

Kunststoff-Recycling: Motor für die Circular Economy, Triebfeder für Innovationen

Gerold Breuer, Head of Marketing & Portfolio Management, EREMA Group GmbH

Circular Packaging Day, 11. April 2019 in Wien, Österreich



Source: Sci. Adv. 2017;3 19 July 2017

How much **plastic**
has been **produced** to date?



Source: Sci. Adv. 2017;3 19 July 2017

How much **plastic**
has been **produced** to date?



Source: *Sci. Adv.* 2017;3 19 July 2017

How much plastic waste has been **generated**?



Source: *Sci. Adv.* 2017;3 19 July 2017

How much plastic waste
has been **generated**?



Source: *Sci. Adv.* 2017;3 19 July 2017

How much **plastic** has been **recycled**?



Source: *Sci. Adv.* 2017;3 19 July 2017

How much **plastic**
has been **recycled**?



5000

MT

Source: Sci. Adv. 2017;3 19 July 2017

**of plastics waste is
part of our environment.**



Source: *Sci. Adv.* 2017;3 19 July 2017



Source: *Sci. Adv.* 2017;3 19 July 2017

CHANGE

re

thinking

the future of plastics

DEMAND
for recycling
increases.

Coca Cola

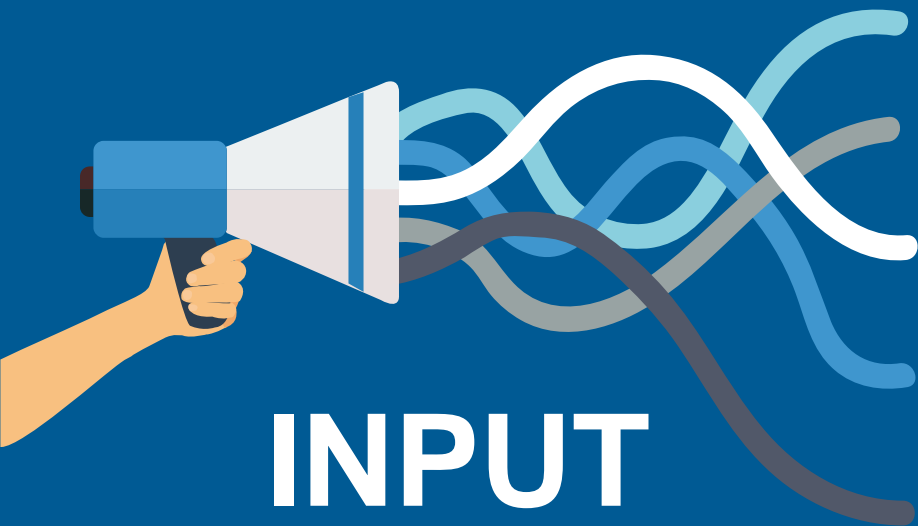
Philips

Henkel

P&G

Werner & Mertz

IKEA



INPUT



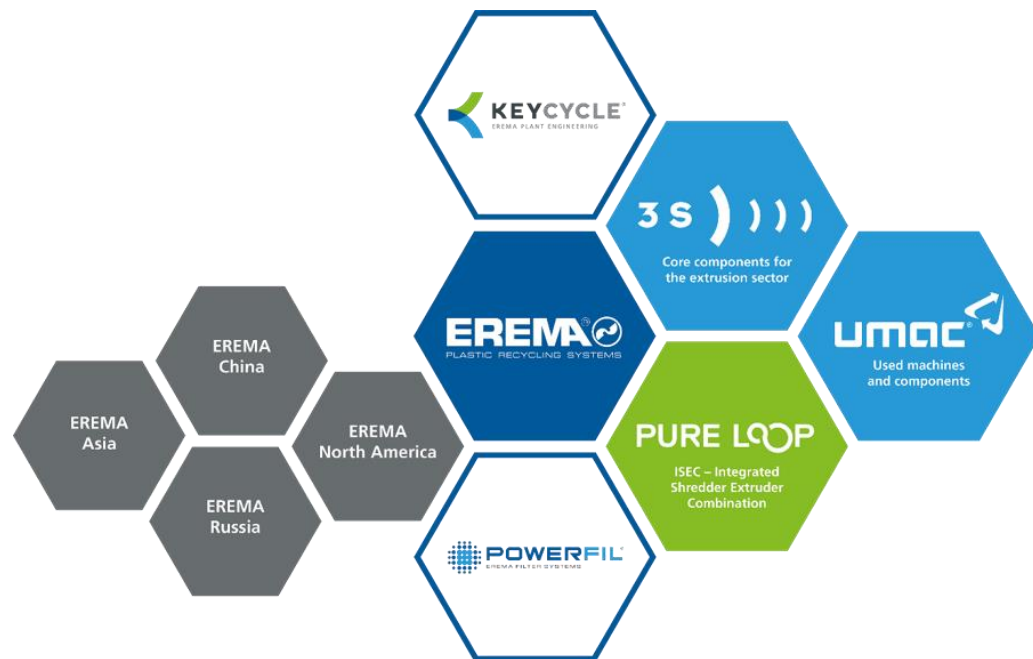
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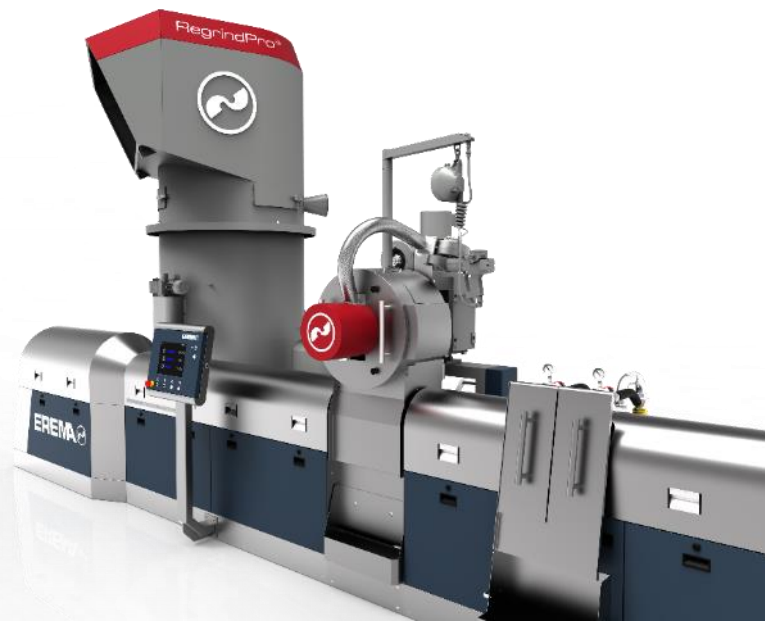
2

3

OUTPUT

= RAW MATERIAL





SAICA NATURE CYCLE PLUS, Spain

Supermarket film & shrink-wrap film
with paper contamination

> 12.000 ton/year of recycled PE



30% rPE
from p. c.
supermarket film

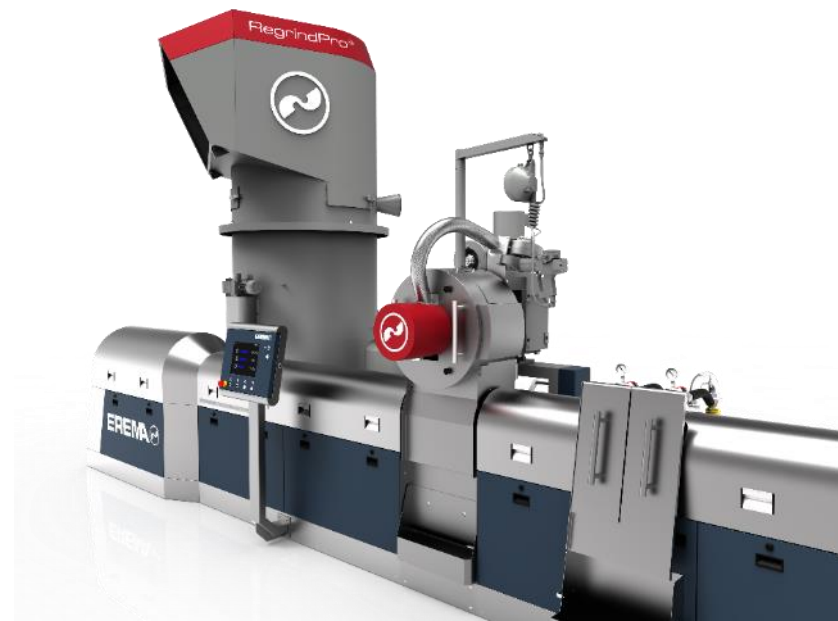




Regrind recycling

with INTAREMA® RegrindPro®

www.regrindpro.com



End products
made of recycle



Thanks to VACUREMA® & VACUNITE® :

100% rPET

food contact compliant.





North America

752

Europe

2,569

Asia

1,256

South America

321

Africa

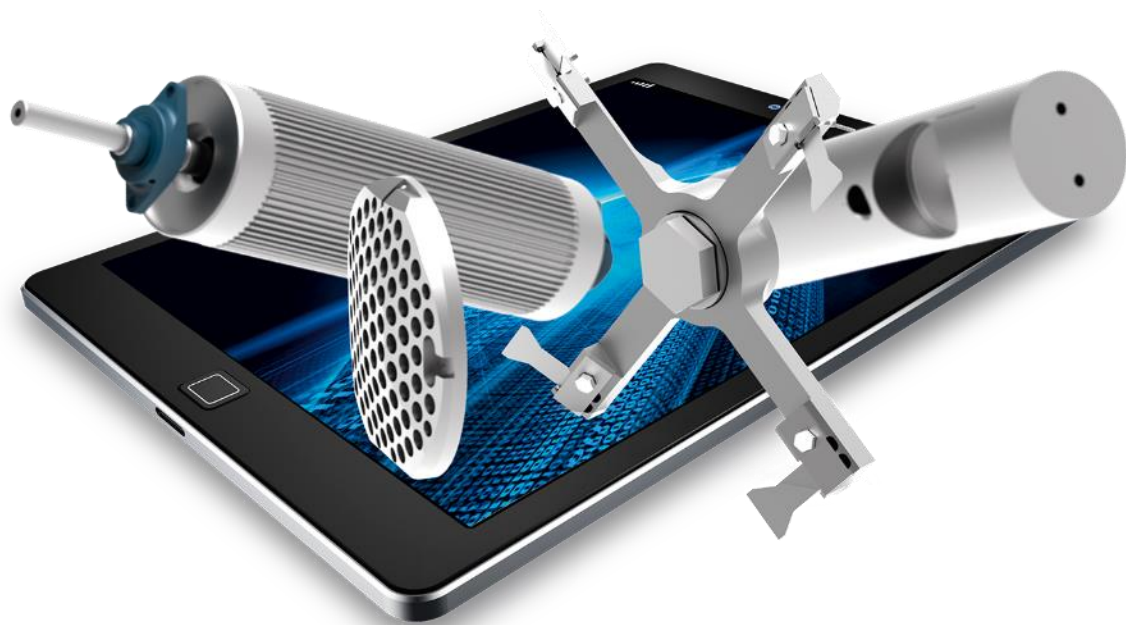
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Australia

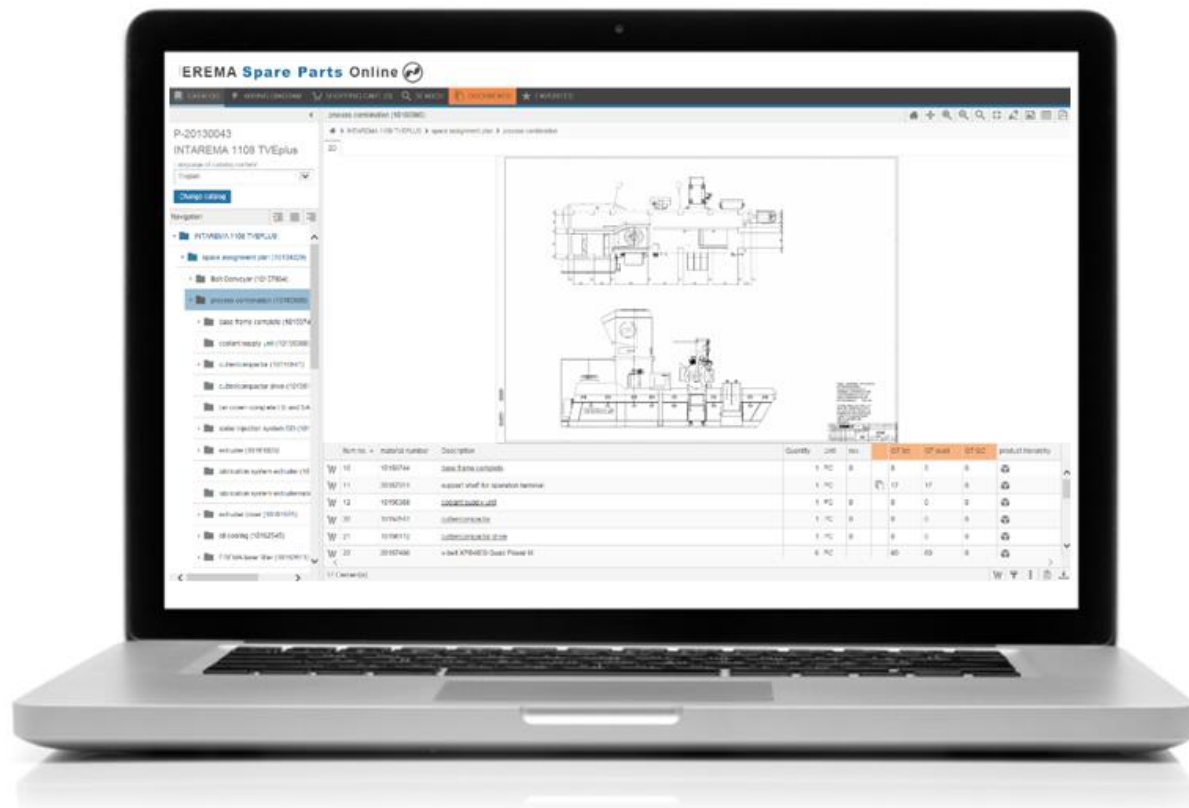
72

More than 5,000. Worldwide.

EREMA is the global market leader in plastic recycling systems.



EREMA **Spare Parts** Online 





ReFresher

Odour optimised repellets

Odor and Out

Treating Post-Consumer Recyclates to Remove Odors

During extrusion, recycled pellets from post-consumer material principally lose high volatile odor substances. To make them suitable for an even wider range of end products a downstream thermal-physical cleaning process removes the high molecular odor substances.

Recyclates from production and industrial waste are already used as secondary raw materials on a number of production lines. In the post-consumer sector, the recycling of PET bottles has long become established even for food contact grade applications. A key reason for this is the collecting and sorting systems for these materials which work efficiently in many regions. Aside from PET bottles, the potential of the remaining post-consumer wastes has yet to be exploited. This is attributable to factors such as severe fluctuations in the quality of the input material.

Continuous improvements in sorting, washing and mechanical recycling have contributed towards improving the quality of recyclates from post-consumer material. However, substances which cause unpleasant odors cannot be adequately removed within this processing chain and using existing extrusion technology. Thanks to the interplay of the Intarema TVEplus with ReFresher technology it is possible to remove a considerable proportion of these odor substances. While the extruder system primarily takes care of the high volatile, low molecular sub-

stances, the ReFresher also removes the low volatile, high molecular odor matter (Fig. 3).

Keep Odors Out in the First Place

A typical problem of plastic from municipal waste is that the packaging absorbs the odor of the food, cosmetics or cleaning agents inside it. The high molecular substances which migrate into the plastic are particularly stubborn odors. Further potential sources of odor cannot or can only partly be removed when sorting and washing. These include wood residues, paper remains (e.g. labels), rubber- and silicone-like contaminants, printing inks and food residues such as oils or fats.

In conventional processes these impurities in the extruder input material can burn easily during extrusion, change chemically as a result and thus create an odor which transfers to the plastic. This can be avoided through the mechanical recycling of post-consumer waste in which degassing and filtration techniques in particular inhibit the development of odors. In Erema's Intarema-TVEplus system the material's dwell time inside the large-scale preconditioning unit of up to one hour already reduces any odor. This is where the input material is heated to the polymer-dependent operating point. Thanks to the large active surface, high volatile, low molecular substances can escape from the material and are already removed by the integrated air flow ("Airfluh" technology) prior to extrusion.

Following pretreatment the dry, degassed and warmed through material is dosed into the directly connected extruder. It is precisely in this transitional area between the preconditioning unit



Post-consumer problem: For recycled pellets from municipal waste to give off less unpleasant odors they have to undergo a two-stage treatment process (a+b=)

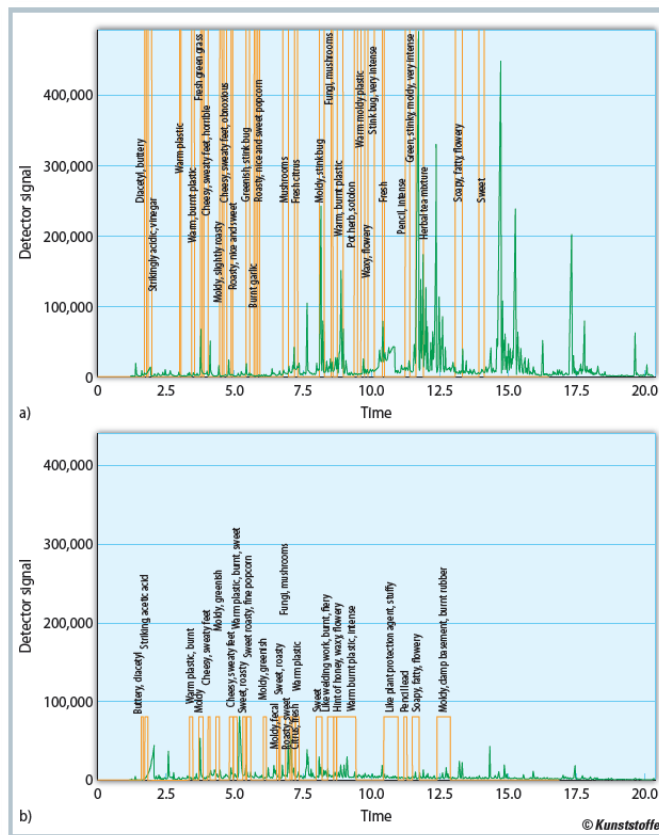
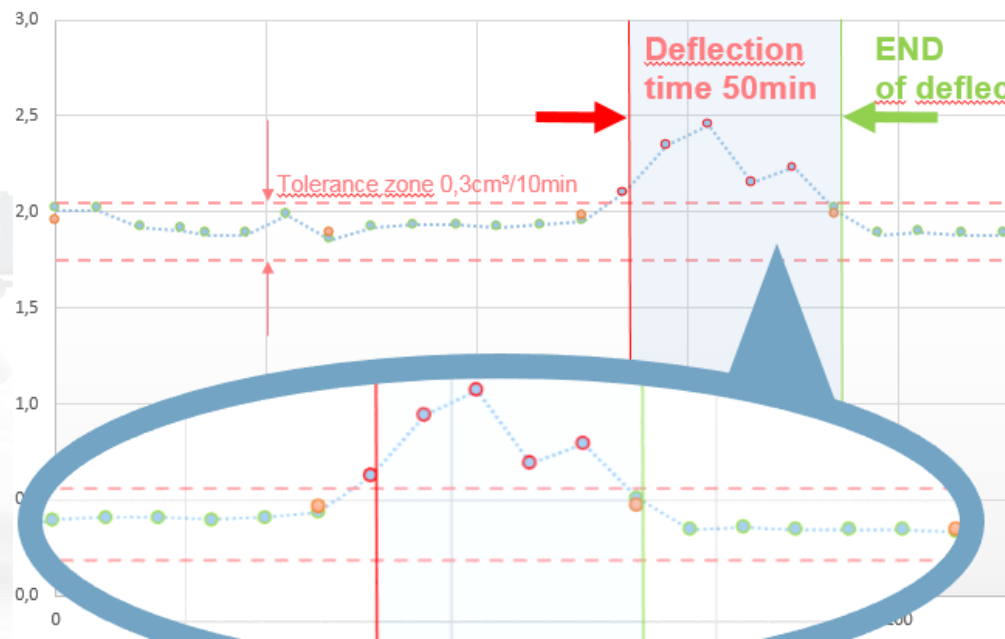


Fig. 2. VOC values (green) and odor perception (orange): a) Assessors can identify odors even if the odor-causing substances (VOCs) are below the detection threshold, i.e. no longer registered by conventional detectors and no peak is visible on the chromatogram; b) lower VOC concentrations correlate with lower odor perception (source: TU Graz)

Online measuring
QualityOn:MVR



Online measuring
QualityOn:Colour

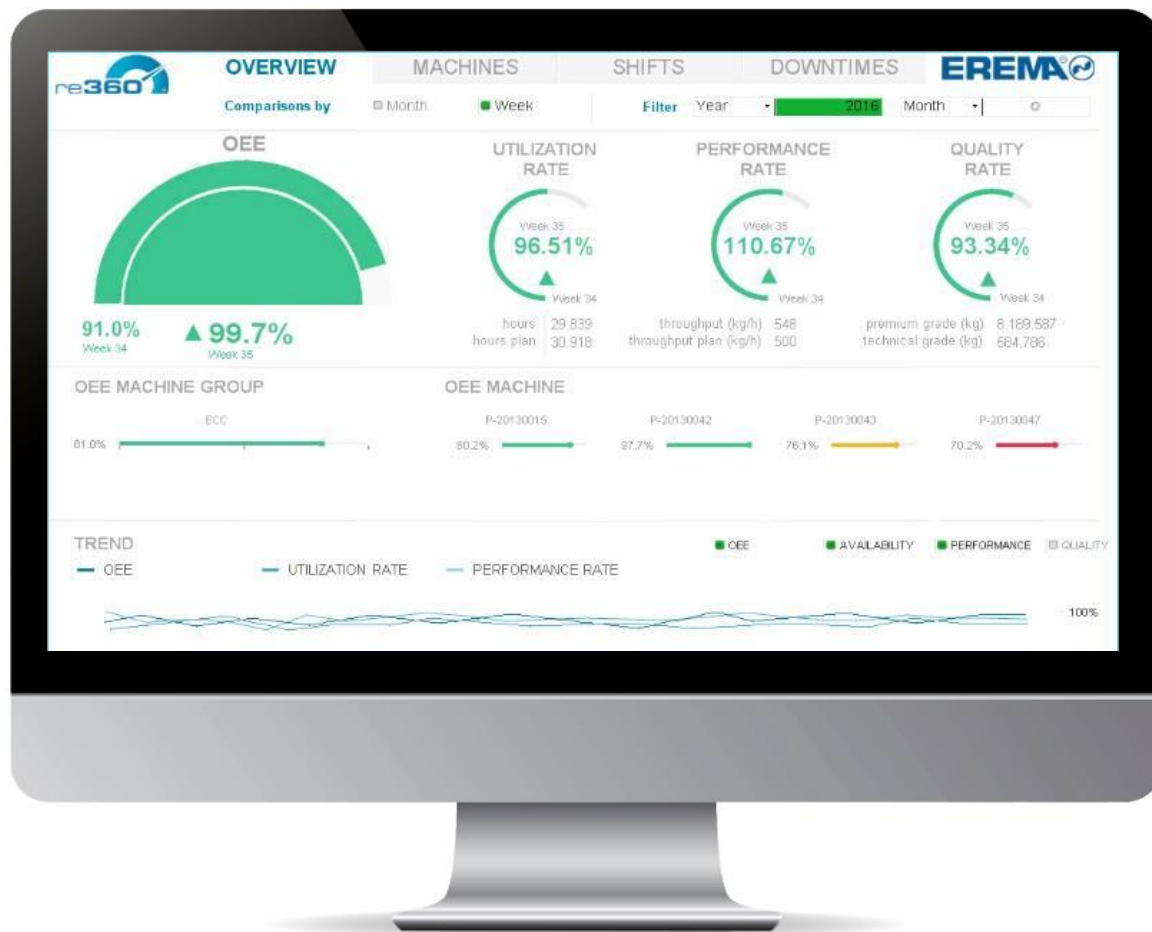


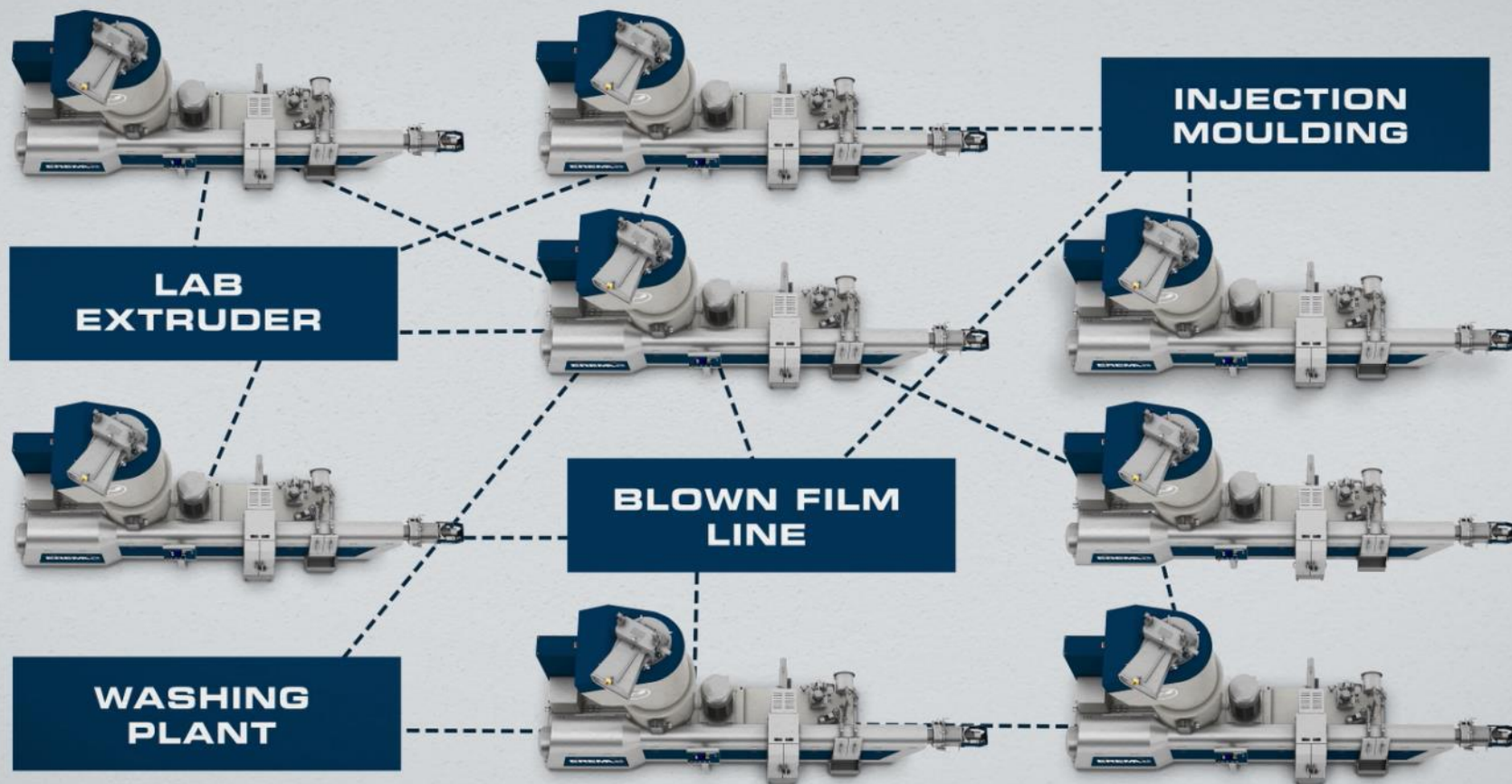
Quality data
Production data
Processing data
Maintenance data



TRANSPARENCY









CAREFORMANCE RECYCLING CENTRE

EREMA. We recycle your Live at K!



Manfred Hackl (CEO, **EREMA Group**), Alexandre Dangis (Managing Director, **European Plastics Converters**),
Ton Emans (President, **Plastics Recyclers Europe**) and Alfred Stern (Executive Vice President Polyolefins and Innovation & Techn., **Borealis**)



Design **for recycling**

Recyclable!

Verification and examination of recyclability:

RecyClass

ANALYSE STARTEN INFORMATIONEN ÜBER UNS

Das Recycling-Tool für Kunststoffverpackungen

ANALYSE STARTEN

- 1 Informieren**
Alles Wissenswerte zum RecyClass-Tool finden Sie hier.
- 2 Registrieren**
Erstellen Sie Ihren persönlichen Account.
- 3 Starten**
Einloggen und los geht's. Experimentieren Sie!

Standort: [Home](#)

RecyClass – das Recycling-Tool für Ihre Kunststoffverpackung

Das Design entscheidet, ob eine Verpackung recycelt werden kann. Wollen Sie eine umweltfreundliche Kunststoffverpackung konstruieren? Hier erfahren Sie, worauf es dabei ankommt.

In wenigen Schritten können Sie mit „RecyClass“ überprüfen, wie recyclingfähig Ihre Verpackung ist. Und Sie erhalten Hinweise, was Sie besser machen können. Schließlich können Sie Ihre Verpackung durch einen Experten zertifizieren lassen, wenn Sie unser Label für Ihr Marketing

News

[RecyClass Plattform Launchpad](#)

RECYCLASS PLATFORM

Assess, improve and endorse the recyclability of your packaging

FH CAMPUS WIEN
UNIVERSITY OF APPLIED SCIENCES

CIRCULAR PACKAGING DESIGN GUIDELINE

EMPFEHLUNGEN FÜR DIE GESTALTUNG RECYCLINGGERECHTER VERPACKUNGEN

Version 01
Jänner 2019

PACKFORCE AUSTRIA
das österreichische Verpackungsinstitut

CIRCULAR ANALYTICS

Prüfung und Testierung der Recyclingfähigkeit

Anforderungs- und Bewertungskatalog
des Institutes cyclos-HTP
zur EU-weiten Zertifizierung

zertifiziert vom Institut cyclos-HTP
100%
recyclingfähig

Fassung 3.7+ Rev2
Stand: 02. Januar 2019

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*Katalog zur Orientierung für die Beantragung der Recyclingfähigkeit der ZSVH vom 02. November 2018



PCEP
POLYOLEFIN
Circular Economy Platform



helping recyclers develop the circular economy model
Success and implement the courage to do it
developing technologies more than
120 companies across Europe
PRE future-oriented
Plastics Recyclers making plastics circular
Innovation Recyclers
Europe experts
IREMA
increasing many years of cooperation
the recycling rates together
processing the interests of plastic recyclers in Europe
Partners goal-oriented
a profitable and sustainable plastics recycling industry
meet challenges

Amsterdam, June 2019

Dear customers,
Dear Ton Emans,
on behalf of all members of Plastics Recyclers Europe,
We would like to thank you for the excellent long lasting
cooperation in the past between IREMA and the members of
Plastics Recyclers Europe (PRE). We appreciate PRE's objective
to establish a profitable and sustainable plastics recycling
industry by helping recyclers develop and implement the circular
economy model, and to harmonize the recycling standards
across Europe.
Especially, we thank all our customers for the open feedback and
discussions. By means of the open work atmosphere we could
develop future-oriented technologies for the

Cello Recycling

Ton Emans



DISCOVERY

DAYS 2018

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