JCCI International Seminar

Introduction of TBM

Innovative Sustainable Material Mainly Made from Limestone And Material Circulation

Feb. 5th 2025

TBM Co., Ltd.

Global Business Development Team

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Company Introduction

Company Name	TBM Co., Ltd.
Established	August 2011
Address	15F Toho Hibiya Building, 1-2-2, Yurakucho, Chiyoda-ku, Tokyo, JAPAN
CEO	Nobuyoshi Yamasaki
No. of employee	313 *as of December 2023
Capital	100 million yen *including capital reserve of 12,035,460,000 yen
Business	Develop ecological materials and promote material circulation.

Tohoku LIMEX Factory (Tagajo City, Miyagi Prefecture)

Yokosuka Circular Factory (Yokosuka City, Kanagawa Prefecture)

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Business Introduction

To realize a decarbonized, recycling-oriented society, we encourage using new environmentally friendly materials and promote resource recycling of waste plastics and

Carbon Neutral

LIMEX

- Research and development of sustainable materials
- Manufacturing of sustainable materials and products
- Delivering sustainable materials and products

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Resource Circulation

- Purchasing and recycling of valuable plastic
- Recycling plant operation for LIMEX and plastic recycling
- Providing resource recycling platform "Maar"

Circular Economy

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LIMEX

LIMEX Business

What is LIMEX？

LIMEX is an inorganic filler composite material, which can be used as **plastic and paper alternatives**.

CaCO3 (Limestone) 50%≦

&

Plastic Resin

LIMEX

LIMEX Pellet

LIMEX Sheet

Blown Film Molding
- Shopping Bag
- Waste Bag

Thermoforming
- Food Container
- Cup

Injection Molding
- Daily Goods
- Industrial Goods

Extrusion Molding
- Sheet
- Film

Blow Molding
- Bottle
- Tube

Spunbond
- Bag

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Why Limestone?

Abundant natural resource worldwide

Limestone

Reduce CO_2 emissions

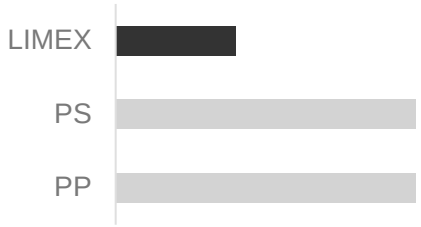
Economical and stable price

Environmental Impact of LIMEX

As alternative to plastic

Reduce oil consumption

Plastic consumption

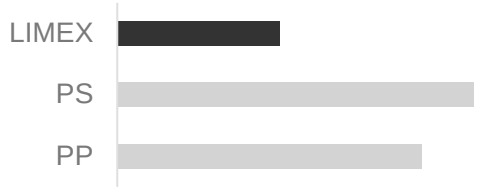


* Per kg (PS=100)

Reduce GHG emissions

GHG emissions *1

Raw material sourcing ~ incineration
(production of final product is excluded)

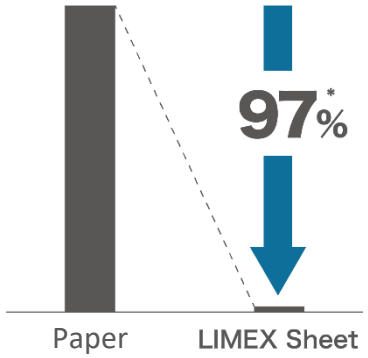


*Functional Unit/System Boundary
1 kg pellets
Evaluation of raw material procurement (including pelletizing), material transportation, product transportation, and disposal process
Assumed that disposal process is incineration as general waste
Product manufacturing is omitted since it depends on molding processes

As alternative to paper

Reduce water consumption

Water consumption at manufacturing



Save Forest

Manufactured using 100% renewable energy

*1 Simplified LCA conducted by TBM Co., Ltd. (2020) | Calculation Method Life Cycle Inventory | Inventory Database: LCI Database IDEA version 2.3 (2019/12/27), National Institute of Advanced Industrial Science and Technology, Safety and Scientific Research Department and Society and Research Laboratory for IDEA, SuMPO (Sustainable Management Promotion Organization) | Impact Assessment Method: Climate change IPCC 2013 GWP 100a *2 Water use divided by the production volume(weight) during the trial production period of 2022 at Tagajo Plant | Source: Japan Paper Association, “New Water Usage Intensity per 1 ton of Paper and Paperboard Please note that these are estimates for reference only and the values may change depending on the recipe, manufacturing conditions, and the data availability.

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Introduction Cases

More than **10,000** companies and municipalities use various LIMEX materials and products.

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Global Symbolic Cases of LIMEX

Recognized for its environmental benefits, LIMEX was adopted by LVMH group's cosmetic brands and Big C, a supermarket run by a Thai conglomerate

JCDecaux(FR)/ Backlit Signage

Liwayway VN/ Flexible Packaging

KENDO(LVMH)/ Lipstick package

SEVENTEEN(KR)/ Poster

BigC(Thai)/ Basket

Emami Ltd(India)/ Bottle

Thien Long(VN)/ Pen

BioTech(VN)/ Stand Pouch

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New TOPIC

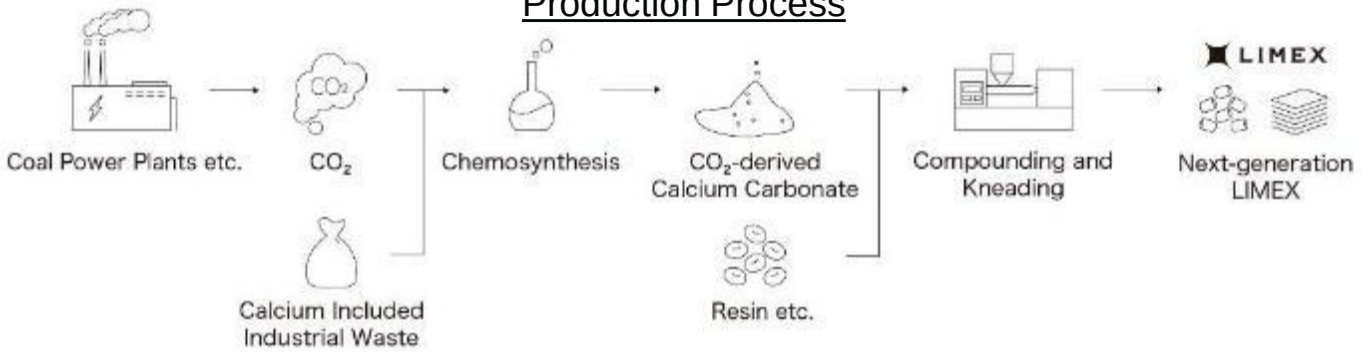
The Next-Generation LIMEX (CR LIMEX)

TBM succeeded to develop “Next-Generation LIMEX” using emission gas CO2 as raw material with **CCU** technology and presented at Davos.

CO2 gas emission from industries

Next-Generation LIMEX(made from CO2)

Production Process



Supported by:

NEDO

東北大学 TOHOKU UNIVERSITY

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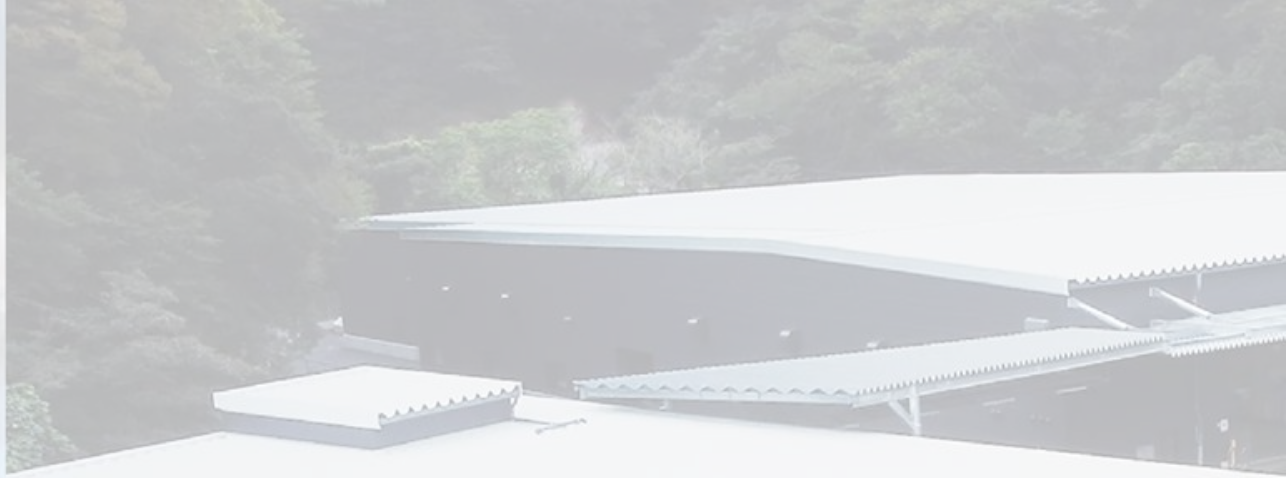


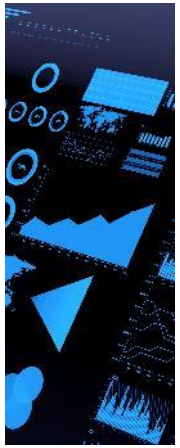
Material Circulation

Material Circulation Business in TBM

We promote material circulation from multiple perspectives such as trading plastics and the recycling factory operations.

01
Trading waste plastics

Matching business (trading) of waste plastics discharged from business establishments.



02
Material circulation digital platform

Visualize traceability and environmental impact by DX. Support efficient procurement and buying/selling of recycled plastics

03
Recycling factory

Mechanical recycling factory operation

We recycle plastic (PP, PE, PS, etc) and LIMEX in mechanical recycling factory. The construction of the factory was completed in November 2022 by collaborating with sorting machine manufacturer in Europe.

Recycling record in Japan is **17,000 tons**/year.

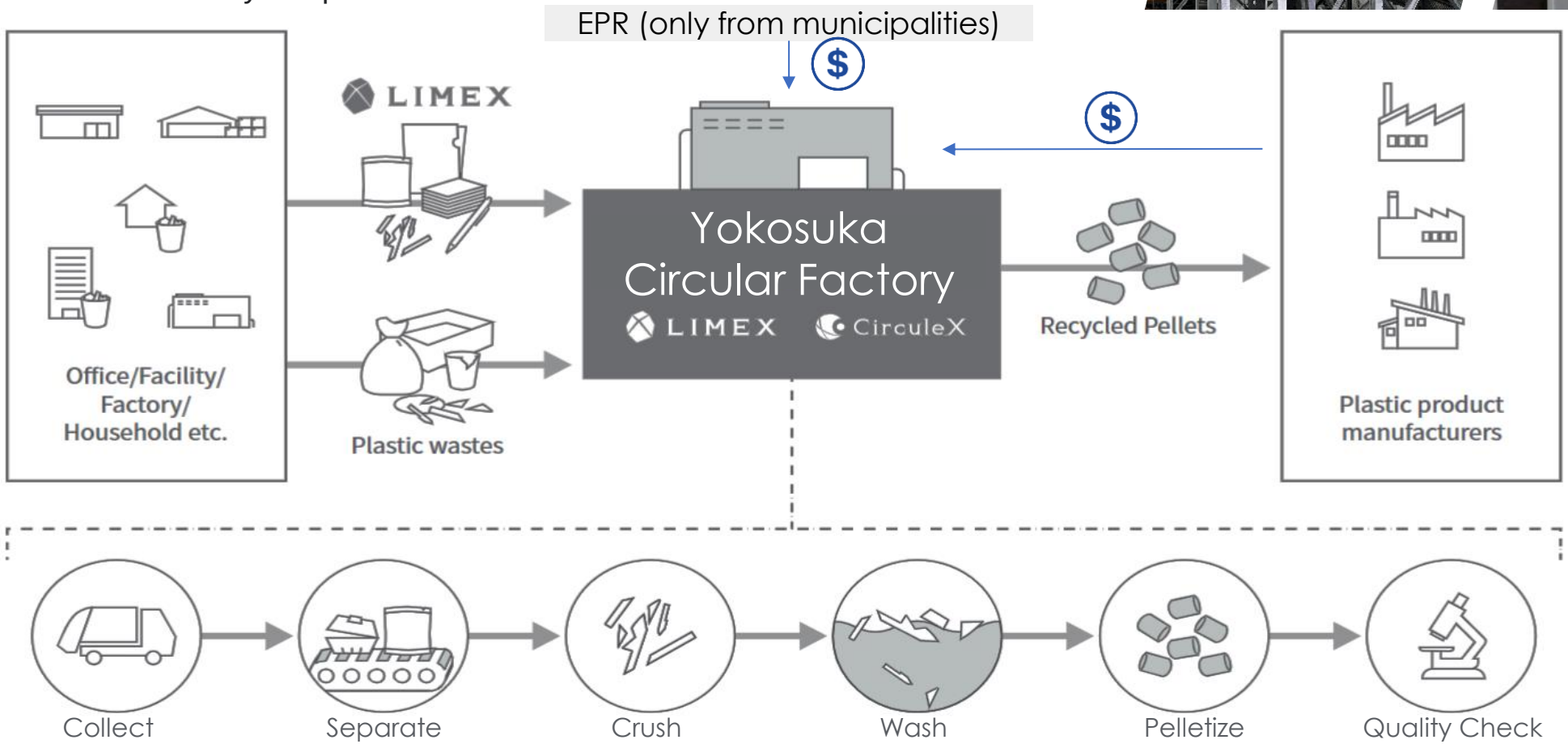
04
Development of final product

Develop high-added value final products as a material manufacturer

Material Circulation Business

Yokosuka Circular Factory | Business Model

The world's first plant to collect and auto-select general-purpose plastics (PP, PE, PS, etc.) and LIMEX for recycling was completed in November 2022. **Double income model**: processing fee and sales of recycled pellets.



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Yokosuka Circular Factory | Processes

Maximum Reception of plastics : 40,000 tons/year　　Maximum production of Pellet : 24,000 tons/year

Sorting

PP, PE, PS were sorted automatically by using European technology. In addition to general purpose plastics, **LIMEX** can be also sorted.

Crushing & Washing

Sorted plastics are crushed and washed. In addition, they are separated depending on their specific gravity in this process.

Pelletizing

There are five pelletizing lines. An automatic self-cleaning screen changer can remove contaminants.

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LIMEX Closed-loop recycling

Used LIMEX products (park guides and cups) were collected and recycled into the bakery and employee cafeteria trays.

USE | PELLETIZE | REMAKE | REUSE

Used LIMEX products are collected from customers at Adventure World

Food Tray

Recycled LIMEX pellets are molded at our partner company in Wakayama and recycled.

Used as food trays in the park

Used as trays in the company cafeteria

Resource Recycling Council (RRC)

TBM launched the Resource Recycling Council (RRC) as an organizer.

Together with more than 190 members from corporates, startups, financial institutions, experts, and local governments etc. Former vice ministers participate as directors and council members. The RRC will carry out policy recommendation and social implementation of the circular economy.

Board Members

糸谷 祥輝
Senior corporate officer of TOPPAN

金子 文雄
President of DAIEI KANKYO, a major recycling company

坂田 英人
Senior corporate officer of DNP

瀧澤 徳也
Chief Sustainability Officer, EY Japan

竹本 吉輝
President of Tobimushi

田中 靖訓
President of REMATEC, a major recycling company

田原 純香
ESG Consultant

中井 徳太郎
Former Vice-Minister, Ministry of Environment

藤本 あゆみ
Chief Marketing Officer, Plug and Play Japan

夫馬 賢治
CEO, Neural a sustainability consulting firm

守屋 実
New business developer

山﨑 敦義
CEO of TBM

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TBM

Times Bridge Management

We will realize the “Sustainability Revolution”

Our future we want doesn’t just come.
No matter how we predict the future, the future we want will not come.
Only when we take on a challenge with strong will to create the future, we can reach the future we want.

We have experienced the agricultural revolution, industrial revolution, and digital information revolution. The AI revolution is coming next.
So, what is coming after these?
We believe, the “Sustainability Revolution” is coming … moreover, we have to make it happen.
It is our mission to lead the next coming revolution.

Nobuyoshi Yamasaki,
Representative director, CEO

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Please feel free to contact us!

About LIMEX⇒**Minori Kitagawa**: m-kitagawa@tb-m.com
About Resource Circulation⇒**Tatsuki Sasaki**: tatsuki-sasaki@tb-m.com

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