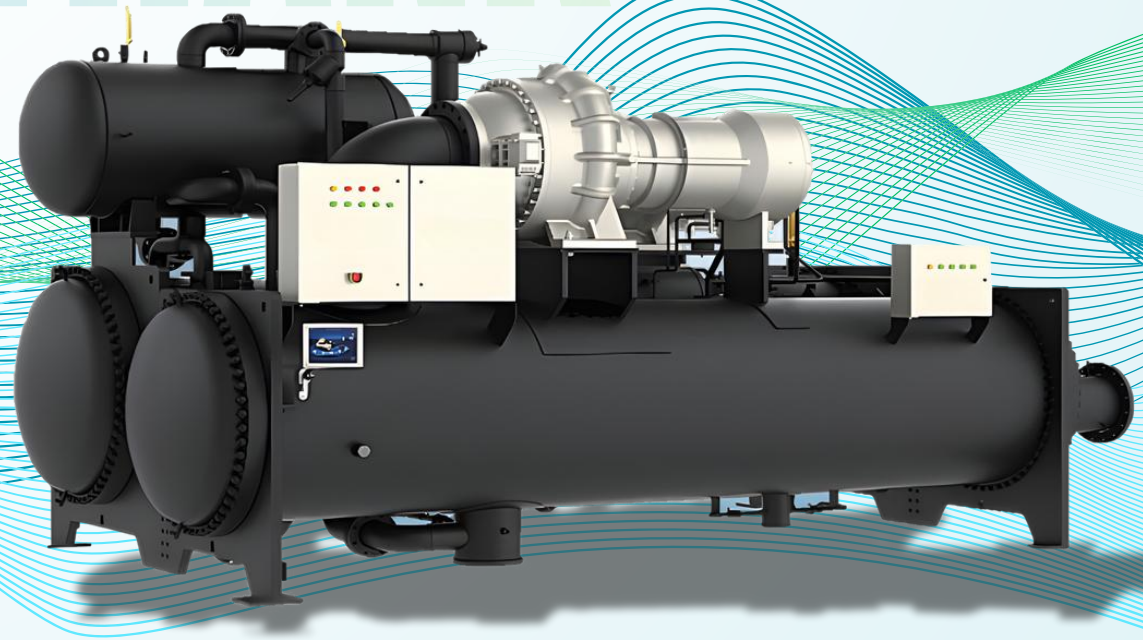
INVESTMENT COST ESTIMATE

ALTERNATIVE SOLUTION	HEATING CAPACITY (kW)	APPLICATION SCOPE	CAPEX (USD/MW)	ENERGY CONSUMPTION (KW)	LIFETIME (Years)
150°C Steam-Generating Heat Pump	1000	Suitable for textile dyeing factories	700,000 - 1,100,000	~ 550 kW Free 128 RT (Chilled water)	20
120°C Steam-Generating Heat Pump	1000	Suitable for textile dyeing factories	630,000 - 730,000	~ 413 kW Free 167 RT (Chilled water)	20
80°C Hot-Water Heat Pump	1000	Suitable for textile dyeing & washing factories	480,000 - 550,000	~ 303 kW Free 198 RT (Chilled water)	20
60°C Hot-Water Heat Pump	1000	Suitable for washing factories	400,000 - 500,000	~ 216 kW Free 223 RT (Chilled water)	20

5. CONCLUSION

- Heat Pumps represent a breakthrough technology because they:
  - Shift industrial energy use from combustion to efficient heat upgrading.
  - Maximize the use of low-temperature heat sources — the largest source of industrial heat losses.
  - Align with future trends of electrification and renewable power systems.
- This marks a critical engineering milestone for the transition toward low-carbon industrial operations.

THANK YOU



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ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

Ha Noi, 4th December 2025

Mr. Pham Dang An

Deputy General Director

Vu Phong Energy Group

Mr. Pham Dang An

ELECTRO-THERMAL TECHNOLOGY

GREEN SOLUTION FOR
A GREEN SOLUTION FOR
THE INDUSTRIAL SECTOR

ORGANIZER

HAUHOUSE Engineering & Construction

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WWF H&M BAJ BANGJIE KNITTING (VIET NAM) VUPHONG SINCE 2009 Energy Group

VUPHONG® SINCE 2009 Energy Group

ELECTRIFICATION OF INDUSTRY
HEAT PUMP POWERED
by RENEWABLE ENERGY

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

13 CLIMATE ACTION

17 PARTNERSHIPS FOR THE GOALS

ABOUT VU PHONG ENERGY GROUP

COMPANY HISTORY

2009 - 2019

Since 2009, under the brand Vu Phong Solar, the company has been a **pioneer** in the solar energy sector, implementing large-scale solar farm projects and initiating **rooftop solar power solutions for manufacturing enterprises**.

2020-2024

Rebranded as **Vu Phong Energy Group**, the company has expanded its **renewable energy ecosystem (hydropower, wind power, and relevant certificates)** and provides comprehensive solutions for **Zero-CAPEX solar power** projects, **accompanying businesses on their journey toward 100% renewable energy and Net-Zero.**

2025

Vu Phong Energy Group continues its **25-year commitment to dual transformation**, partnering with clients to achieve the **Net-Zero goal by 2050**.

Zero Capex model – Vu Phong Energy Group provides emission reduction solutions while optimizing energy costs for manufacturing plants.

2050

The global community has committed to Net-Zero by 2050.

TWIN TRANSITION AND THE JOURNEY TOWARDS NET-ZERO

2050 TARGET | VIETNAM AND GLOBAL CORPORATIONS

2025 — CBAM

2030 — Emission reduction
Scope 1-2, part of Scope 3

H&M 56%

Tetra Pak, Google

Net Zero emissions commitment

2040 — **Comprehensive** reduction
Scope 1-2-3

Unilever, Mercedes-Benz, Walmart, amazon

Net Zero emissions commitment

Net-Zero **2050** — **Commitment to 100%RE**

SCGP, Nestlé, PEPSICO, Shell, bp, Apple

Microsoft — Offsetting all emissions since establishment in 1975

Scope 1
Direct
Emissions generated by businesses themselves from their direct activities

Scope 2
Indirect
Emissions from the use of energy purchased from suppliers

Scope 3
Indirect
Emissions from activities outside the direct scope of the business (supply chain)

VU PHONG ENERGY GROUP – KEY CAPABILITIES

VUPHONG SINCE 2009 Energy Group

EPC
O&M

VUPHONG SINCE 2009 Energy Group

- EPC, O&M for RE projects

CÔNG TY CỔ PHẦN XÂY DỰNG 47
CONSTRUCTION JOINT STOCK COMPANY 47

EVNPECC3

*Associate companies

GREEN TRANSITION & ZERO CAPEX

VUPHONG SINCE 2009 Energy

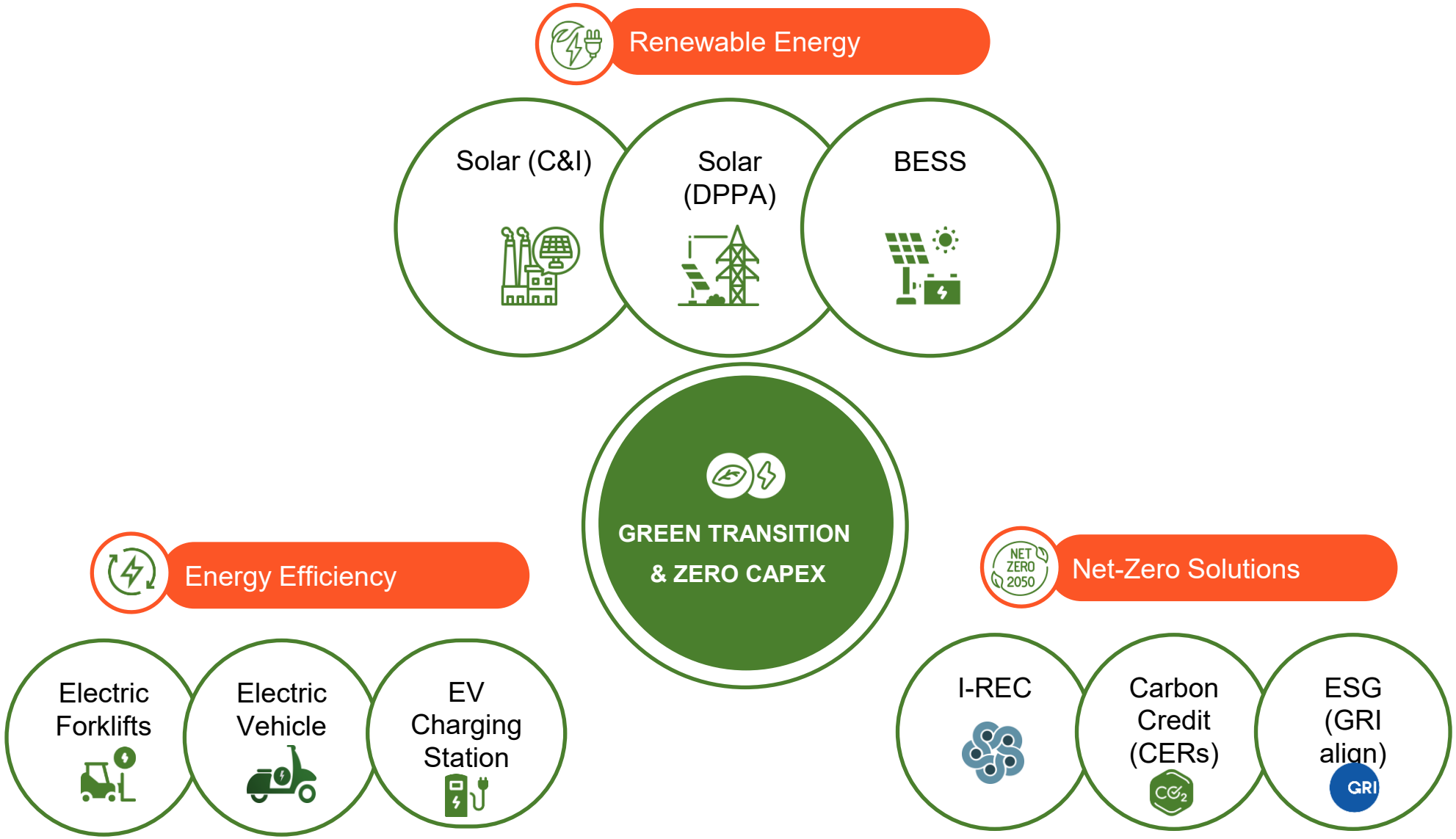
- Renewable Energy
- Energy Efficiency
- Net-Zero Solutions

GREENTECH MANUFACTURER

VUPHONG RENEWABLE ENERGY TECH

- PV Cleaning Robot
- Collaborative Robot
- IoT Devices

TWIN TRANSITION: GREEN AND DIGITAL TRANSITION



TWIN TRANSITION: GREEN AND DIGITAL TRANSITION

VP.CARBON
Your partner on the **Net-Zero** pathway

VP Carbon is a member of Vu Phong Energy Group, a leading renewable energy company in Vietnam. We specialize in providing solutions to support businesses in effectively reducing greenhouse gas emissions, ***aiming for Net-Zero roadmap through services related to emission reduction, renewable energy certificates (REC), and more.***

Invest and cooperate in REC/CERs projects

Accompany partners in registering ownership and trading of RECs, as well as CERs (Carbon credits), ensuring compliance with strict international standards, suitable for each specific project.

GRI

Community member

Consulting on Net-Zero roadmap solutions

VP Carbon is honored to join the GRI Community as a member, reinforcing our commitment to transparency and sustainable development.

Authorised EKOenergy sellers

Being awarded the EKOenergy label demonstrates that the project not only generates clean electricity but also **meets strict standards for sustainability, environmental protection, and social responsibility.**

PARTNERS IN COLLABORATION

VUPHONG SINCE 2009 Energy Group

H&M

pepsico
Food. Drinks. Smiles.

NIKE AIR

Vinamilk EST 1976

Golden Victory

Cargill

NGHIA – SINCE 1980 –

DUYTAN member of SCGP

Dalat Hasfarm®
Flower your life

Tetra Pak®
PROTECTS WHAT'S GOOD

Q & Q Co., Ltd

VOLTAIRA

Unilever

GSK

RADIANT

DWS DALAT WORSTED SPINNING

Garment SAIGON 3
QUALITY MAKES DIFFERENCE

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

WWF

sonova
HEAR THE WORLD

VUPHONG.COM

Scan the QR code to view more projects.

GOLDEN VICTORY | 8.10 MWp | Nam Dinh Province

FDI footwear factory, a supplier for globally renowned sports brands like NIKE.

Golden Victory

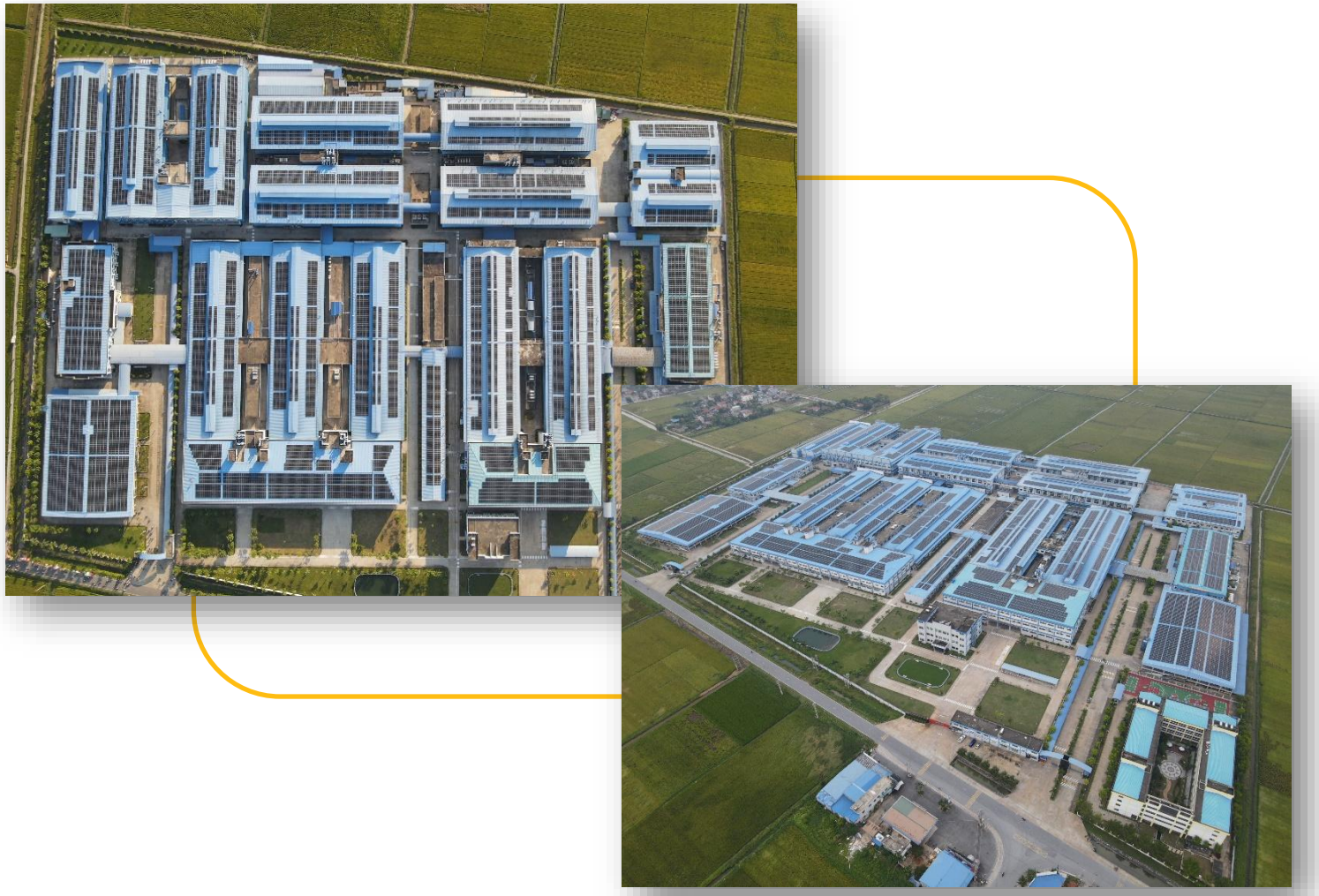
8.10 MWp

6,800 **tons of CO2/year** ***(*)***

equivalent to

102,000 **trees**

planted over 10 years***(**)***



(*) 2023 Emission Factor of the National Grid

(**) Calculated by: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

HIGHLIGHT PROJECTS

VUPHONG SINCE 2009 Energy Group

pepsico — 0.999 MWp

Beneficiary: Pepsico

Provided services: EPC

GSK — 1.626 MWp

Beneficiary: GSK

Provided services: Zero Capex Solar

Cargill — 6.06 MWp

Beneficiary: Cargill

Provided services: EPC

SAIGON 3 Group — 1 MWp

Beneficiary: Saigon 3 Garment

Provided services: EPC

DWS DALAT WORSTED SPINNING — 2.04 MWp

Beneficiary: DWS

Provided services: Zero Capex Solar

Vinamilk EST 1976 — 3.39 MWp

Beneficiary: Vinamilk

Provided services: Zero Capex Solar

Q&Q — 1.39 MWp

Beneficiary: Quang Quân

Provided services: Zero Capex Solar

DUYTAN member of SCGP — 2.17 MWp

Beneficiary: Duy Tân

Provided services: Zero Capex Solar

PROJECT ROOFTOP SOLAR PV SYSTEM

VUPHONG SINCE 2009 Energy Group

VU PHONG ENERGY GROUP KEY COMMITMENTS

Comprehensive energy solution

Delivering a **comprehensive energy solution** for the Bangjie Knitting factory.

EPC Excellence

International standard
Engineering - Procurement - Construction

Project Development

End-to-end management and execution.

ISO & European Standards

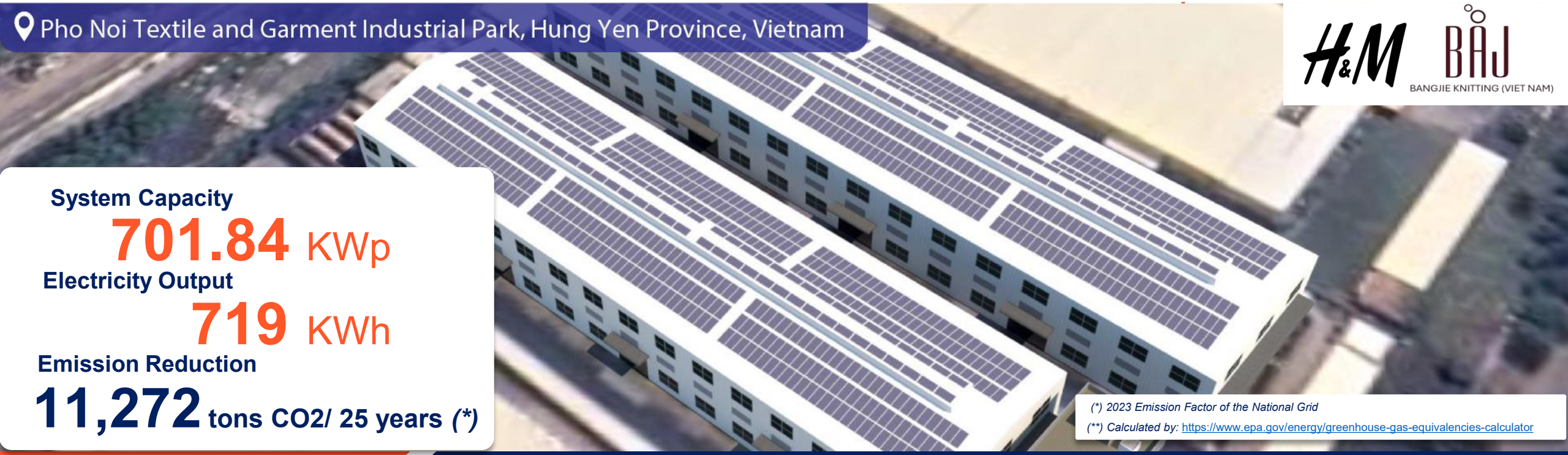
Ensuring top-tier quality and safety compliance.

Knowledge Transfer

1-year free & high-quality O&M.
Full knowledge transfer to local teams.

7 AFFORDABLE AND CLEAN ENERGY · 8 DECENT WORK AND ECONOMIC GROWTH · 13 CLIMATE ACTION · 17 PARTNERSHIPS FOR THE GOALS

Pho Noi Textile and Garment Industrial Park, Hung Yen Province, Vietnam



H&M · BAJ BANGJIE KNITTING (VIET NAM)

System Capacity
701.84 KWp

Electricity Output
719 KWh

Emission Reduction
11,272 tons CO2/ 25 years *(*)*

(*) 2023 Emission Factor of the National Grid
(**) Calculated by: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

CERTIFIED PRODUCT QUALITY | THE NUMBER THAT TALKS

110+ MWp executed for C&I projects.

100+ Partners cooperated in **Zero Capex Solar model** and **I-REC & Net-Zero solutions.**

PRESTIGIOUS AWARDS

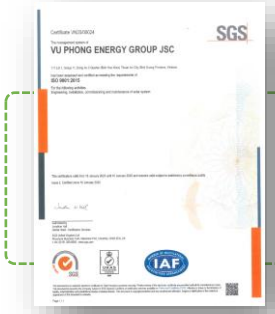
BEST C&I PROJECT AWARD: ROOFTOP (INDUSTRIAL)
South East Asia Leadership Awards

2022 BEST EPCCONTRACTOR IN VIETNAM
TotalEnergies

THE SOLAR FUTURE AWARDS
THE EPC COMPANY OF THE YEAR

THE ASIAN POWER AWARDS
SOLAR POWER PROJECT OF THE YEAR
ENVIRONMENTAL UPGRADE OF THE YEAR

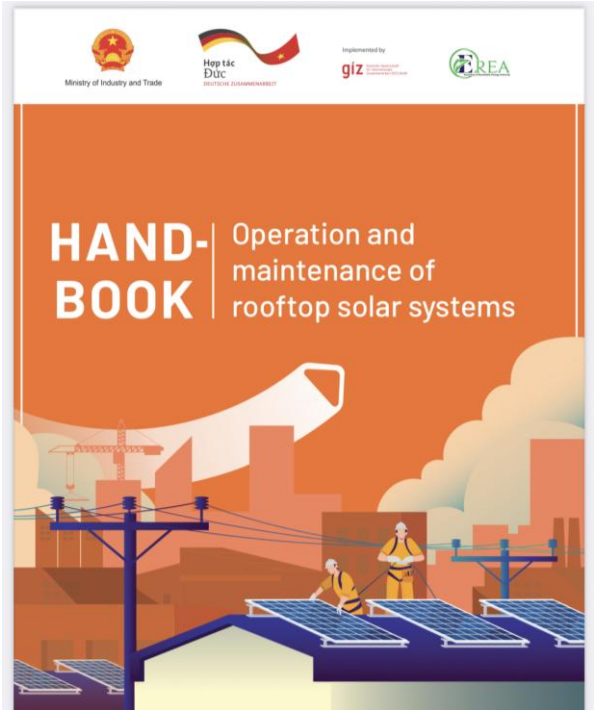
ISO CERTIFICATES



ISO 9001: 2015
Quality Management System

ISO 14001: 2015
Environmental Management System

ISO 45001: 2018
Occupational Health & Safety Management System



Acknowledgments

"Handbook for Operation & Maintenance of Rooftop Solar Systems" was compiled by the technical staffs of the "Commercial and Industrial Rooftop Solar" (CIRTS) Project.

To complete this Handbook, we have received valuable comments from investors and contractors for the construction of rooftop solar systems, especially the cooperation and input of information related to practical experiences in the operation and maintenance of rooftop solar in Viet Nam of Vu Phong Energy Group Joint Stock Company.

We would like to express our sincere thanks to the Electricity and Renewable Energy Authority / Ministry of Industry and Trade, Vietnam Electricity and colleagues at GIZ for cooperating and supporting us in the process of developing and completing the Handbook.

Scan the QR code to view the hand-book

Asset Management - Operation & Maintenance (O&M)

FOR ROOFTOP SOLAR

I. Operation and Maintenance

1. Preventive Maintenance
2. Corrective Maintenance
3. Predictive Maintenance
4. Electric Grid Management
5. Monthly Report

Optional package

- I-V test for the system
- PV module cleaning
- Power system quality assessment

II. Technical Asset Management

1. Reporting to Asset Owner
2. Warranty management
3. Ensuring regulatory compliance
4. Insurance claims

VU PHONG ENERGY GROUP ACCOMPANY PARTNERS TOWARD RE100

Rooftop Solar

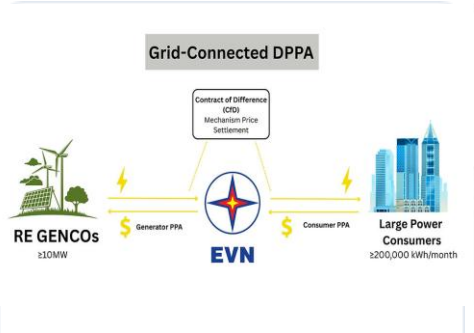
Solutions that maximize on-site electricity generation, significantly reduce Scope 2 emissions, and lower energy costs.

iREC & EKOenergy

Deployment of International Renewable Energy Certificates (iRECs) and EKOenergy ecolabels to validate green credentials and ensure global compliance.

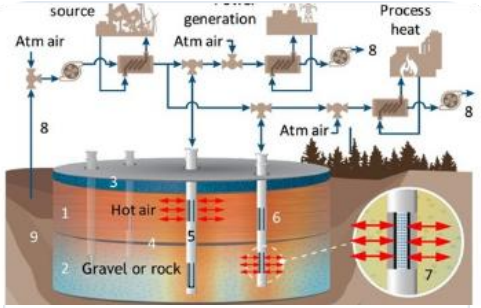
BESS Integration

Deployment of Battery Energy Storage Systems (BESS) to stabilize grid supply, enable load shifting, and expand access to renewable energy outside daylight hours.



DPPA Implementation

Leveraging Direct Power Purchase Agreements (DPPA) to access large-scale off-site renewable energy through the national grid, bridging the gap to 100% renewable energy.



Heat Storage

Pioneering research into thermal energy storage solutions to decarbonize industrial heating processes and usher in a new era of energy efficiency.

THANK YOU

Website

vuphong.vn

vuphong.com

Social media platforms

/company/vuphongenery/

/vuphongenergy/

/VuPhongEnergy/

/@vuphongenergy/

/VuPhongEnergy/

VUPHONG® SINCE 2009 Energy Group

RENEWABLE ENERGY
TWIN TRANSITION AND NET-ZERO

111 Lot 1, Group 11, Dong An 3, Binh Hoa, Thuan An, Binh Duong, Vietnam

1800 7171 / (+849) 1800 7171

hello@vuphong.com

SCAN THE QR CODE TO SEE MORE PROJECTS.

ORGANIZER

HAUHOUSE Engineering & Construction

SPONSOR

WWF H&M BAJ VUPHONG SINCE 2009 Energy Group

ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

Ha Noi, 4th December 2025

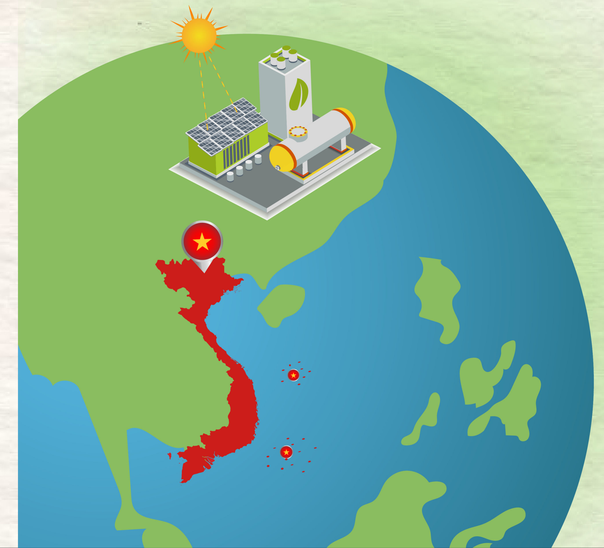
Ms. Anna Zhan

Public Affairs Program Lead

H&M Group

Ms. Anna Zhan

ELECTRIFICATION AND ISSUES OF EMISSION REDUCTION ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT



ELECTRIFYING THE APPAREL SUPPLY CHAIN

A DECARBONIZATION CASE STUDY

ĐIỆN KHÍ HÓA CHUỖI CUNG ỨNG NGÀNH MAY MẶC

NGHIÊN CỨU ĐIỂN HÌNH VỀ GIẢM PHÁT THẢI CACBON

DECEMBER 2025

1 H&M GROUP OVERVIEW
TỔNG QUAN VỀ TẬP ĐOÀN H&M


H&M


COS


WEEKDAY


CHEAP
MONDAY


MONKI


H&M HOME


& other Stories


ARKET

H&M Group at a glance
Tổng quan về tập đoàn H&M

4,200
stores
cửa hàng

78
markets
thị trường

22 billion USD
net sales
doanh thu ròng đạt

2017
Opened first store in Vietnam
Mở cửa hàng đầu tiên tại Việt Nam

20+
Years sourcing from Vietnam
Đã có nguồn cung ứng tại Việt Nam hơn 20 năm

syre

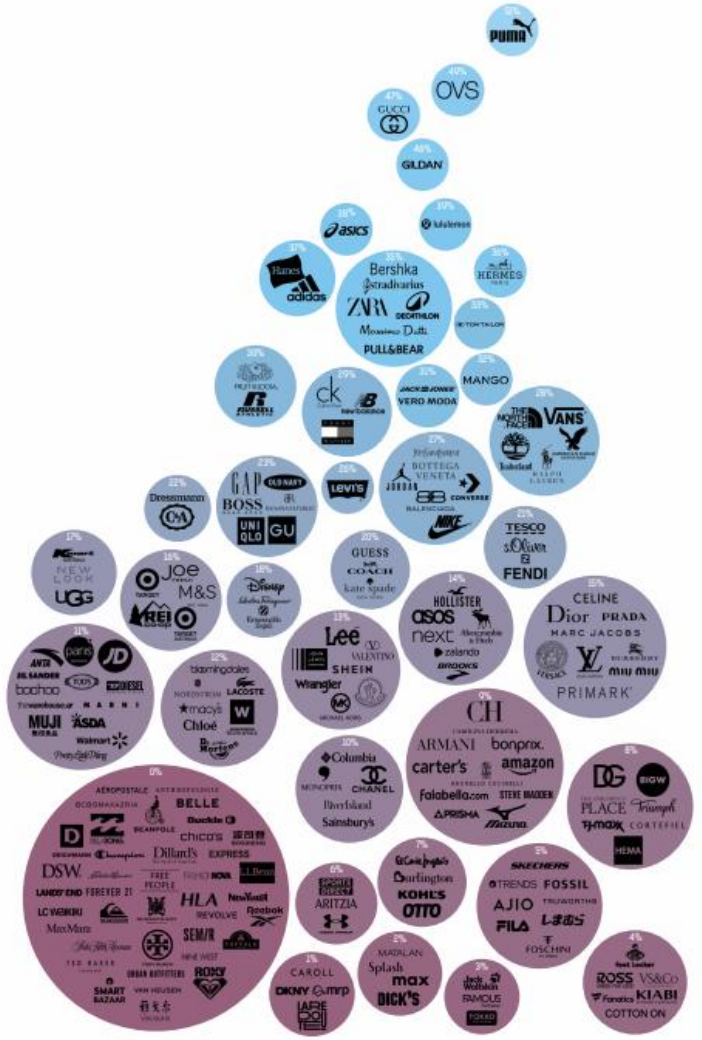
USD 1 bn investment in a recycling plant in Gia Lai by 2028
Đầu tư 1 tỷ đô la Mỹ vào nhà máy tái chế tại Gia Lai vào năm 2028

STAND.EARTH
FOSSIL FREE FASHION SCORECARD

Scope 1 - 3 Emissions Targets Alignment

FASHION REVOLUTION
WHAT FUELS FASHION?

RESULTS
OVERALL SCORE PER BRAND



2 DECARBONIZING OUR PRODUCTION
GIẢM PHÁT THẢI CACBON TRONG QUY TRÌNH SẢN XUẤT

Climate targets aligned with science
Các mục tiêu khí hậu phù hợp với cơ sở khoa học

Reduce absolute scope 1, 2 and 3 GHG emissions by 56% by 2030
Giảm 56% lượng khí nhà kính (GHG) tuyệt đối ở phạm vi 1, 2 và 3 vào năm 2030

Reach net-zero by 2040
Đạt mức phát thải ròng bằng 0 vào năm 2040

-41%
reduction in scope 1 & 2 emissions from 2019 baseline
Giảm 41% lượng khí nhà kính thuộc phạm vi 1 & 2 so với năm cơ sở 2019

-24%
reduction in scope 3 emissions from 2019 baseline
Giảm 24% lượng khí nhà kính thuộc phạm vi 3 so với năm cơ sở 2019

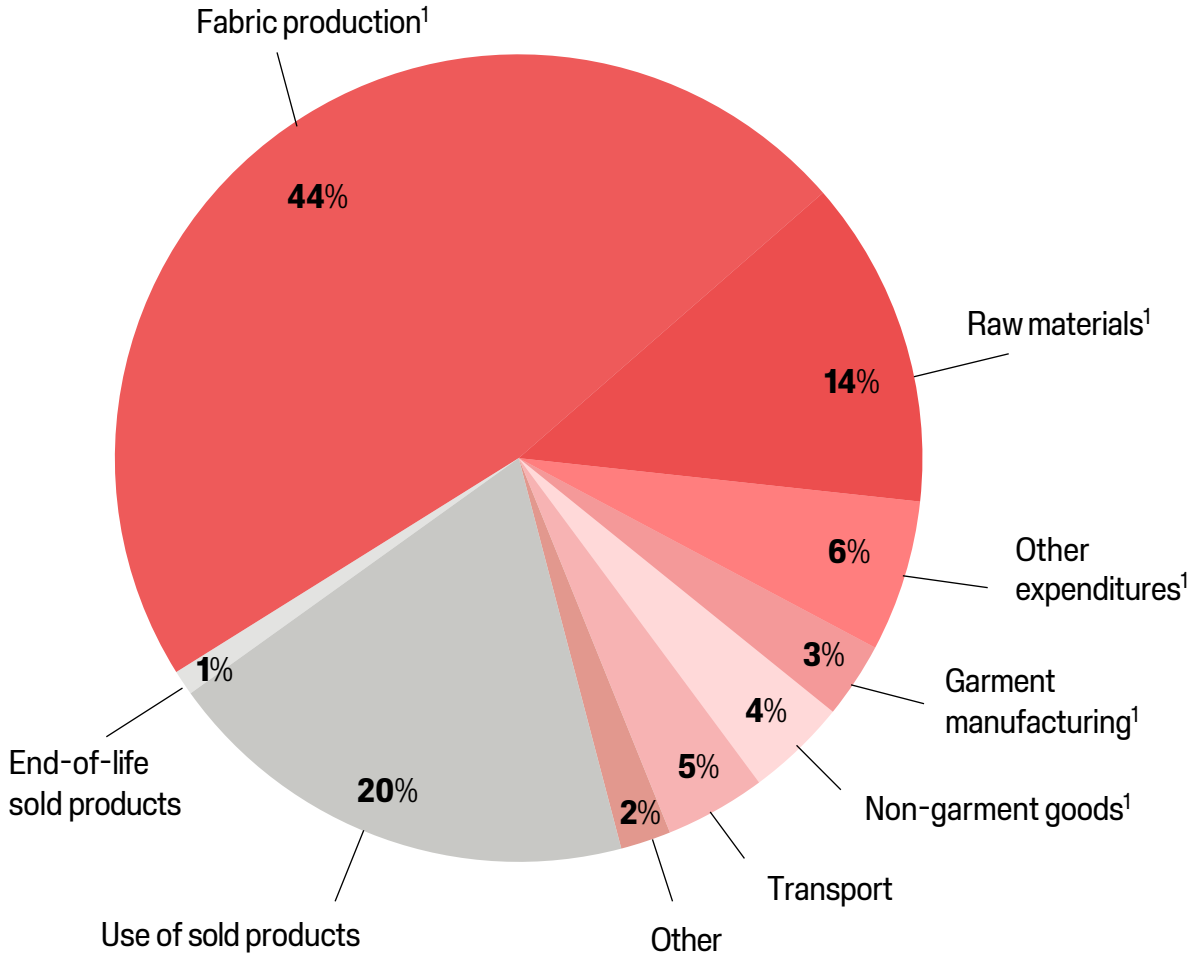
Where do we have the biggest climate impact?
Những lĩnh vực nào gây tác động khí hậu lớn nhất?

Scope 3: 80% of our total GHG emission
Phát thải khí nhà kính thuộc phạm vi 3 chiếm đến 80% tổng lượng phát thải

— **Fabric and garment production: 47% of Scope 3 GHG emissions**
Sản xuất vải và may mặc : chiếm 47% lượng phát thải khí nhà kính (GHG) thuộc phạm vi 3

— **Fabric, garment production, raw materials, transport, other: 78% of Scope 3 GHG emissions**
Sản xuất vải, may mặc, nguyên liệu thô, vận chuyển và các yếu tố khác: chiếm 78% lượng phát thải khí nhà kính (GHG) thuộc phạm vi 3

SCOPE 3 GHG EMISSIONS
PHÁT THẢI KHÍ NHÀ KÍNH THUỘC PHẠM VI 3



1. GHG Protocol category 1: purchased products.

Decarbonizing in the right order
Giảm phát thải cacbon theo trình tự hợp lý

OBTAIN TRACEABILITY & DATA
Khả năng truy xuất nguồn gốc và dữ liệu

IMPROVE ENERGY EFFICIENCY
Nâng cao hiệu quả sử dụng năng lượng

PURCHASE RENEWABLE ELECTRICITY
Sử dụng năng lượng tái tạo

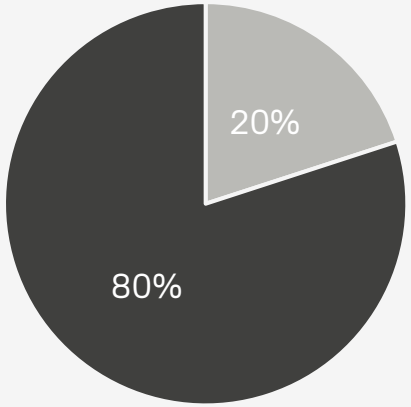
PHASE OUT ON-SITE COAL BY 2026
Loại bỏ than trước năm 2026

INCREASE ELECTRIFICATION
Đẩy mạnh điện khí hóa

Electrification will increase renewable electricity demand
Điện khí hóa làm tăng nhu cầu về năng lượng tái tạo

TODAY
KỊCH BẢN HIỆN TẠI

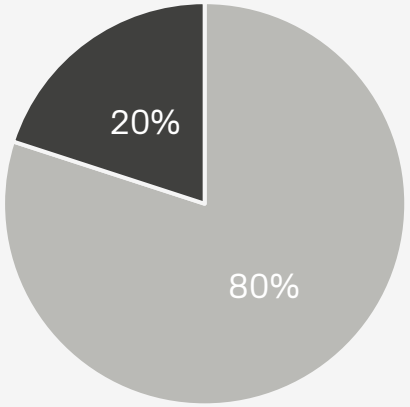
Energy use (MJ)
Năng lượng sử dụng (MJ)



Electricity Heating and others

FUTURE SCENARIO
KỊCH BẢN TƯƠNG LAI

Energy use (MJ)
Năng lượng sử dụng (MJ)



Electricity Heating and others

3 CASE STUDIES
NHỮNG NGHIÊN CỨU ĐIỂN HÌNH

Electrification pilots in China
Các dự án thí điểm điện khí hóa tại Trung Quốc

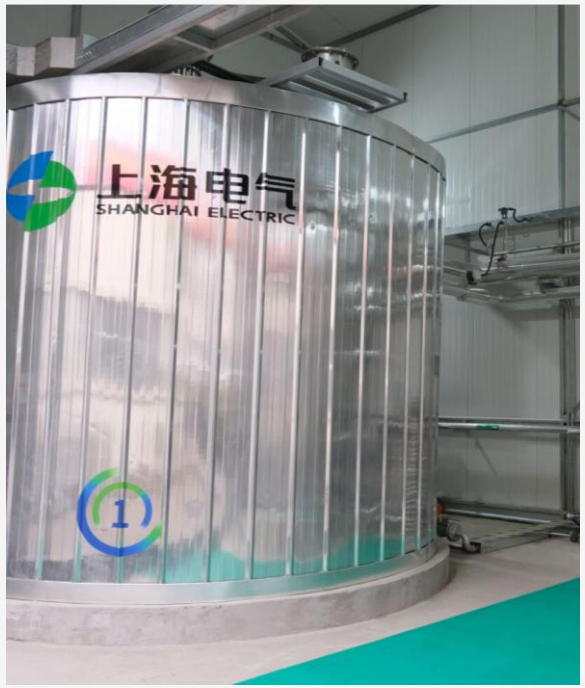
WATER HEAT PUMP
BƠM NHIỆT SINH NƯỚC NÓNG

Recover waste hot water to save 25% purchased steam in a textile dyeing factory (Jiangsu)
Thu hồi nước thải nóng tiết kiệm 25% lượng hơi mua ở một nhà máy dệt nhuộm (Giang Tô)

STEAM HEAT PUMP
BƠM NHIỆT SINH HƠI

First steam heat pump application in a textile dyeing facility to replace purchased steam (Zhejiang)
Ứng dụng đầu tiên trong sử dụng bơm nhiệt sinh hơi để thay thế hơi mua tại một cơ sở dệt nhuộm (Chiết Giang)

HEAT STORAGE
LƯU TRỮ NHIỆT



First commercial application of molten salt heat storage system in a garment factory (Jiangsu)
Ứng dụng thương mại đầu tiên của hệ thống lưu trữ nhiệt muối nóng chảy tại một nhà máy may mặc (Giang Tô)

HEAT STORAGE + HEAT PUMP
KẾT HỢP LƯU TRỮ NHIỆT VÀ BƠM NHIỆT

Heat storage coupled with heat pump replace steam from natural gas boiler at garment factory (Shanghai)
Lưu trữ nhiệt kết hợp với bơm nhiệt thay thế hơi nước tạo ra từ lò hơi khí đốt tự nhiên tại một nhà máy may mặc (Thượng Hải)

Vietnam's first heat pump pilot project
Dự án thí điểm máy bơm nhiệt đầu tiên tại việt nam

WWF, H&M Group, Apparel Impact Institute and leading supplier Bangjie to pioneer the apparel industry's first fully electrified heat pump installation

WWF, Tập đoàn H&M, Apparel Impact Institute và Bangjie nhà cung cấp hàng đầu tiên phong triển khai hệ thống máy bơm nhiệt điện hóa hoàn toàn đầu tiên trong ngành may mặc

HUNG YEN, VIET NAM

WWF

apparel impact institute

H&M

H&M

4 LOOKING AHEAD
ĐỊNH HƯỚNG SẮP TỚI

Electrification emerges as a pivotal strategy for decarbonizing Viet Nam's industrial heat, potentially cutting sectoral emissions by 40–60% by 2030 while sustaining economic growth

Điện khí hóa nổi lên như một chiến lược then chốt để giảm thiểu phát thải cacbon cho ngành công nghiệp sử dụng nhiệt của Việt Nam, có khả năng giảm phát thải ngành từ 40–60% vào năm 2030 đồng thời duy trì tăng trưởng kinh tế

Enablers for electrification scale-up
Các yếu tố hỗ trợ mở rộng quy mô điện khí hóa

Accelerating the adoption of electrified technologies in light industries
Đẩy nhanh việc áp dụng công nghệ điện khí hóa trong các ngành công nghiệp nhẹ

To create a foundation for low-carbon, resilient and competitive industry in the long-term
Tạo nền tảng cho ngành công nghiệp ít phát thải carbon có khả năng phục hồi và cạnh tranh trong dài hạn

RENEWABLE ENERGY
→Stable supply
→DPPA

STABLE ELECTRICITY GRID
→Transmission
→Capacity

FINANCIAL INCENTIVES
→Investment subsidies
→Attractive business case

NĂNG LƯỢNG TÁI TẠO
→Nguồn cung ổn định
→DPPA

LƯỚI ĐIỆN ỔN ĐỊNH
→Truyền tải
→Công suất

ƯU ĐÃI TÀI CHÍNH
→Hỗ trợ tài chính cho đầu tư
→Trợ cấp


THANK YOU!
CẢM ƠN!

ORGANIZER

HAUHOUSE Engineering & Construction

SPONSOR

WWF H&M BAJ VUPHONG SINCE 2009 Energy Group

ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

Ha Noi, 4th December 2025

Mr. Hau Bui

Chief Executive Officer

Hauhouse Co.,Ltd

Mr. Hau Bui

APPLICATION OF STEAM HEAT PUMP TECHNOLOGY COMBINED WITH WASTE HEAT RECOVERY IN THE TEXTILE INDUSTRY

HAUHOUSE
Engineering & Construction

APPLICATION OF STEAM HEAT PUMP TECHNOLOGY COMBINED WITH WASTE HEAT RECOVERY IN THE TEXTILE INDUSTRY

www.hauhouse.com
info@hauhouse.com

1. OVERVIEW

HAUHOUSE
Engineering & Construction

2. TRANSITION POTENTIAL

HAUHOUSE
Engineering & Construction

01

Technologies & engineering solutions are ready and localized

02

Process heat demand is mostly below 150°C

03

Efficiency of existing equipment remains low

Transition Potential

04

Increasing pressure on emissions reduction

05

Pressure to reduce labor intensity and operating costs

06

Supportive policies available from departments and brands

3. ENERGY SAVING SOLUTIONS

HAUHOUSE
Engineering & Construction

ENERGY RECOVERED FROM WASTE HOT WATER

Waste hot water temperature up to 90 °C

ENERGY RECOVERED FROM CONDENSATE WATER

Condensate water flow rate ~ 2.000 L/h; temperature up to 98 °C

ENERGY SAVING AFTER THERMAL INSULATION

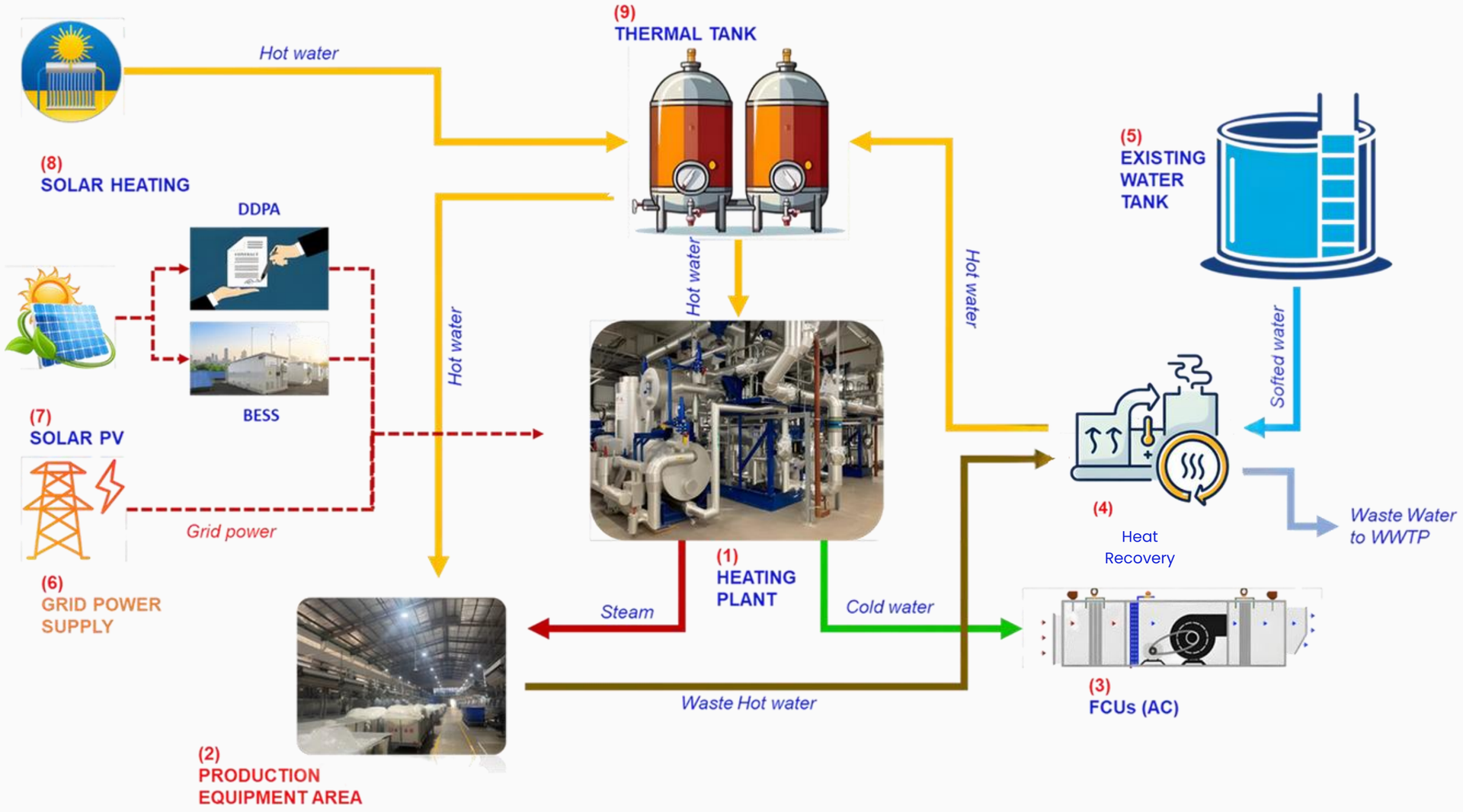
- Heat energy emitted from dyeing machine, pipes, valves before insulation
- Heat energy emitted from the dyeing machine, pipes, valves after insulation

SOLAR HEAT TUBE

TOTAL ENERGY SAVINGS
~1 Ton of steam per hour
~30% Steam Demand

4. ALTERNATIVE SOLUTIONS

HAUHOUSE
Engineering & Construction



5. BENEFITS

HAUHOUSE
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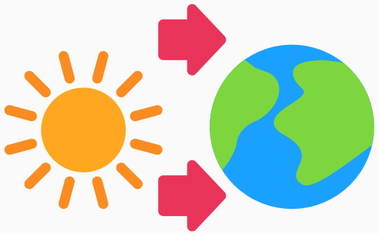
Optimize
Operating Costs

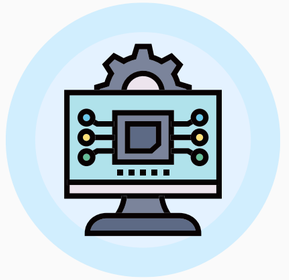
Reduce Emissions



Improve Thermal
Efficiency

Heat Recovery

Towards A
Green Factory



Smart System

HAUHOUSE
Engineering & Construction

THANK YOU

0907 136 388

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10 Pho Quang, Tan Son Hoa Ward, HCMC

ORGANIZER

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ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

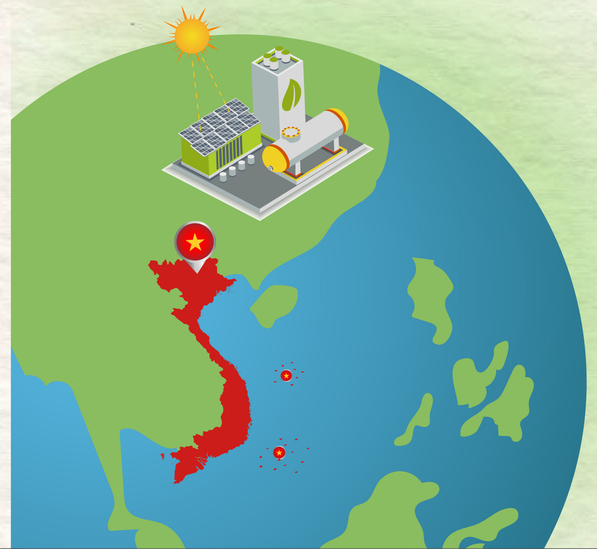
Ha Noi, 4th December 2025

Mr. An Zhou

VP of Technology
Apparel Impact Institute

Mr. An Zhou

POWERING NET-ZERO TEXTILES WITH APPAREL IMPACT INSTITUTE



apparel impact institute

Powering Net-Zero Textiles with Aii Integrated Approach

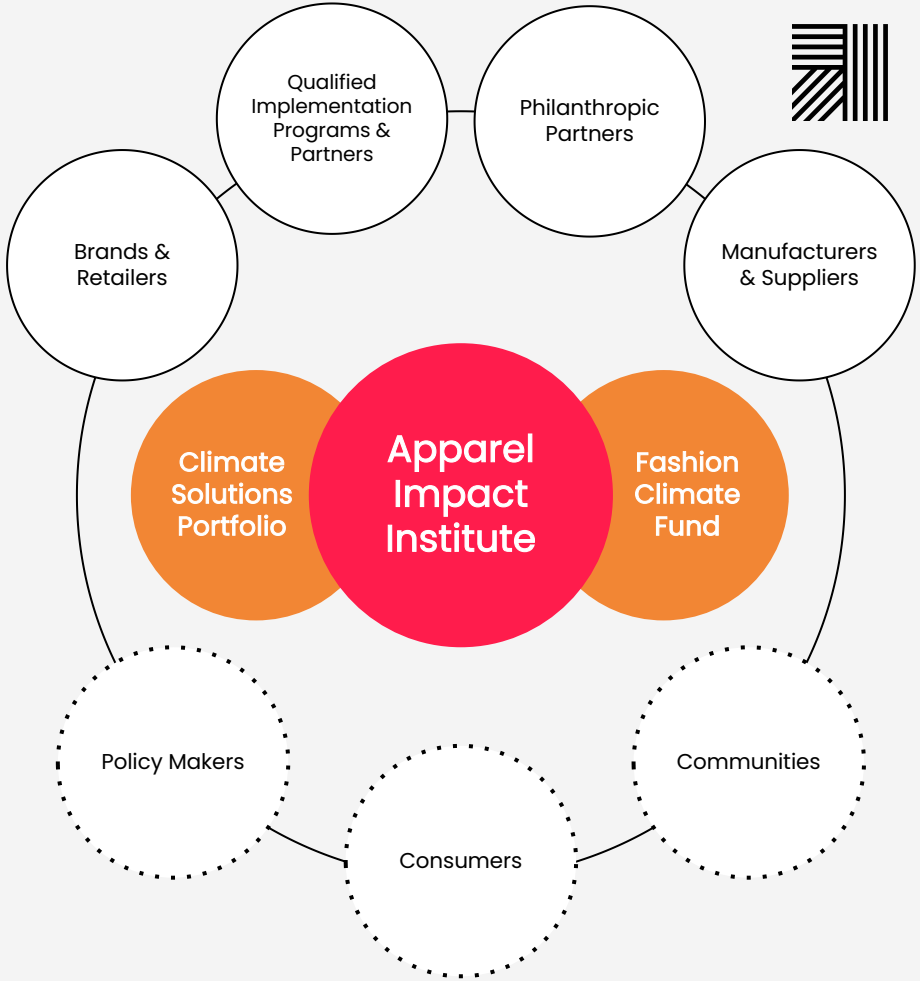
AN ZHOU
VP of Technology, Aii
December 2025


who we are

Aii's Role

Apparel Impact Institute is a global nonprofit, registered in the US, whose mission is to **identify, fund, scale and measure** positive impact for the textile, apparel and footwear industry's supply chain.

As a leading industry convener, we can align industry leaders around the biggest opportunities to urgently act on production facilities' decarbonization efforts.



Our Vision & Mission

OUR *VISION*

A transformed apparel, footwear, and textile industry that has a positive impact on people and the planet.

OUR *MISSION*

We identify, fund, scale, and measure proven quality solutions to accelerate positive impact in the industry.

IDENTIFY

We use verified data to identify programs and solutions that are poised to have a significant impact on industry carbon emissions.

FUND

We aggregate existing resources and attract new ones to build a pipeline of scalable impact in the industry.

SCALE

We remove barriers to accelerate the implementation of proven solutions.

MEASURE

We ingest, analyze, and report critical data to move our partners closer to their climate targets.

Our Reach

1,261

producers started or completed an Aii program since 2018.

9,689

farms started or completed an Aii program through 2024.

38

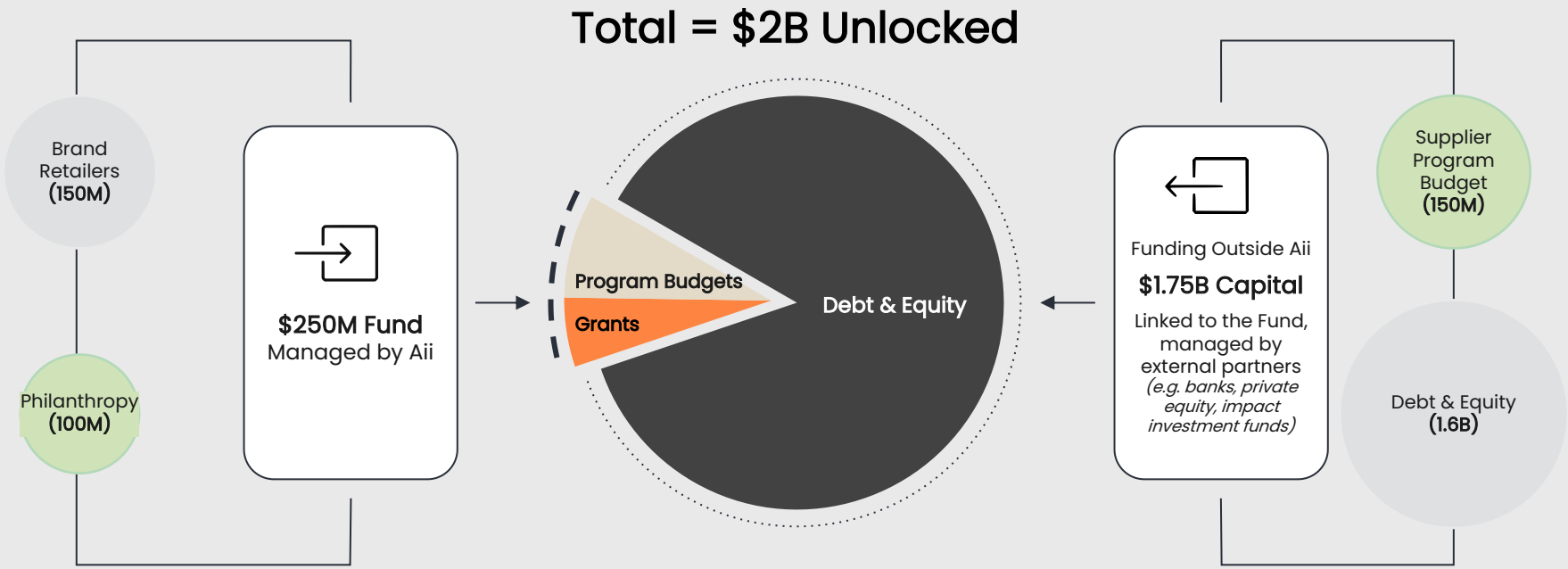
brands partnered with Aii in 2024.

21

Implementation partners and **solution providers** offered in-region, specialized knowledge to support Aii programming.


Aii funding &
technical support

We're Committed to Unlocking $2B



Philanthropic & Government Grants

Brands & Retailers

Supply Chain

Banks, Private Equity, Impact Investing

Aii Has Several Financial Tools to Support Implementation

Step 1 Feasibility Financing

Brand programmatic funding is needed to support supplier feasibility studies to generate decarbonization pipeline for DGG eligible projects.

Step 2 Project CapEx Funding

Climate Solutions Portfolio Grant

Supports pilot projects . Encourages first movers to de-risk technologies.

Deployment Gap Grant

Brings a high return on investment for high impact projects down to 2 years.

Pooled Loan Guarantee

Reduces lender risk via brand/philanthropic guarantees. Enables supplier access to loans by easing collateral and improving terms.

Blended Finance

Combines grants with private capital for suppliers seeking grant support in addition to better financing terms.

Our Funding Priorities

Thematic Priority Area	Technologies / Solutions
Solutions that reduce reduce process demand for energy	Countercurrent rinsing, efficient (low liquor) jet machines
Solutions that reduce/eliminate GHG emitted from generating heat and electricity	Heat pumps, more efficient boilers, energy storage for industrial application
Solutions that reduce energy losses	Heat recovery from hot water, including pretreatment, dyeing, rinsing and wastewater effluent, recycling condensate heat exchangers

Aii has two grant funding opportunities: Climate Solutions Portfolio & Deployment Gap Grant

Climate Solutions Portfolio

- Supplier-focused but open to all
- Any supplier can apply
- Solutions that need pilots & demonstration
- Any solutions eligible
- Creates pipeline for DGG by vetting solutions through pilots

Deployment Gap Grant

- Suppliers linked to brands funding Aii are prioritized
- Solutions that are at commercial scale, but have return on investment >2 years
- Only Aii-vetted priority technologies

Technical Support: Renewable Energy Transition Initiative

Renewable Energy Potential Assessment

Assess the facility's potential for renewable energy applications

Design Energy Transition Roadmap

Design the implementation sequence for transition solutions and finding the optimal technical roadmap.

Lower Energy Transition Cost

Significantly reduce reliance on traditional fossil fuels and lower transition costs.

Enhance Climate Competitiveness

Effectively reduce carbon emissions, enhance corporate social responsibility

Program Output

Technical Roadmap for RE Implementation

RETI helps reduce GHG emissions by defining the best technology roadmap for improving the facility’s energy structure.

Suitable Business Model

Recommended business model for implementing renewable energy, based on the results of roadmap analysis.

Implementation Support

Provide implementation support, and connect with specific service providers to ensure the plan's successful execution from design to vendor selection to implementation.

Actual GHG Emission Reduction

Aii works with the expert team to implement renewable energy technologies in factories, effectively reducing carbon emissions.


Case Studies

Bangjie Climate Solutions Portfolio Funding

Clean Thermal- Heat Pump

- Bangjie applied for a grant to install a industrial heat pump to replace biomass thermal energy
- Aiming to achieve immediate reductions in fuel consumption and CO_2 emissions

Aii's Grant Funding

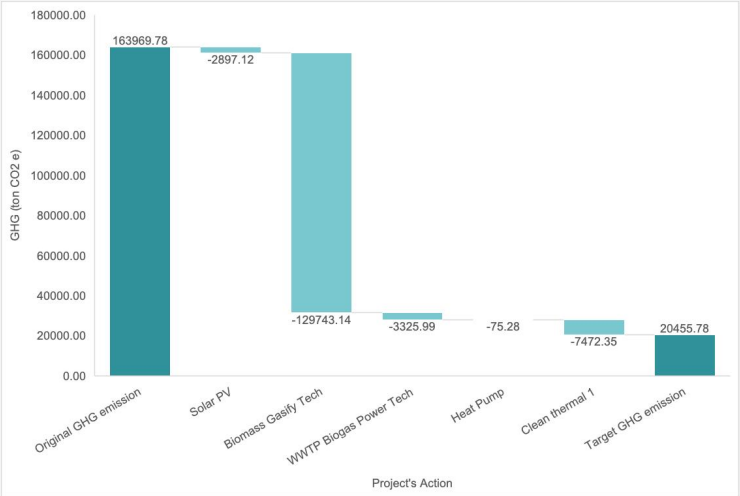
Reduces upfront CAPEX burden and accelerates implementation

Accelerated Decarbonization Pathway

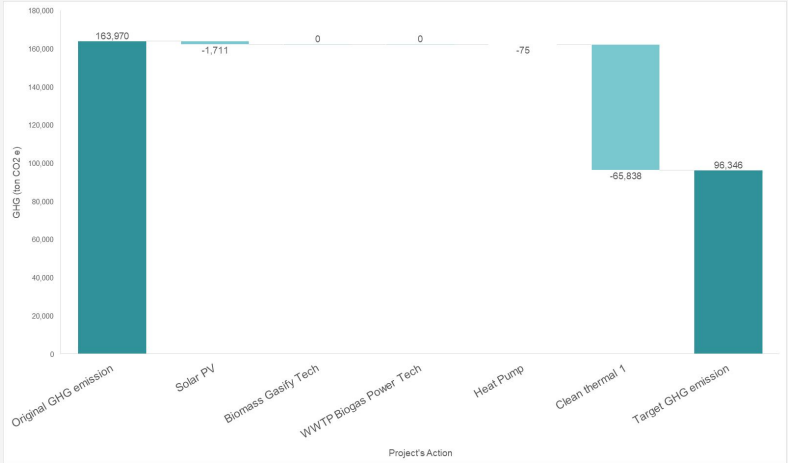
- Faster adoption of high-impact thermal technologies
- Reduced payback time and improved financial feasibility
- Creates a replicable model for other textile suppliers

Renewable Energy transition Initiaitve Case Study China

Saving Potential: approximately 140,000 tons, reducing about 88% of the original carbon emissions.



Actual Saving: approximately 70,000 tons of CO2, reducing about 42% of the original carbon emissions, reaching nearly half of the initial target.



The implementation of the RETI effectively helps the factory identify renewable energy technologies with potential and generates significant carbon reduction impact.

questions?

thank you

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ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

Ha Noi, 4th December 2025

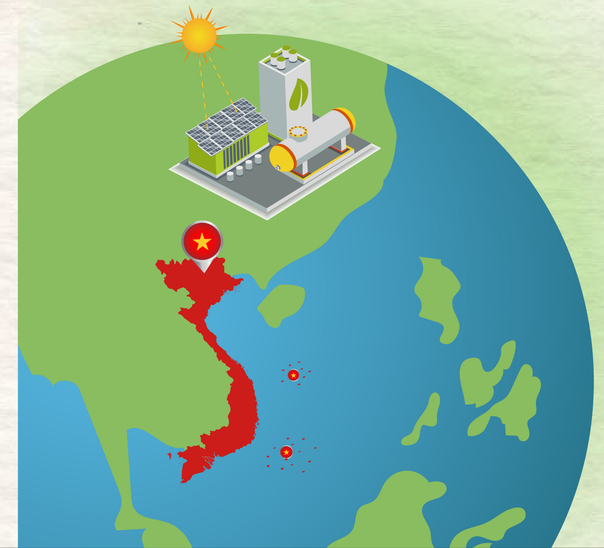
Mr. Wang Ji Shan

Deputy General Director

Bangjie Knitting (Viet Nam)

Mr. Wang Ji Shan

ELECTRIFYING THE APPAREL SUPPLY CHAIN
A DECARBONIZATION CASE STUDY



BANGJIE KNITTING (VIET NAM) COMPANY LIMITED
棒 杰 针 织 （ 越 南 ） 有 限 公 司

Introduction to Bangjie (Viet Nam)

Update： December, 2022

目录

Content

Three Global Operation Sites

Business Mission

Provide innovative apparel supply chain service with competitive price and optimal lead time.

BAJ Strength

§ Vertically integrated supply chain

- data driven, eco-smart covered yarn mill / dyeing mill/sewing factory & ware house
- customized manufacturing platform, quick to react
- can well accommodate customers' growing business needs- capacity, talents, equipments, and investment.

§ Design & development center

- state nominated R&D
- owned 40 patents
- ODM service to global brands if needed

BAJ Strength

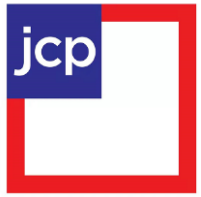
- 750 sets state-of-art Santoni machines
- Huge capacity - Yiwu (450 sets)，Shanxi (200 sets), Vietnam (100 sets)
- Close cooperative relationships with world renowned yarn, trim & finishing suppliers

yarn suppliers: Fulgar, Toray, Nylstar, Nilit, Lycra, hyosung , unifi;

trim suppliers: Stretchline, ITL, Avery Dennison etc.

finishing suppliers: Rudolf Group, Japan Rihua Auxiliary Company, Tanafinish

Major Customers



01
PART

公司简介

COMPANY PROFILE

棒杰针织（越南）有限公司是由棒杰国际境外投资的一家以生产无缝服装为主要业务的公司; 其座落于越南兴安省美豪县的纺织工业区，交通非常便利，离河内大约40分钟的车程，离海防港约1个小时的路程，进出口也均比较方便。

棒杰越南，主要以生产无缝服装为主营业务，拥有从织造，染色，缝制整套生产流程，为客户提供高品质的产品及快速，优质的服务。

BANGJIE KNITTING(VIETNAM) CO., LTD., invested by Bangjie International that is a seamless garment company . It is located in the textile industrial park of My Hao District , Hung Yen Province in Vietnam. The transportation is very convenient, about 40 minutes drive from Hanoi and 1 hour drive from Haiphong port. It is easy for import and export goods.

BANGJIE VIETNAM , we provide high quality product & fast response service depend on our whole process that is include knitting, dyeing & sewing production.

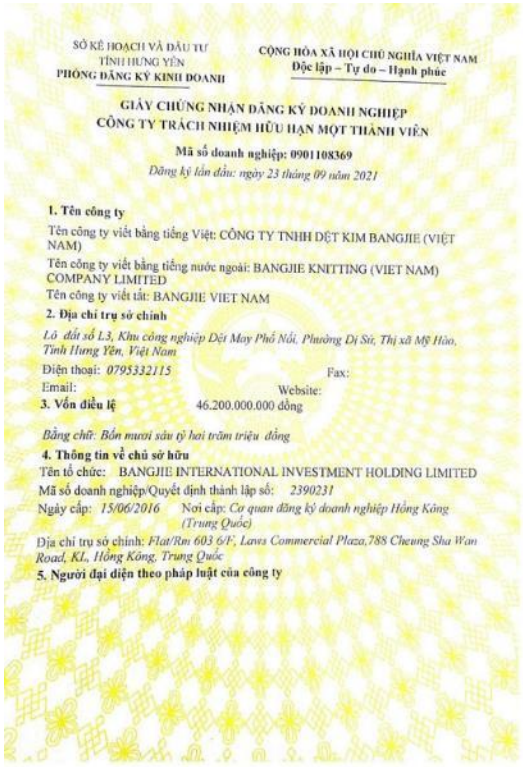
地址
Add.

越南兴安省，美豪镇，异史乡，甲街纺织L3工业区
Lot no L3, Pho Noi Textile and Garment Industrial Park, Di Su Commune, My Hao District, Hung Yen Province, Vietnam

电话
Tel

+84 0221 3900690

营业执照-Business license



SỞ KẾ HOẠCH VÀ ĐẦU TƯ
TỈNH HƯNG YÊN
PHÒNG ĐĂNG KÝ KINH DOANH

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

GIẤY CHỨNG NHẬN ĐĂNG KÝ DOANH NGHIỆP
CÔNG TY TRÁCH NHIỆM HỮU HẠN MỘT THÀNH VIÊN

Mã số doanh nghiệp: 0901108369
Đăng ký lần đầu: ngày 23 tháng 09 năm 2021

1. Tên công ty

Tên công ty viết bằng tiếng Việt: CÔNG TY TNHH DỆT KIM BANGJIE (VIỆT NAM)

Tên công ty viết bằng tiếng nước ngoài: BANGJIE KNITTING (VIET NAM) COMPANY LIMITED

Tên công ty viết tắt: BANGJIE VIET NAM

2. Địa chỉ trụ sở chính

Lô đất số L3, Khu công nghiệp Dệt May Phố Nối, Phường Dị Sử, Thị xã Mỹ Hào, Tỉnh Hưng Yên, Việt Nam

Điện thoại: *0795332115* Fax:

Email: Website:

3. Vốn điều lệ 46.200.000.000 đồng

Bằng chữ: Bốn mươi sáu tỷ hai trăm triệu đồng

4. Thông tin về chủ sở hữu

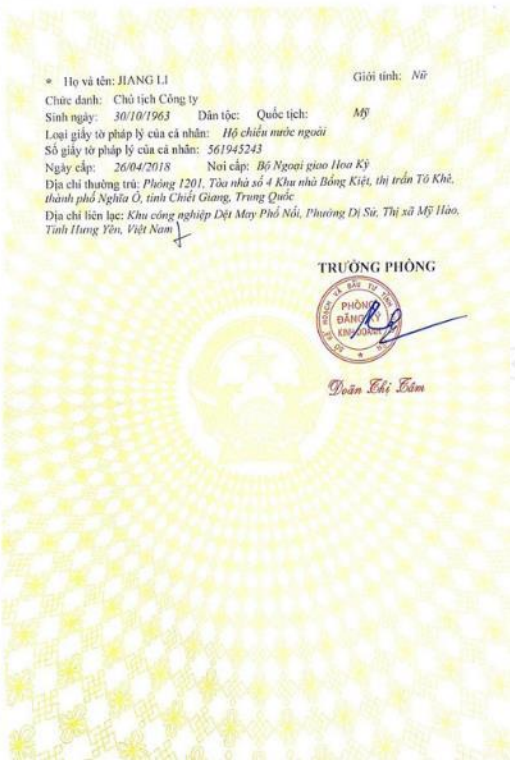
Tên tổ chức: BANGJIE INTERNATIONAL INVESTMENT HOLDING LIMITED

Mã số doanh nghiệp/Quyết định thành lập số: *2390231*

Ngày cấp: *15/06/2016* Nơi cấp: *Cơ quan đăng ký doanh nghiệp Hồng Kông (Trung Quốc)*

Địa chỉ trụ sở chính: *Flat/Rm 603 6/F, Laves Commercial Plaza,788 Cheung Sha Wan Road, KL, Hồng Kông, Trung Quốc*

5. Người đại diện theo pháp luật của công ty



Họ và tên: JIANG LI Giới tính: *Nữ*

Chức danh: Chủ tịch Công ty

Sinh ngày: *30/10/1963* Dân tộc: Quốc tịch: *Mỹ*

Loại giấy tờ pháp lý của cá nhân: *Hộ chiếu nước ngoài*

Số giấy tờ pháp lý của cá nhân: *561945243*

Ngày cấp: *26/04/2018* Nơi cấp: *Bộ Ngoại giao Hoa Kỳ*

Địa chỉ thường trú: *Phòng 1201, Tòa nhà số 4 Khu nhà Bồng Kiệt, thị trấn Tô Khê, thành phố Nghĩa Ô, tỉnh Chiết Giang, Trung Quốc*

Địa chỉ liên lạc: *Khu công nghiệp Dệt May Phố Nối, Phường Dị Sử, Thị xã Mỹ Hào, Tỉnh Hưng Yên, Việt Nam*

TRƯỞNG PHÒNG

Đoàn Thị Tâm

SỞ KẾ HOẠCH VÀ ĐẦU TƯ
TỈNH HƯNG YÊN
PHÒNG ĐĂNG KÝ KINH DOANH

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

GIẤY CHỨNG NHẬN ĐĂNG KÝ DOANH NGHIỆP
CÔNG TY TRÁCH NHIỆM HỮU HẠN MỘT THÀNH VIÊN
一人有限责任公司营业登记证书

Mã số doanh nghiệp/营业号: 0901108369

Đăng ký lần đầu/第一次登记: ngày 23 tháng 09 năm 202

1. Tên công ty/公司名称

Tên công ty viết bằng tiếng Việt/越文名称: CÔNG TY TNHH DỆT KIM BANGJIE (VIỆT NAM)

Tên công ty viết bằng tiếng nước ngoài/外文名称: BANGJIE KNITTING (VIỆT NAM) COMPANY LIMITED

Tên công ty viết tắt/简称: BANGJIE VIỆT NAM

2. Địa chỉ trụ sở chính/地址

Lô đất số L3, Khu công nghiệp Dệt May Phố Nối, Phường Dị Sử, Thị xã Mỹ Hào, Tỉnh Hưng Yên, Việt Nam

越南，兴安省，美豪镇，异史坊，PhoNoi 纺织工业区，L3 地块

Điện thoại/电话: 0795332115 Email/邮箱:

Website/网站:

3. Vốn điều lệ/法定资本: 46.200.000.000 đồng/越盾

Bằng chữ/大写: Bốn mươi sáu tỷ hai trăm triệu đồng/四百二亿越盾

4. Thông tin về chủ sở hữu/业主

Tên tổ chức/组织名称: BANGJIE INTERNATIONAL INVESTMENT HOLDING LIMITED

Mã số doanh nghiệp/Quyết định thành lập số/营业号: 23902310 Ngày cấp/日期: 15/06/2016

Nơi cấp/签发机关: Cơ quan đăng ký doanh nghiệp Hồng Kông (Trung Quốc)/（中国）香港营业登记机关

Địa chỉ trụ sở chính/地址: Flat/Rm 603 6/5, Laves Commercial Plaza,788 Cheng Sha Wang - Road, KL, Hồng Kông, Trung Quốc

5. Người đại diện theo pháp luật của công ty/法律公司代表人

* Họ và tên/姓名: JIANG LI Giới tính/性别: Nữ/女

Chức danh/职务: Chủ tịch Công ty/公司总裁 Sinh ngày/出生日期: 30/10/1963

Dân tộc/民族: Quốc tịch/国籍: Mỹ/美国

Loại giấy tờ pháp lý của cá nhân/个人法律证书类别: Hộ chiếu nước ngoài/外国护照

Số giấy tờ pháp lý của cá nhân/个人法律证书号: 561945243

Ngày cấp/签发日期: 26/04/2018 Nơi cấp/签发机关: Bộ Ngoại giao Hoa Kỳ/美国外交部

Địa chỉ thường trú/常住地址: Phòng 1201, Tòa nhà số 4 Khu nhà Bồng Kiệt, thị trấn Tô Khê, thành phố Nghĩa Ô, tỉnh Chiết Giang, Trung Quốc/中国，浙江省,义务市，苏溪镇，棒杰家园 4 号楼，1201 房

Địa chỉ liên lạc/联系地址: Khu công nghiệp Dệt May Phố Nối, Phường Dị Sử, Thị xã Mỹ Hào, Tỉnh Hưng Yên, Việt Nam/兴安省，美豪镇，异史坊，PhoNoi 纺织工业区。

TRƯỞNG PHÒNG/课长

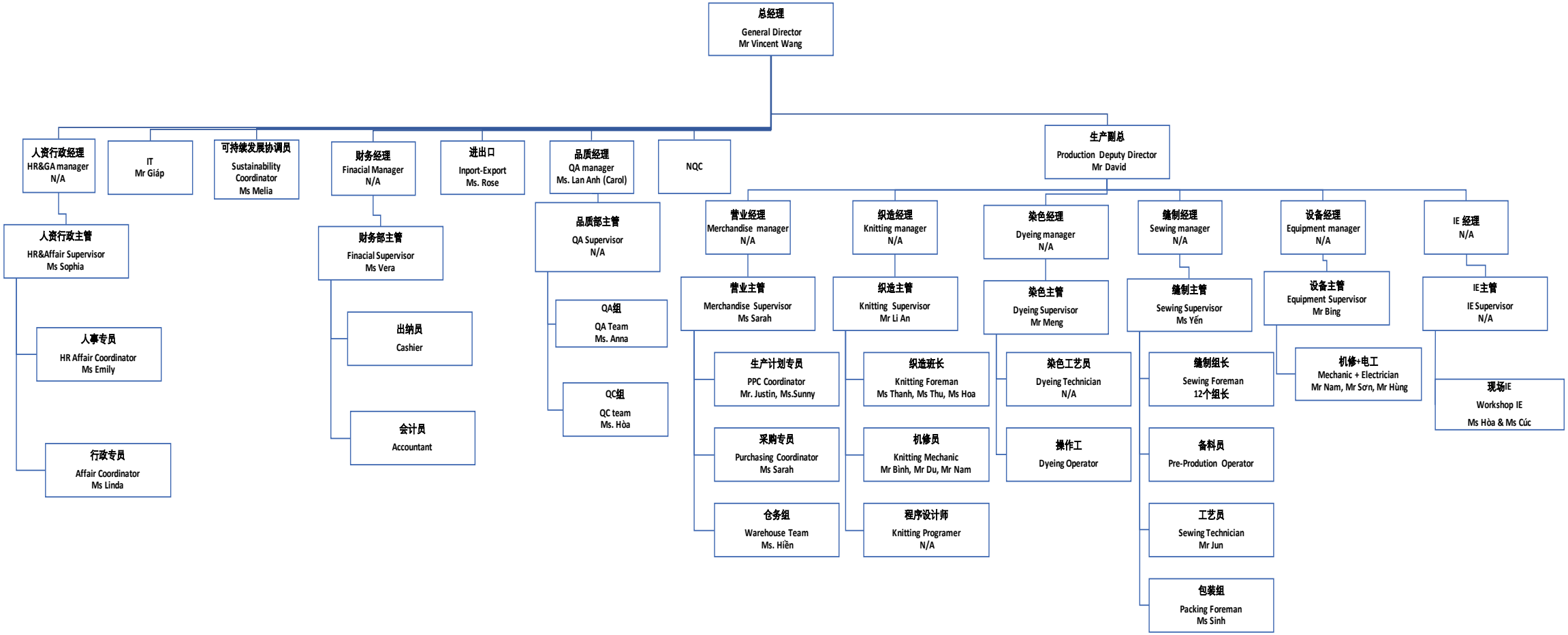
Doãn Thị Tâm/尹氏心

End of document

棒杰（越南）针织有限公司组织架构图

ORGANIZATION CHART OF BANGJIE (VIETNAM) KNITTING CO., LTD.

Date：2022-12-07



棒杰针织（越南）职员介绍 Bangjie VietNam - Staff Introduction

Name	Job	Age	E-mail	Tel.	Qualification
Vincent Wang	General Manager	47	vincentwang@bangjie.cn	+84 795332115	MBA. Total 22years working in Apparel Manufacturing
David Yau	Production	44	david.yau@bangjie.cn	+84 935489798	A total of 19 years working in Apparel Manufacturing
Lee An	Knitting Dept.	34	anlee@bangjie.cn	+84 772249866	Working in knitting industry 15 years, specifically in seamless programmes and sampling
Zheng jindong	Knitting Dept.	26		+84 782049866	Knitting technician, 4 years working experience in China factory
Guo ruijie	Knitting Dept.	29		+84 788457866	Knitting technician, 5 years working experience in China factory
Hu tongkai	Knitting Dept.	30		+84 346988656	Mechanic, focus on knitting machine and over 5 years
Meng weijiang	Dyeing Dept.	43	wj.meng@bangjie.cn	+84 763374866	Working in dyeing industry 20 years
Pan jun	Sewing Dept.	35	jun.pan@bangjie.cn	+84 787340975	Working in apparel industry 13 years, specifically technical and production
Qiu bing	Mechanic Dept.	32		+84 705508975	working in garment industry 10 years, specifically maintenance.
Ngô Thị Yến, Daisy	PMC	40	daisy.ngo@bangjie.cn	+84 982799423	Working in garment industry 17 years, specifically production planning
Hoàng Thị Lương, Sarah	Mechandising Dept.	35	sarah.luong@bangjie.cn	+84 368780322	working in garment industry 11 years, merchandising
Vũ Thị Anh	Sewing Dept.	36		+84 328658378	Working in garment industry 11 years, specifically sewing technical, sampling
Đỗ Thị Lan Anh	QA Dept.	35	carol.do@bangjie.cn	+84 346565299	Working in garment industry 13 years, specifically quality control.
Đỗ Thị Thanh Hoài	Sustainability Section	41	melia.do@bngjie.cn	+84 398155886	Working in industry 17 years; 3 years experience in audit fields and sustainability section

02
PART

项目建设进度

PROJECT SCHEDULE PROGRESS

工业区及厂房外观
Industrial & Factory Outlook

03
PART

生产流程

PRODUCTION PROCESS

生产产能
PRODUCTION CAPACITY

织造Knitting

3500KG每天，72-100台织机

3500KGS /Day, 72-100 sets cylinder machines

染色Dyeing

3500KG/每天，18-24台缸

3500KGS/Day, 18-24 sets dyeing machines

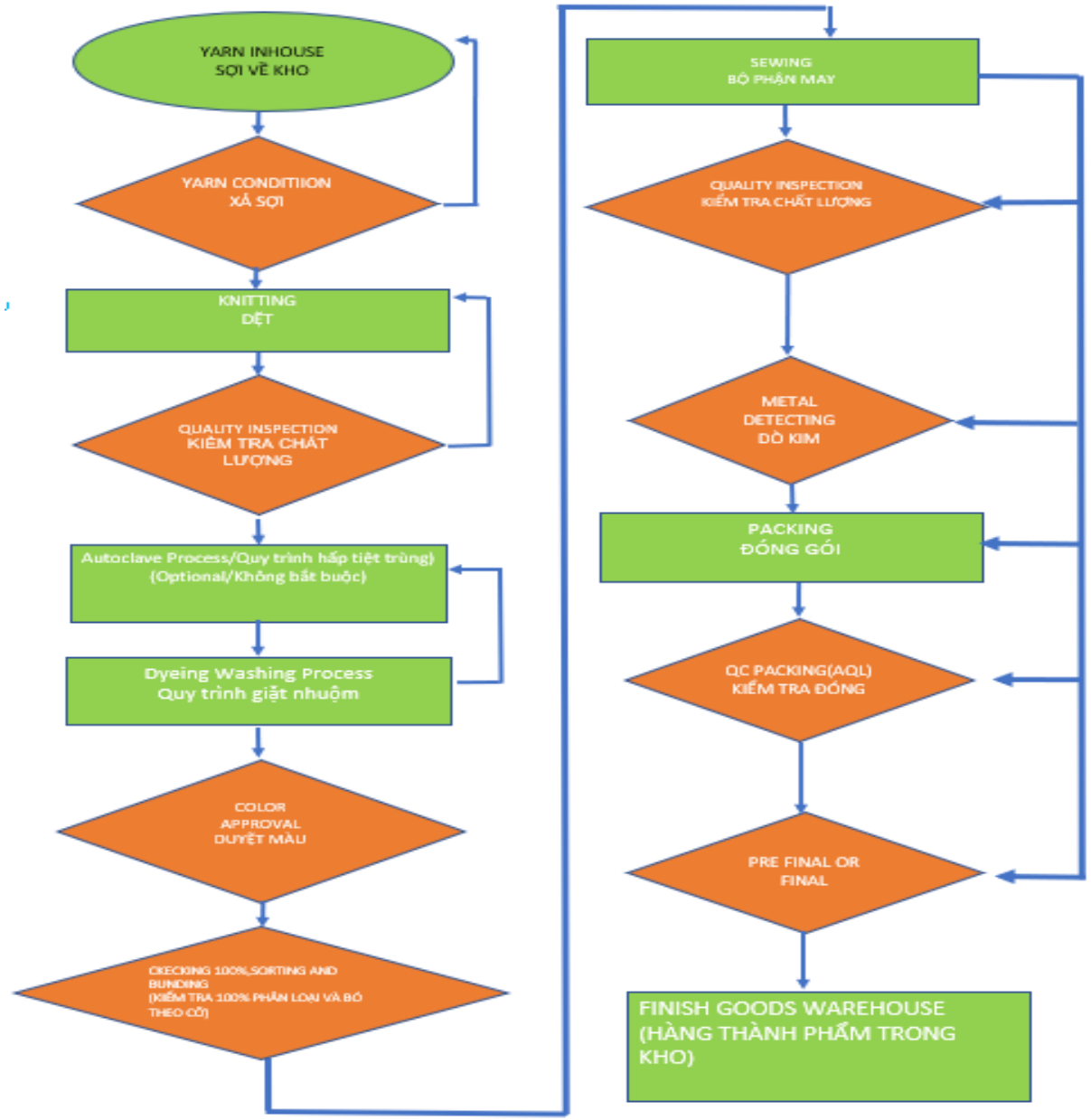
缝制 Sewing

13条线，208个工位，150-200台缝纫设备，产出

15,000-20,000Pcs /每天

13 Lines， 208 working station ,150-200 sets sewing machines, Output : 15,000-20,000pc per day

FLOW CHART OF BANGJIE PRODUCTION PROCESS



织造Knitting

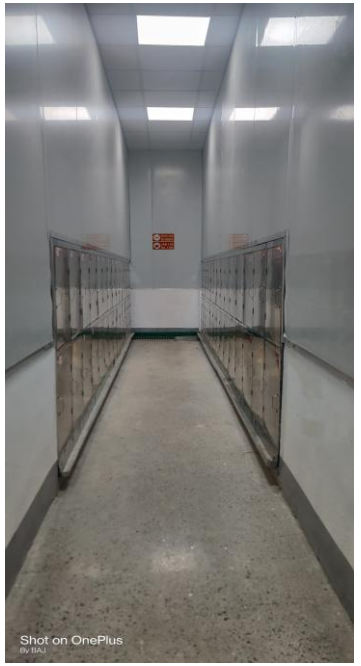
圣东尼无缝织机
Santoni Seamless Machine

2024年计划需要安装200台织机
2024 year plan to install 200 pcs knitting machines.

染色Dyeing

设备24台染缸

Twenty four sets dyeing vats

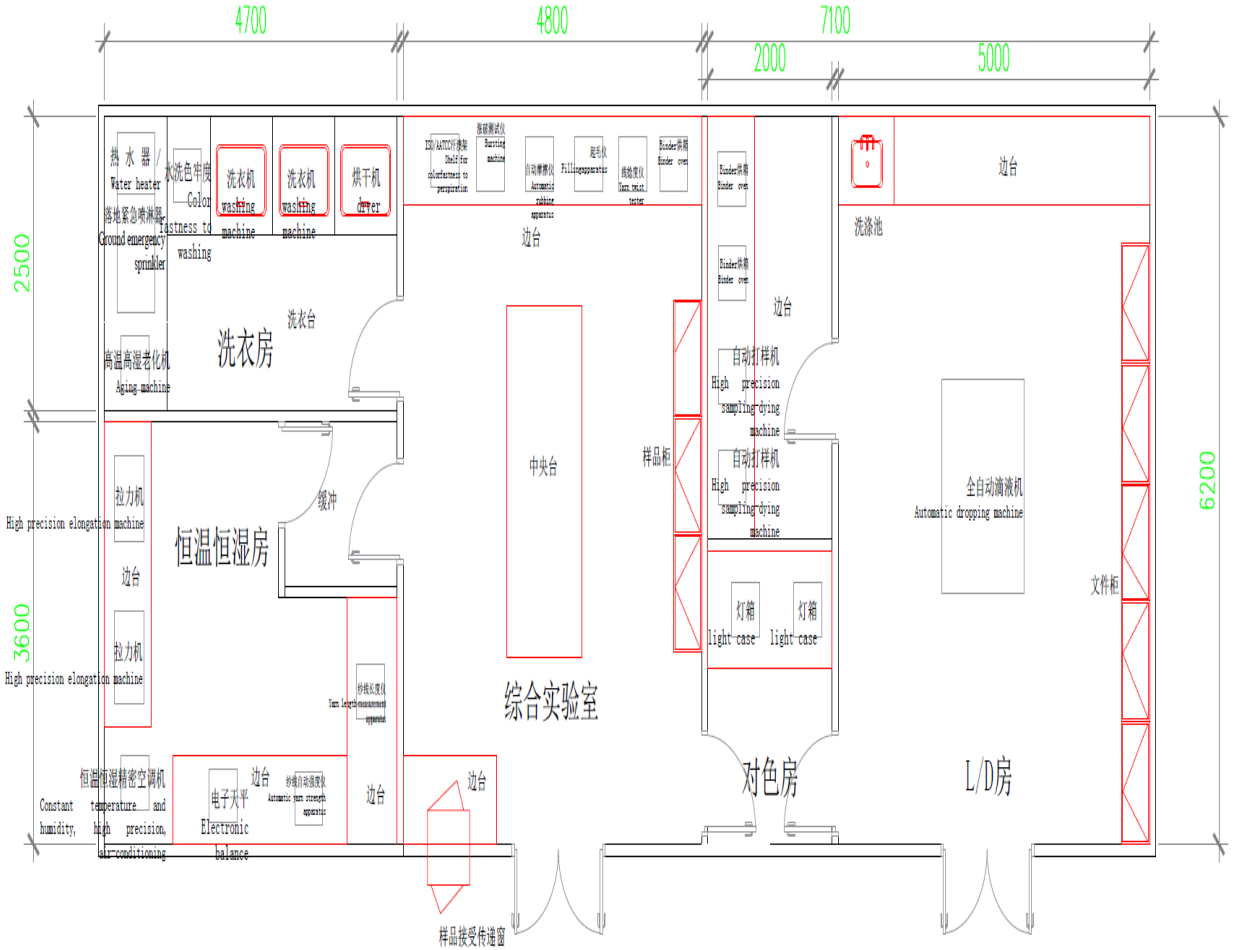


染色领料房
Chemical
Distribution area

生产流程

PRODUCTION PROCESS

实验室Lab



2023年认证实验平面布置图
Laboratory floor plan

Lab room

设立本厂内部实验室，**提供各**项化学和物理检验以确保质量

Our internal lab will support the chemical and physical testing, such as colorfastness testing, dimensional change, elongation etc, for achieve the quality request.

CETME 拉伸仪
CETME machine for the stretch testing

测试设备
Equipment of Lab test

生产流程

PRODUCTION PROCESS

自动烘干机
Automatic Dryer
is ready

Tube inspection room

所有柒料都有ZDHC&MRSL 认可, 确保产品安全, 以符合客人要求

For ensure product safety and meet customer requirements, all the chemical materials conform to ZDHC&MRSL requirements

100%筒布检验
100% tube inspection before send to sewing

03
PART

生产流程

PRODUCTION PROCESS

直驱衣车
Direct drive sewing machine

工人生产中
Sewer on production

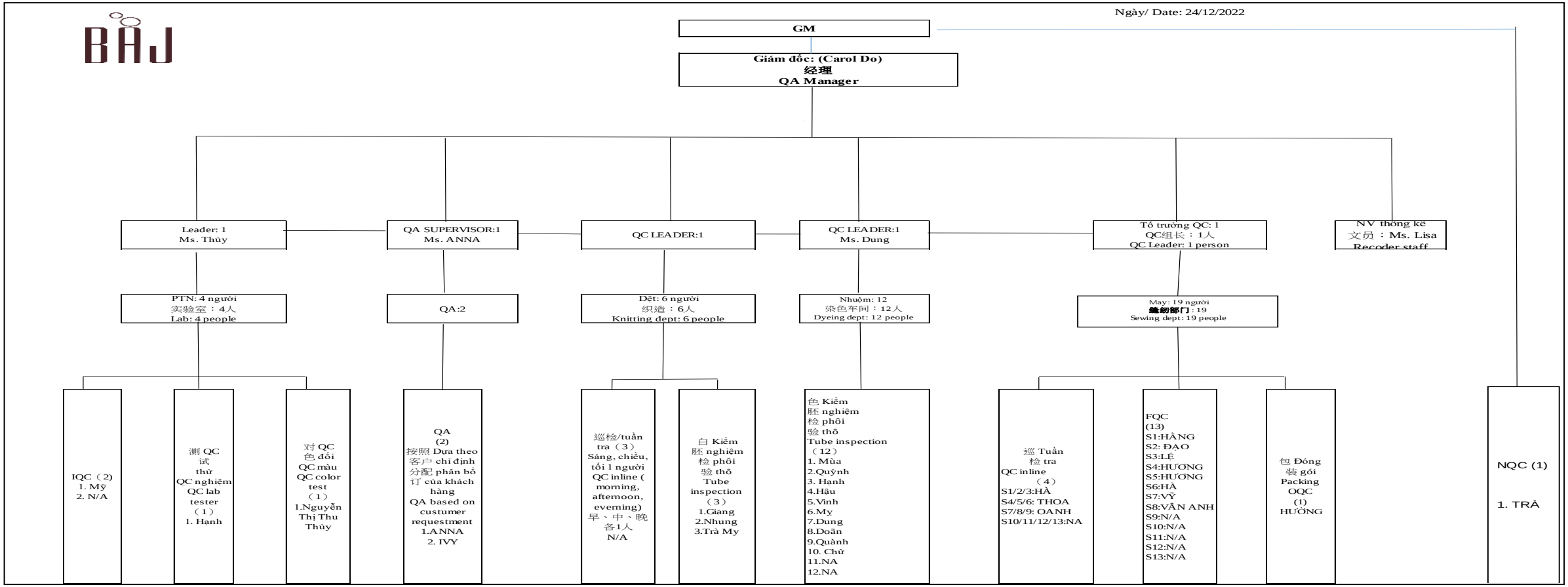
缝制 Sewing

缝纫车间已经开始运作13条线;

We are now running 13 sewing lines

车缝生产间
Sewing workshop

Organization



Quality team is independent with production, report directly to GM Vincent Wang.

- NQC leader, NQC and back up NQC.
- NQA
- QS Responsible
-

04
PART

质量控制

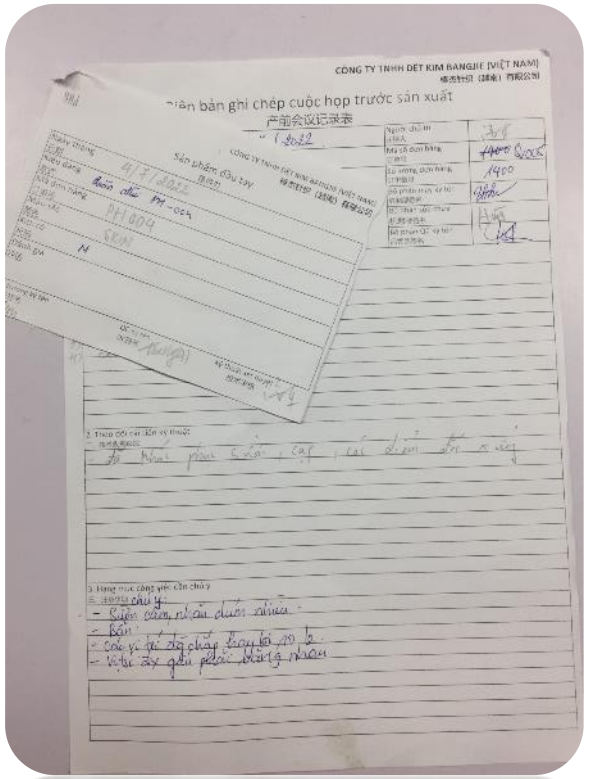
Quality Control

产前会议
Pre-production meeting

产前板和产前会议记录
PP sample and the meeting minutes

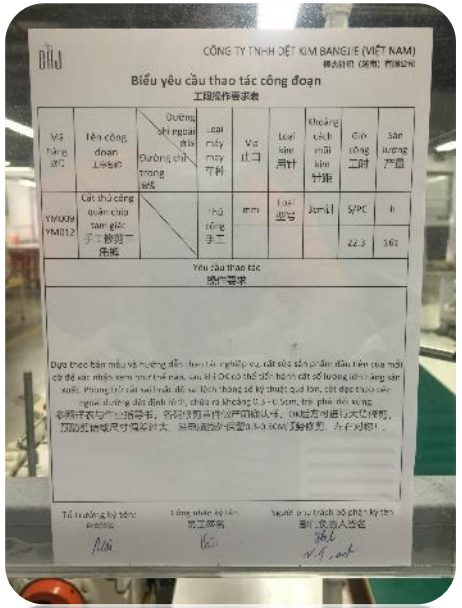
質量控制 QUALITY CONTROL

我們相当注視質量控制. 从原材料的入厂检验， 到半成品的巡检， 以至成品检验， 我们都按照客人要求 或 国际标准. 所有的流程作业都是文件化， 标准化， 可视化. 所有的QC, QA人员都经过培训和考核.



产前会议记录
PP meeting minutes

质量控制
Quality Control



做工指示
Work Instruction

重要工序和实施的红绿灯品控系统
Key Process and implemented Traffic light system

质量控制 QUALITY CONTROL

We are considering the quality control. From the inspection of incoming raw materials, to the semi-finished products, until the finished products; all the works are follow customer's requirement or international standard. All the process are documented, standardized, and visualized. All of our QC, QA are well trained and qualified.

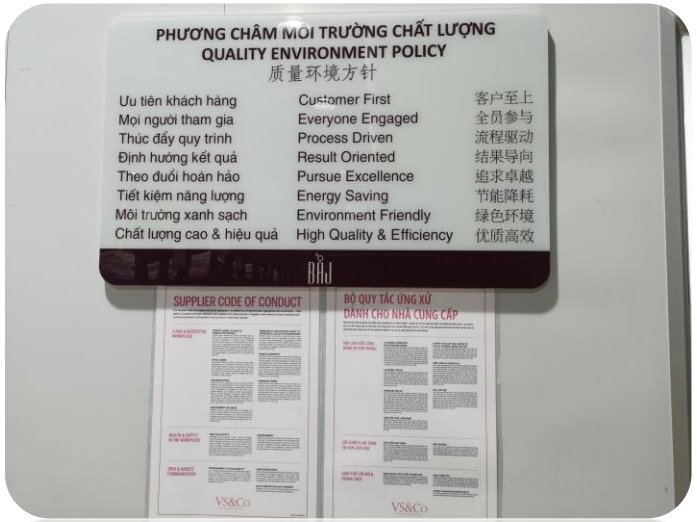
生产线100%尾查
QC 100% checking endline

04
PART

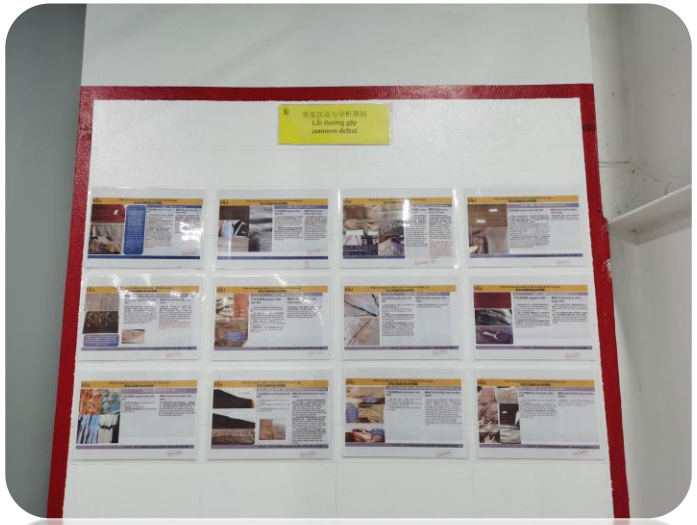
质量控制

Quality Control

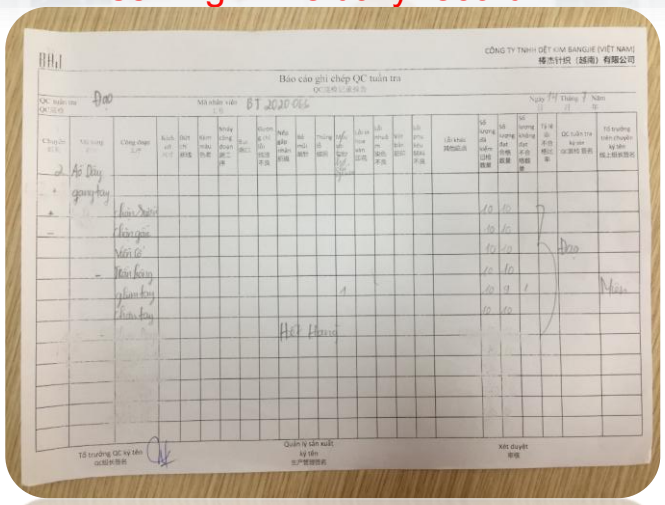
生产线每日巡查记录
sewing inline daily record

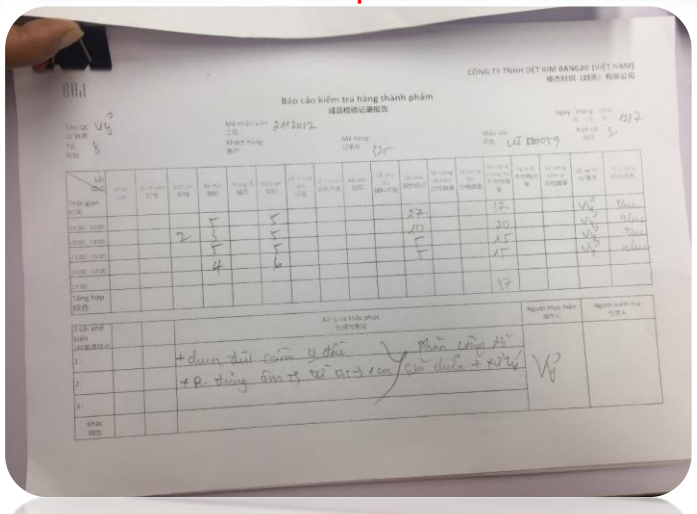


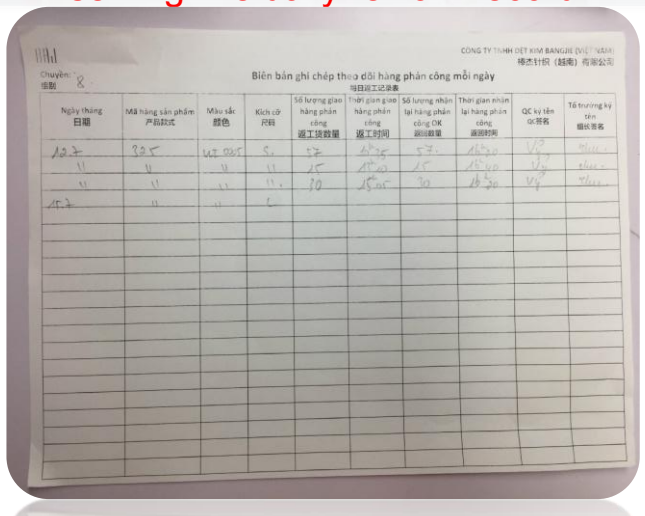
尾查检验报告
Endline QC report



生产线每日番工记录
sewing line daily rework record







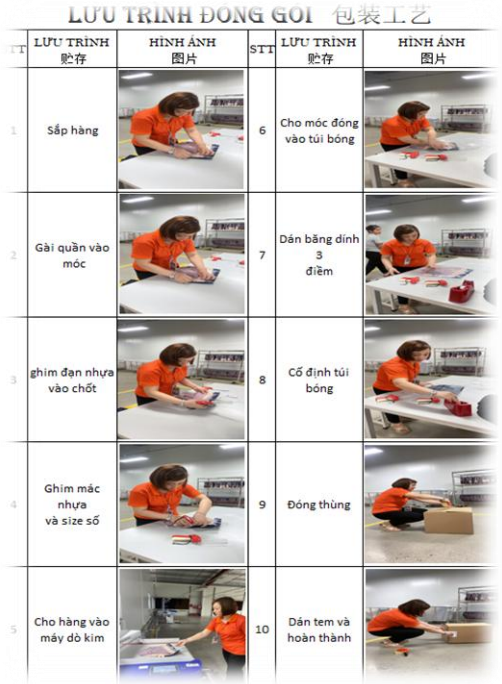
04
PART

质量控制

Quality Control

所有成品验针
Detector machine, all garment products have to pass metal detector before packing

包装指示
Packing instruction



LƯU TRÌNH ĐÓNG GÓI 包装工艺

STT	LƯU TRÌNH 贮存	HÌNH ẢNH 图片	STT	LƯU TRÌNH 贮存	HÌNH ẢNH 图片
1	Sắp hàng		6	Cho móc đóng vào túi bóng	
2	Gài quần vào móc		7	Dán băng dính 3 điểm	
3	ghim đạn nhựa vào chốt		8	Cố định túi bóng	
4	Ghim mác nhựa và size số		9	Đóng thùng	
5	Cho hàng vào máy dò kim		10	Dán tem và hoàn thành	

包装指示
Packing instruction

包装
Packing

04
PART

质量控制

Quality Control

成品仓
Warehouse keeping area

QA检验
QA inspection

检验潮度
Humidity checking

持续发展 SUSTAINABILITY

我们**关注持**续发展. 在兼顾企业发展和照顾员工福祉的同时， 也不忘作为世界公民而尽力保护环境， 为提供员工公平环境， 为客人提供安全产品. 我们将在无害原料， 空气污染， 水源污染， 再生能源等方面作出投资， 管控和改善， 除符合国家法律要求外， 也会为高于客人的期待值而努力.

通过WRAP认証

BSCI认証

已通过SLCP认証

已通过OEKOTEX认証

持续发展 SUSTAINABILITY

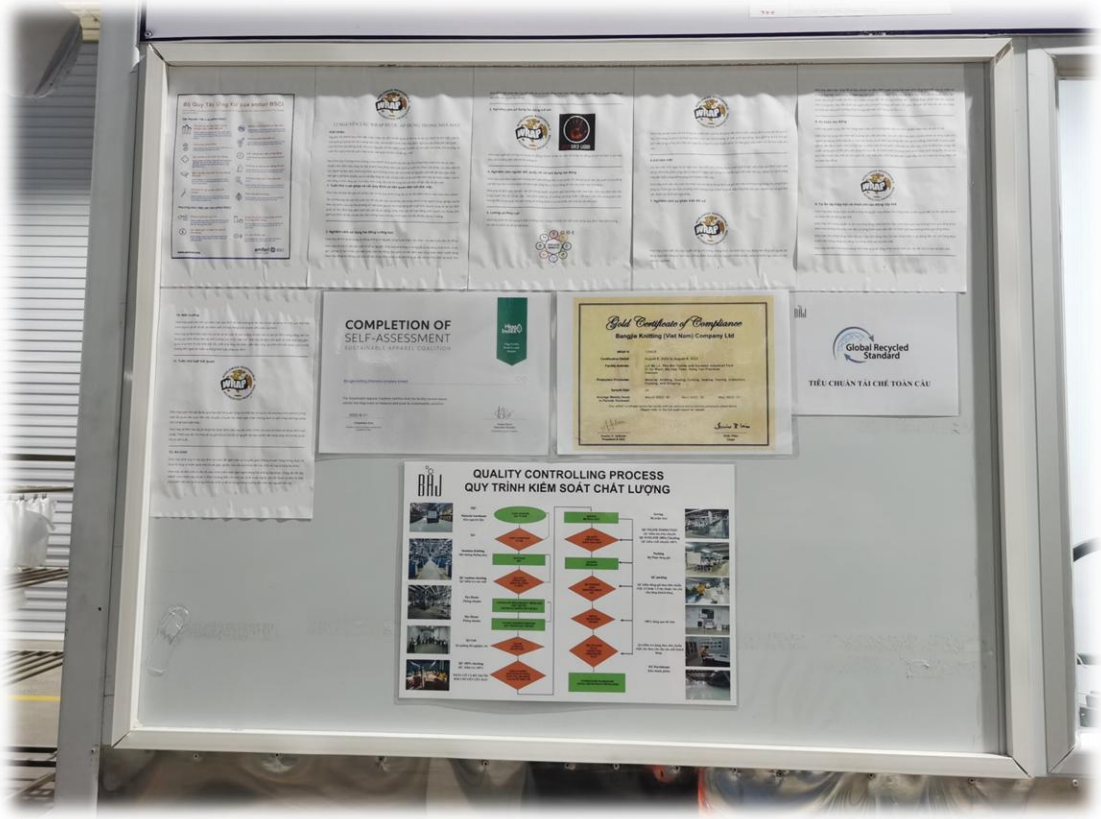
我们**关注持**续发展. 在兼顾企业发展和照顾员工福祉的同时， 也不忘作为世界公民而尽力保护环境， 为提供员工公平环境，为客人提供安全产品. 我们将在无害原料， 空气污染， 水源污染， 再生能源等方面作出投资， 管控和改善， 除符合国家法律要求外， 也会为高于客人的期待值而努力.

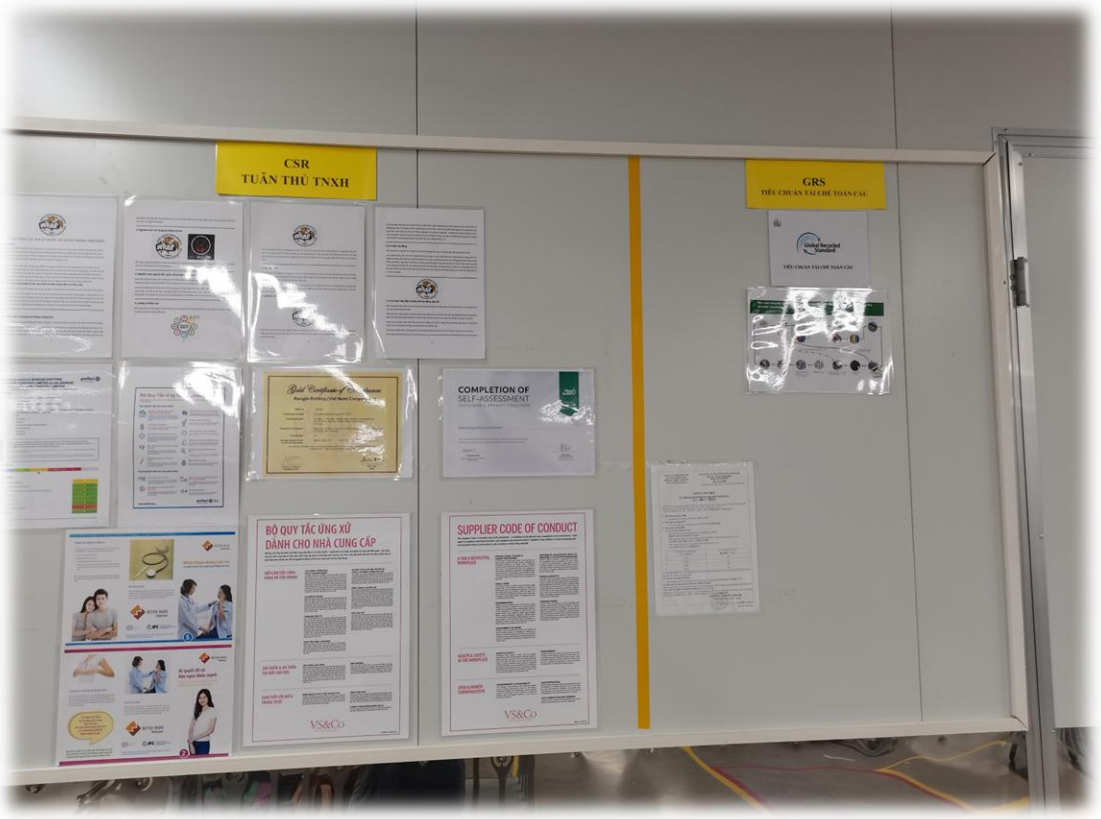
Global Recycled Standard

ISO 9001:2015

International Organization for Standardization ISO 14001:2015

证书


COMPLETION OF
SELF-ASSESSMENT
Gold Certificate of Compliance
Bangjie Knitting (Viet Nam) Company Ltd
Global Recycled Standard
TIÊU CHUẨN TÁI CHẾ TOÀN CẦU
QUALITY CONTROLLING PROCESS
QUY TRÌNH KIỂM SOÁT CHẤT LƯỢNG


CSR
TUÂN THỦ TNXH
GRS
TIÊU CHUẨN TÁI CHẾ TOÀN CẦU
COMPLETION OF
SELF-ASSESSMENT
BỘ QUY TẮC ỨNG XỬ
DÀNH CHO NHÀ CUNG CẤP
SUPPLIER CODE OF CONDUCT
VS&Co
VS&Co

持续发展 SUSTAINABILITY

We are considering the sustainability. While taking the development of the company and well-being of employees, we also do our best to protect the environment as a global citizen, provide a fair environment for employees, provide customers with safe products. We will deal with harmless raw materials, control and reduce the air pollution and water pollution etc., invest the renewable energy and other aspects. All are complying with national legal requirements, and strive to exceed the expectations of our customers.

工厂污水全经污水处理
All factory's water through sewage treatment

空气过滤系统
Air Filtration System

成立工会
Trade Union

已安装27支太阳能路灯
27 sets solar lighting is running

污水廢气过滤系统
Air Filtration System

染色工場气过滤系统
Air Filtration System in dyeing workshop

持续发展

SUSTAINABILITY

生物质燃料
Boiler is used biomass

除尘装置
dust elimination device

脱硫塔
Desulfurization Tower

支持和沟通

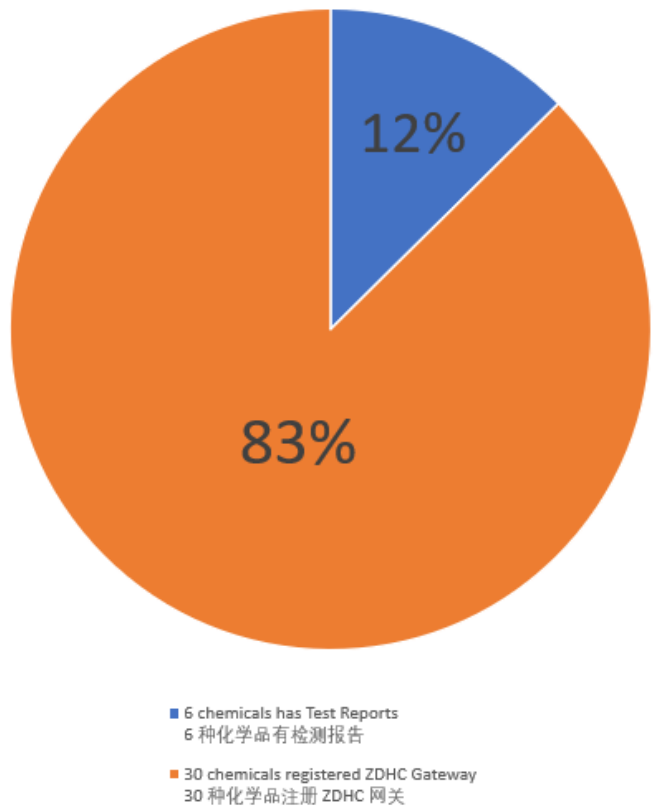
SUPPORT AND COMMUNICATE

支持和沟通 SUPPORT AND COMMUNICATE

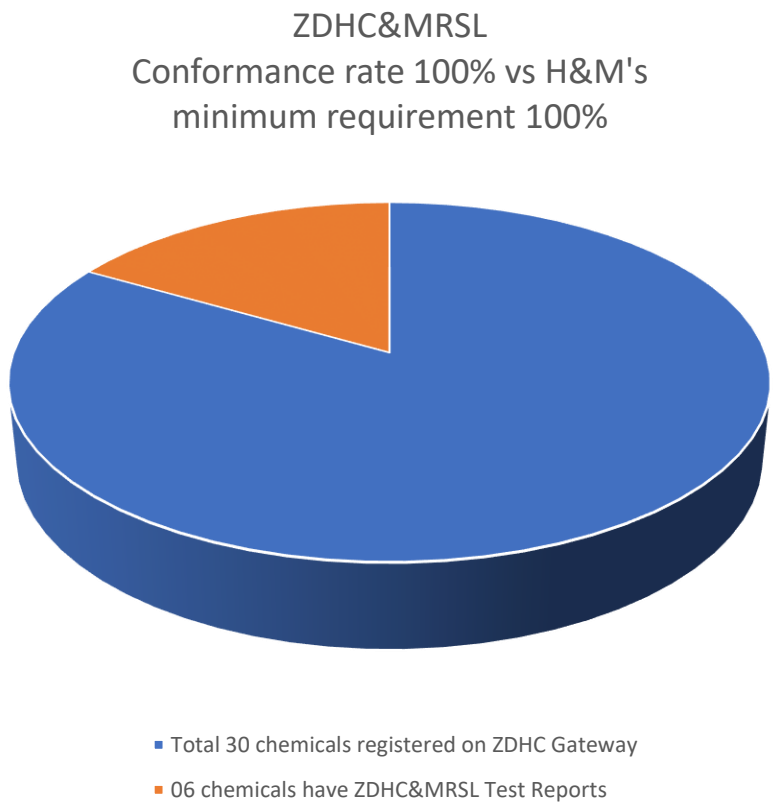
我们仍希望 客人 可以
1）.来厂参观指导， 为本厂管理， 生产流程， 环境保护等方面提供宝贵意见;
3）告知和更新最新各项标准要求; 期待大家多加交流合作， 做到大家互助互利，合作共赢.

We still hope that you can
1). Visit our factory and provide valuable advice for the management, production process, environmental protection and other aspects of the factory;
3) Inform and update the latest standard requirements. We look forward to get more support and communicate, so that both of us can achieve the successful.

总 =36（有ZDHC&MRSL'=30）（没有上转 =6 种）	
Total 36 chemical in use	**Conformance rate 83 % vs C&A's requirement**
6 chemicals has Test Reports 6 种化学品有检测报告	12%
30 chemicals registered ZDHC Gateway 30 种化学品注册 ZDHC 网关	83%



ZDHC&MRSL conformance	**Conformance rate 100% vs H&M's minimum requirement 100%**
Total 30 chemicals registered on ZDHC Gateway	83%
06 chemicals have ZDHC&MRSL Test Reports	17%



不 断 改 善 ， 追 求 卓 越

CONTINUOUS IMPROVEMENT TO BE EXCELLENT

THANKS

BANGJIE (Viet Nam) Presentation

ORGANIZER

HAUHOUSE Engineering & Construction

SPONSOR

WWF H&M BAJ VUPHONG Energy Group

SCAN FOR MORE INFORMATION ABOUT THIS PROJECT

ELECTRIFICATION OF INDUSTRY

HEAT PUMP POWERED BY RENEWABLE ENERGY

Ha Noi, 4th December 2025

THANK YOU

PRESENTED BY

Mr. Nguyen Tien Huy

Mr. Richard Scotney

Ms. Anna Zhan

Mr. Wang Ji Shan

Dr. Ha Anh Tung

Mr. Hau Bui

Mr. Pham Dang An