



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 - 1st 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 4th of July, sale of the majority block of Demap's shares to ACEA Ambiente Srl

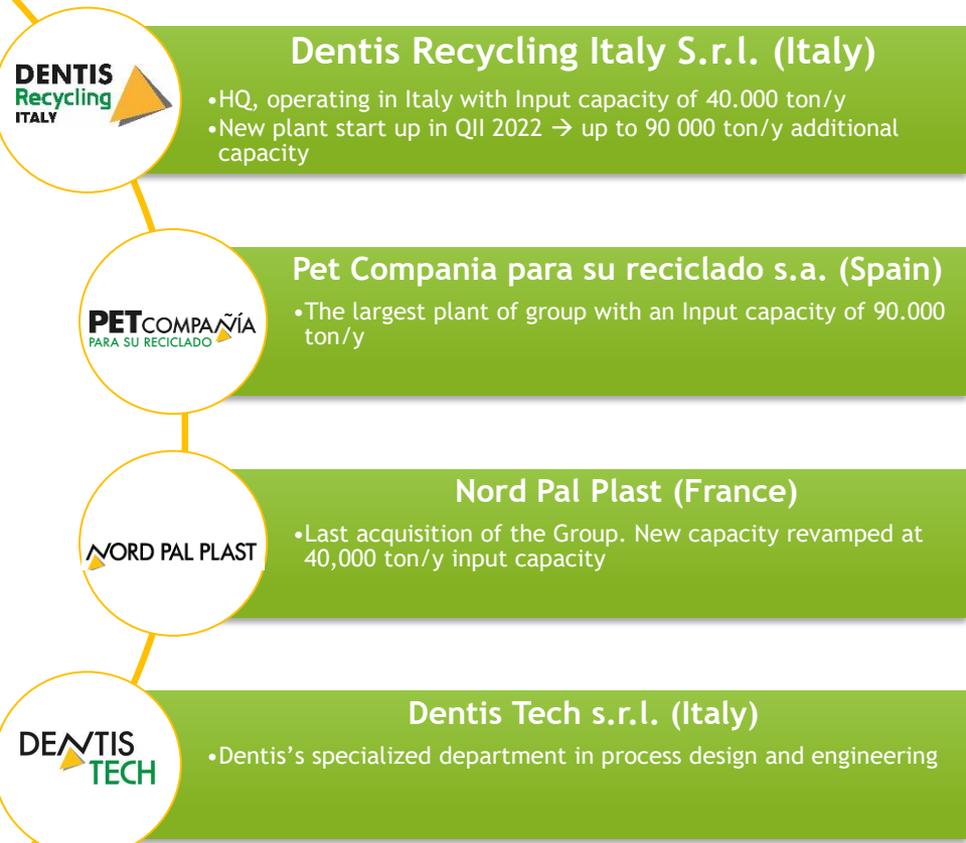
2018 – Founding Member and current President of the new PET bottle collection Consortium, **CoriPET**, **authorized to operate in 2018** by Ministero dell'Ambiente, Italy.

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 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



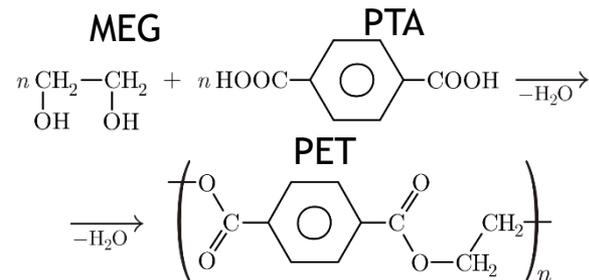
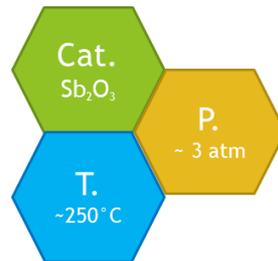
EuCertPlast



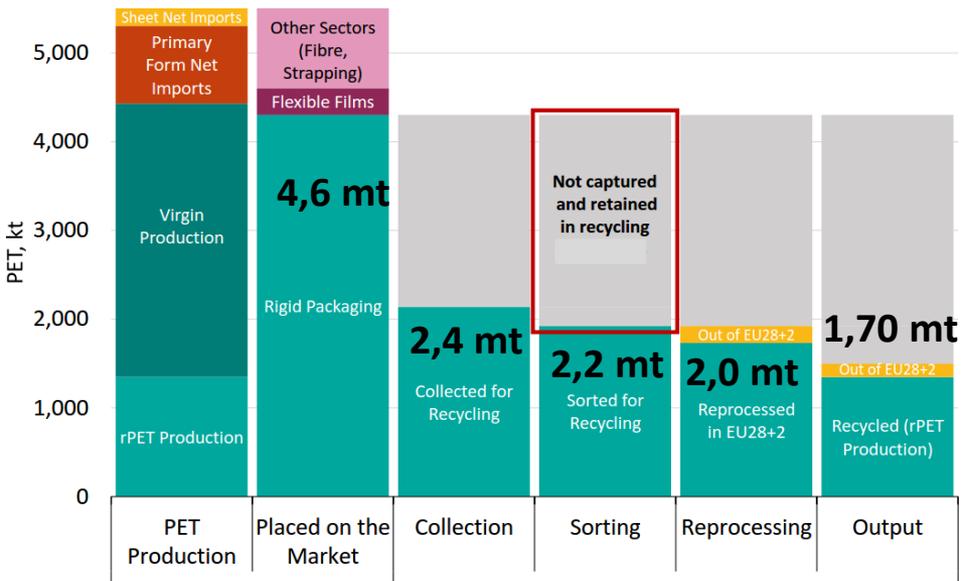
Why PET ?



- 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)

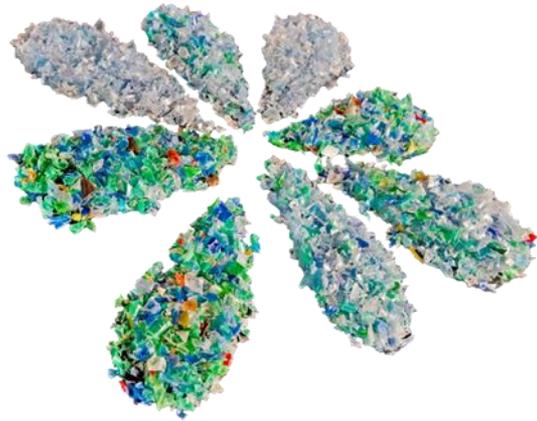
1,70 Mtons rPET production



~ 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



Separation



Washing



Grinding



Manual Sorting

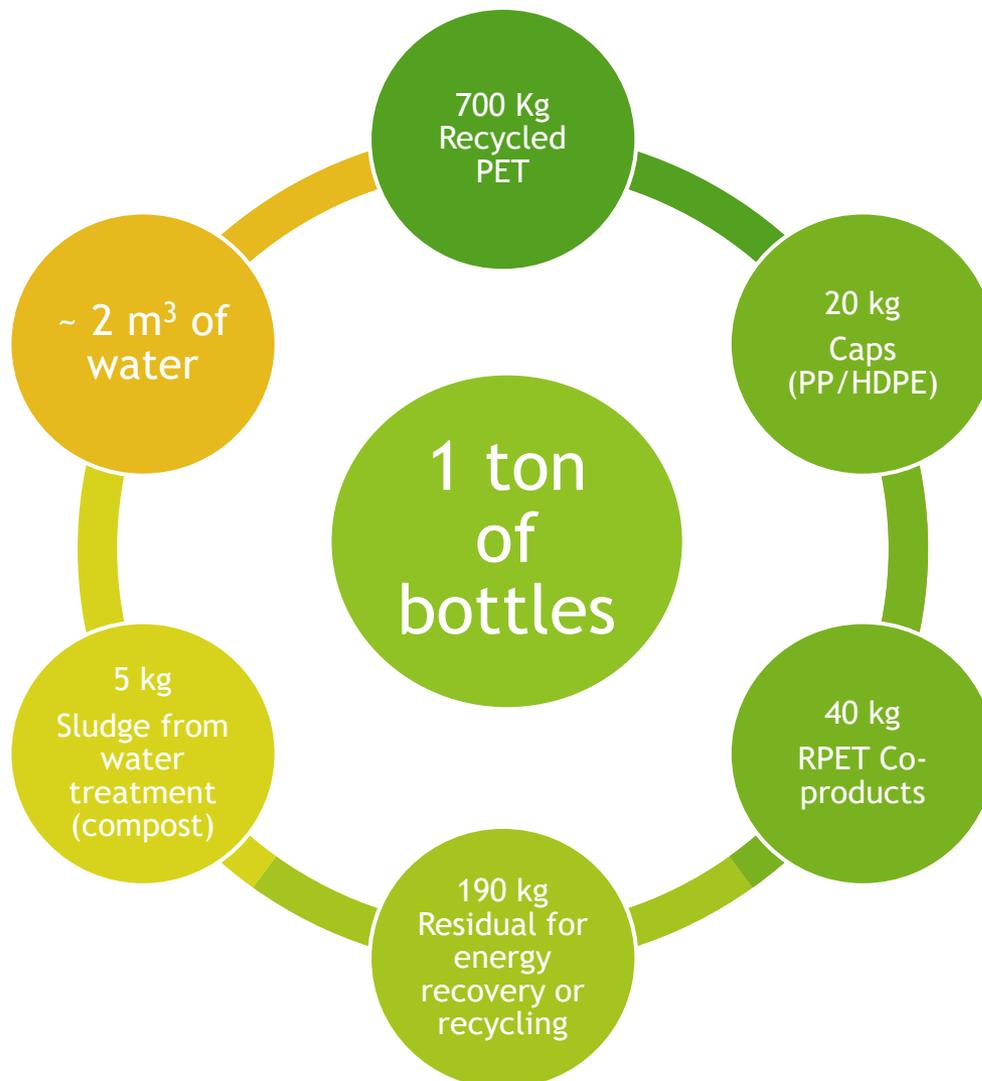


Drying - Crystallization –
Flakes Sorting



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 !!



The EPD logo consists of a horizontal bar with segments in green, dark green, and black, followed by the text 'EPD' with a registered trademark symbol. Below the logo is a 3D target icon with a red bullseye and a black dart with a yellow shaft hitting the center.



SCIENTIFIC APPROACH

Scientific LCA approach “from cradle to grave” according to specific Product Category Rules (PCR)

Independent third-party data verification according to ISO 14025:2006



CUSTOMER ORIENTED

Objective and user-friendly data reading

Easy comparable data for the consumer

Powerful tool for communication

PETALO

Enviromental Product Declaration



PETALO
PET RECYCLING

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

EPD[®]
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	The International EPD[®] System www.environdec.com
Programme operator	EPD International AB
EPD registration number	S-P-02594
Publication date	2021-03-11
Valid until	2026-01-31

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

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

Environmental impact PETALO® R-PET vs Virgin PET

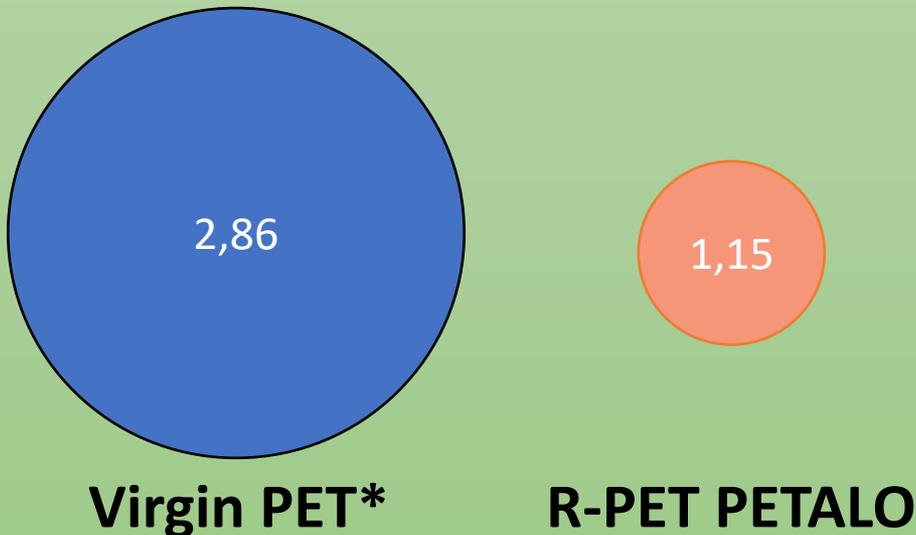
PARAMETER		UNIT	R-PET PETALO	VIRGIN PET
Global warming Potential (GWP)	Fossil	kg CO ₂ eq.	1.08	2.86
	Biogenic	kg CO ₂ eq.	0.07	0.004
	Land use and land transformation	kg CO ₂ eq.	0.001	0.002
	TOTAL	kg CO₂ eq.	1.15	2.86
Acidification potential (AP)		kg SO ₂ eq.	0.004	0.01
Eutrophication potential (EP)		kg PO ₄ ³⁻ 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 ³ 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[®] R-PET vs Virgin PET

The Carbon Footprint (Kg CO₂ eq.)



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



*Impact of 1 kg of Virgin PET equals to 2,86 Kg CO₂ 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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