



## *The PET recycling sustainability: The mission of Dentis Group*

# Dentis Group



Dentis is a multinational, family-run business established in 1987, specialized in PET sorting and recycling.



# A continuous growth

**1987 - 2001**  
**PET recycling**

**1987** - Foundation of Dentis Srl, specialized in post-industrial plastic recycling

**1994** - 1<sup>st</sup> Recycling Line Start-up with a 10,000 ton/y input capacity

**2001** – New facility building in S. Albano Stura (CN) with a new **40,000 t/y** line input capacity

**2011-Today**  
**Acquisition and PET expansion**

**2011** - Acquisition of **PET Compania para su reciclado sa** activities, in Chiva, Valencia, revamped in **2013** with a current input recycling capacity of 90,000 t/y.

**2018** – Acquisition of **Nord Pal Plast SAS** activities, located in Lesquin close to Lille (France), revamped in **2021** with a current input recycling capacity of 40,000 t/y.

**2022** – **IIQ Start up of the new site** dedicated for **Food RPET** production with an additional **input** capacity of **90,000 t/y** → **Total input capacity Dentis 130,000 t/y.**

**EFSA approved REYC 214 and 226.**

**2004 - Today**  
**Plastic Waste Sorting**

**2004** - Constitution of **Demap Srl** as new plastic packaging waste sorting center located in Turin area

**2019** – On the 4<sup>th</sup> of July, sale of the majority block of Demap's shares to ACEA Ambiente Srl

**2018** – Founding Member and current President of the new PET bottle collection Consortium, **CoriPET**, **authorized to operate in 2018** by Ministero dell'Ambiente, Italy.

**2020 - Today**  
**Engineering**

**2020** – New company 'branch' start up, **Dentis Tech**, focused on process development and engineering for plastic waste sorting and mechanical recycling technologies.



# The Dentis Group today

DENTIS  
Recycling  
ITALY

## Dentis Recycling Italy S.r.l. (Italy)

- HQ, operating in Italy with Input capacity of 40.000 ton/y
- New plant start up in QII 2022 → up to 90 000 ton/y additional capacity

PETCOMPANÍA  
PARA SU RECICLADO

## Pet Compania para su reciclado s.a. (Spain)

- The largest plant of group with an Input capacity of 90.000 ton/y

NORD PAL PLAST

## Nord Pal Plast (France)

- Last acquisition of the Group. New capacity revamped at 40,000 ton/y input capacity

DENTIS  
TECH

## Dentis Tech s.r.l. (Italy)

- Dentis's specialized department in process design and engineering

## Dentis Group at “a glance”



Turnover in 2022 > 160 M€



More than 180 employees in three production plants



Over >180 Kton/y bottles PET bottles processed

ISO 14001 9001 and 28000 certified



Product certification



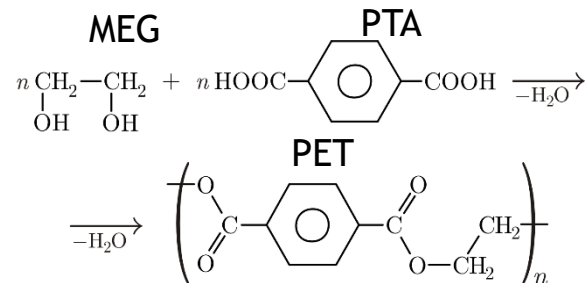
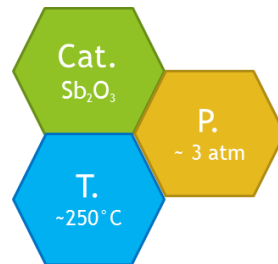
EuCertPlast



# Why PET ?

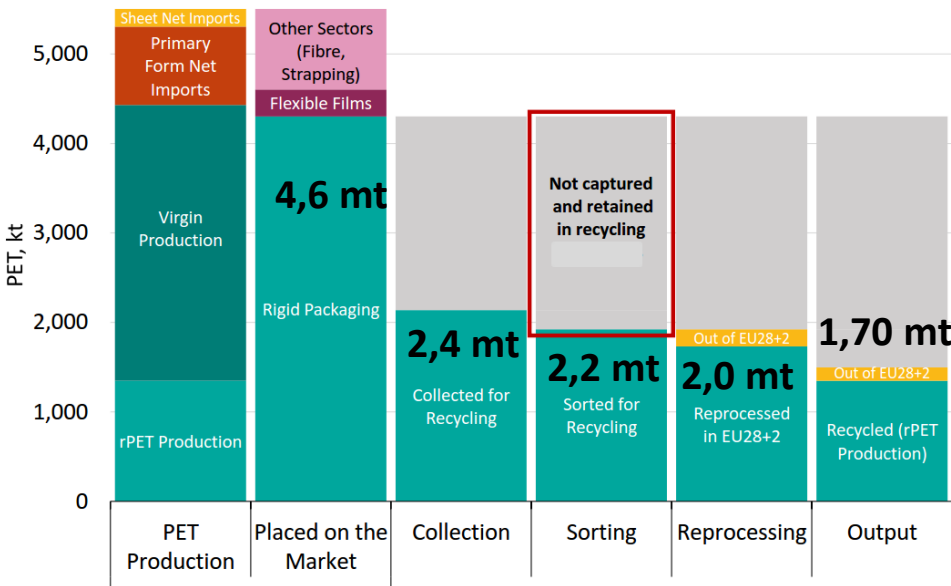


- PET is a plastic polymer produced from purified terephthalic acid (“PTA”) and monoethylene glycol (“MEG”)
- It’s used to manufacture plastic bottles and for other packaging applications for the beverage, food and personal care industries.
- PET key technical advantages: versatility, durability, heat resistance, light weight, cost-competitiveness and **100% recyclability**.





# EU 2021 PET Collection and recycling Balance



An estimated of 4.6 mt of PET **rigid packaging** ended its cycle-life and available for collection in 2020:



**PET Amount for recycling 2,4 mt**  
( 50% of PET placed on market)

2,2 mt (on 3,6 mt on market)  
**61 % for PET bottles**

208 kt (on 1,0 mt on market)  
**~21 % for PET trays (diluted in PET bottle Streams)**

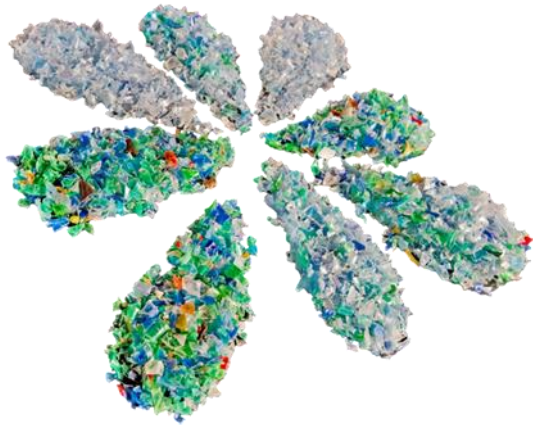
**1,70 Mtons rPET production**



**~ 8% of European collected waste  
managed by Dentis Group**

**~ 6% of European RPET Output  
produced by Dentis Group**

# Dentis Recycling Italy



**DENTIS**  
**Recycling**  
**ITALY**



# Dentis PET recycling process



PET Bales



Feeding



Pre-Washing



Automatic Sorting



Manual Sorting



Grinding



Washing



Separation



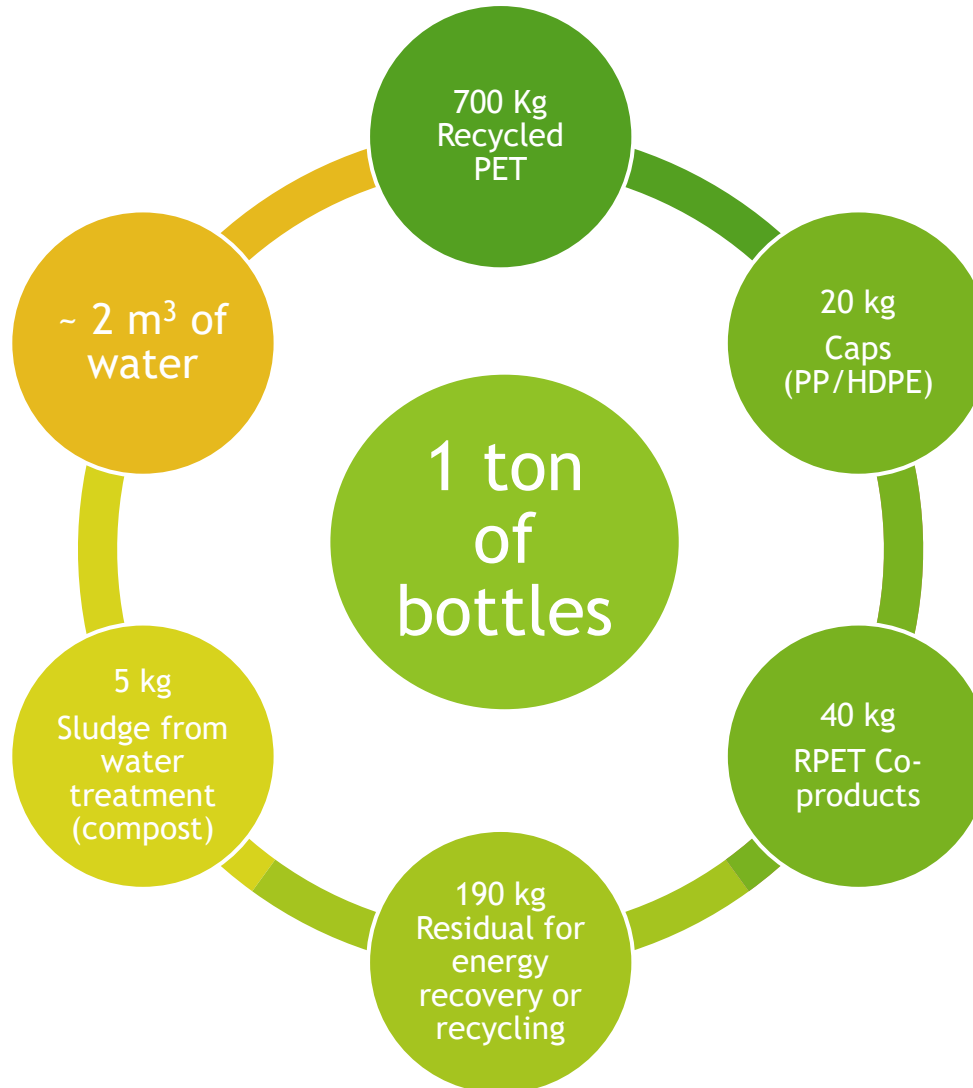
Drying - Crystallization –  
Flakes Sorting



Packaging



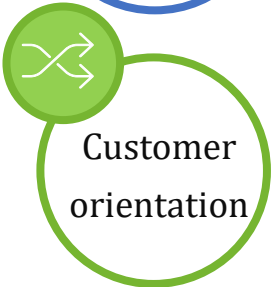
# The Process: mass balance



# New Dentis B2B project mission



Contribute to overcome the lack of R-PET food production in Italy



Boost R-PET market applications, especially for B2B without jeopardizing the already established R-PET market.

Support PET Bottlers customers to catch the target of at least 25% of r-PET (EU target) in their packaging

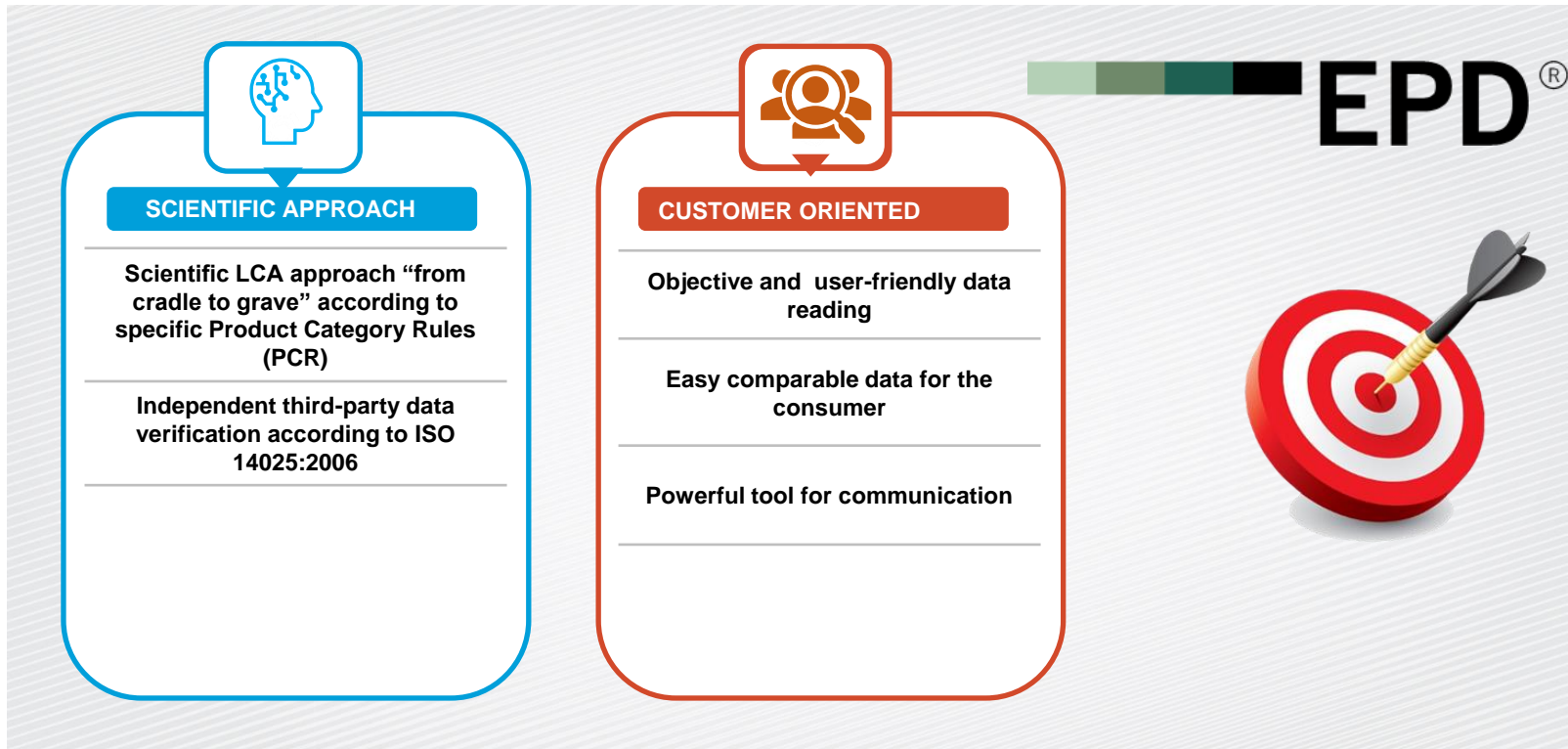


Develop a real sustainable and eco-friendly circular industrial model able to reduce the PET bottle environmental footprint



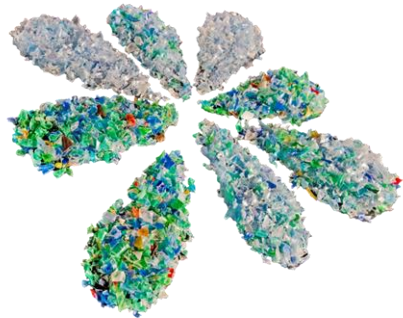
# The Value of R-PET in carbon reduction strategies

To send message beyond PET specialist walls a reliable and objective model is mandatory !!



# PETALO

## Enviromental Product Declaration



**PETALO**  
PET RECYCLING

The study has been conducted by  
**Valentina Castellani** for Dentis  
Recycling Italy S.r.l.

**EPD**<sup>®</sup>  
**ENVIRONMENTAL PRODUCT DECLARATION**

In accordance with ISO 14025 for:

**PLASTIC WASTE AND SCRAP RECYCLING**  
from **DENTIS RECYCLING ITALY S.R.L.**

**DENTIS**  
Recycling  
ITALY

**PETALO**  
PET RECYCLING

Programme	<b>The International EPD<sup>®</sup> System</b> <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator	<b>EPD International AB</b>
EPD registration number	<b>S-P-02594</b>
Publication date	<b>2021-03-11</b>
Valid until	<b>2026-01-31</b>

<https://environdec.com/library/epd2594>

Look up at EPD library for *DENTIS* in the filter field



# Environmental impact PETALO® R-PET vs Virgin PET

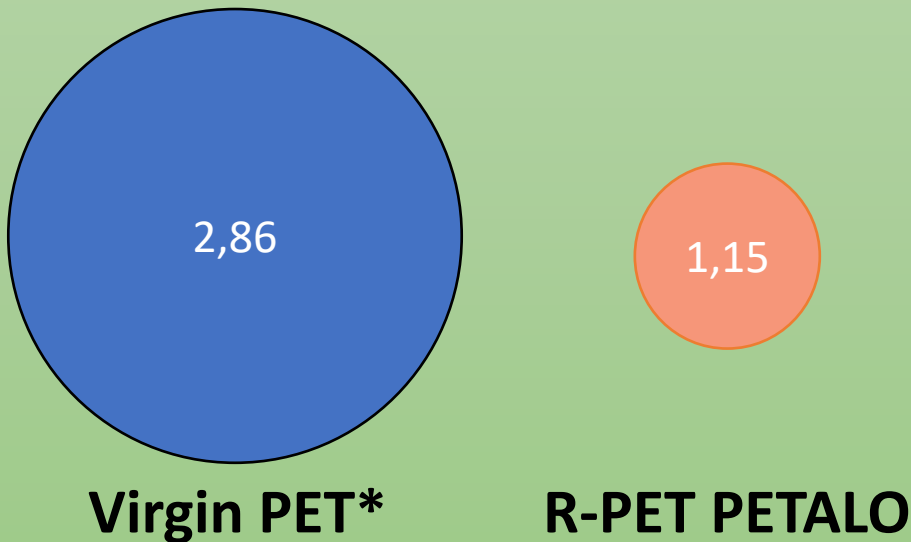
PARAMETER		UNIT	R-PET PETALO	VIRGIN PET
Global warming Potential (GWP)	Fossil	kg CO <sub>2</sub> eq.	1.08	2.86
	Biogenic	kg CO <sub>2</sub> eq.	0.07	0.004
	Land use and land transformation	kg CO <sub>2</sub> eq.	0.001	0.002
	TOTAL	kg CO <sub>2</sub> eq.	1.15	2.86
Acidification potential (AP)		kg SO <sub>2</sub> eq.	0.004	0.01
Eutrophication potential (EP)		kg PO <sub>4</sub> <sup>3-</sup> eq.	0.001	0.003
Photochemical oxidation potential (POCP)		kg NMVOC eq	0.004	0.01
Abiotic depletion potential Elements		kg Sb eq.	0.00001	0.0004
Abiotic depletion potential Fossil resources		MJ, net calorific value	15.57	65.61
Water scarcity potential		m <sup>3</sup> eq.	0.18	1.34

*Impact of 1 kg of virgin PET pellets has been calculated using the Ecoinvent dataset "Polyethylene terephthalate, granulate, bottle grade {GLO} market for | Cut-off", representing the average virgin PET pellets available on the European market.*

# The importance of sustainability: first PETALO R-PET EPD

## Environmental impact PETALO<sup>®</sup> R-PET vs Virgin PET

### The Carbon Footprint (Kg CO<sub>2</sub> eq.)



Less than **60%** of greenhouse emission for R-PET PETALO



\*Impact of 1 kg of Virgin PET equals to 2,86 Kg CO<sub>2</sub> eq. calculated using the ecoinvent dataset "Polyethylene terephthalate, granulate, bottle grade {GLO}| market for | Cut-off", representing the average virgin PET pellets available on the European market

# Conclusions

- ▶ PET is not only a suitable technical resin for packaging, but it can be part of the solution of the emission issues
- ▶ Better than PET is R-PET in terms of reducing Carbon Footprint → Urgent to boost PET Recycling market
- ▶ It's mandatory to build messages that can go beyond the PET wall specialists
- ▶ Necessary a clear and objective data model that can be user-friendly for the consumer



Dentis is proud to be one among the first in the market to be accomplished **an EPD declaration** about R-PET reporting clear data on the **convenience** and **sustainability** of mechanical PET recycling

Thanks for  
the  
attention!

**PET COMPAÑÍA PARA  
SU RECICLADO**

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