

# LATEST SOLUTIONS FOR THE POWDER COATINGS INDUSTRY

Trends Driving Powder Coatings Sustainability & Low Bake Technologies



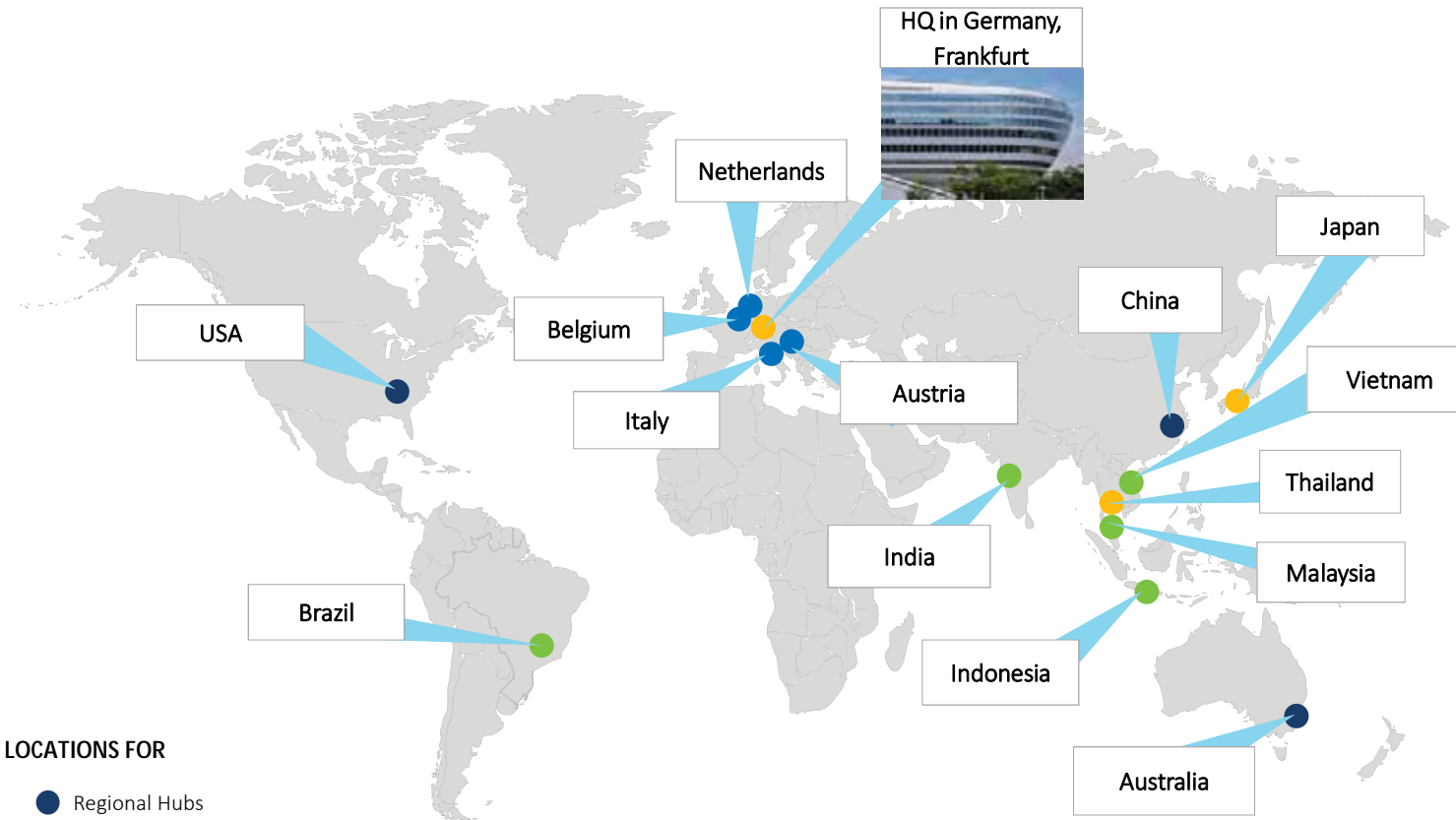
Robert Watson, Global Marketing Director – Powder Coating Resins  
Robertino Chinellato, Global Technology Director – Powder Coating Resins



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# ALLNEX – THE GLOBAL LEADER IN INDUSTRIAL COATING RESINS



- LOCATIONS FOR**
- Regional Hubs
  - R&D Centers
  - Development
  - Technical Services

<b>23</b> R&D centers across the Globe (incl.JVs)	<b>32</b> Production sites
<b>&gt;400</b> Scientists & Technicians	<b>2.2</b> €Billion sales
<ul style="list-style-type: none"> <li> Technical service close to customers</li> <li> Strong analytical capabilities</li> <li> IP department</li> </ul>	
<p>New high-tech R&amp;D center in Austria (Werndorf) inauguration Q3 2022</p>	

# GC IS ASIA PACIFIC'S LEADING PETROCHEMICAL PRODUCER



Market Capitalization

**€7 Billion**

As of Dec'21

Revenue

**€10.7 Billion**

LTM Sept'21

Adjusted EBITDA

**€1.5 Billion**

LTM Sept'21

Ranked

**16<sup>th</sup>**

of Stock Exchange of Thailand (SET)

## Competitiveness & Recognitions

**1<sup>st</sup>**

ASEAN

**25<sup>th</sup>**

Global

ICIS Top 100 Chemical Companies

ICIS Sep 2020

**1<sup>st</sup>**

Global producer



Global Compact **LEAD**

SUSTAINABLE DEVELOPMENT GOALS

The 1<sup>st</sup> company in Thailand recognized in LEAD LEVEL Among 41 global lead participants

MEMBER OF **Dow Jones Sustainability Indices**  
In Collaboration with RobecoSAM

Sustainability Award Gold Class 2021

**S&P Global**



The only company in chemicals sector ranked **No.1** FOR 3 CONSECUTIVE YEARS

The only company in chemicals sector of Asia awarded **GOLD CLASS MEDAL**

The 1<sup>st</sup> and only Thai-own conglomerate to achieve **A LIST: CLIMATE CHANGE & WATER SECURITY**

**1<sup>st</sup>**

ASEAN

**5<sup>th</sup>**

Asia Pacific

Olefins Capacity

IHS Markit Nov 2020

**Bioplastics (PLA & PBS)**

MSCI (top 5)

FTSE4Good (Top 3)

LCST (Excellence) 2 consecutive years

THS THAILAND SUSTAINABILITY AWARDS 4 consecutive years

THAILAND CORPORATE EXCELLENCE AWARDS Distinguished

# Business Overview

allnex is a leading producer of resins, additives and crosslinkers for use in various industrial coating resins applications



Global player with €2.2 billion annual sales and a leading product portfolio

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# Agenda

1 Sustainability and Allnex

2 Powder Coatings & Sustainability

3 Low Temperature Cure Systems

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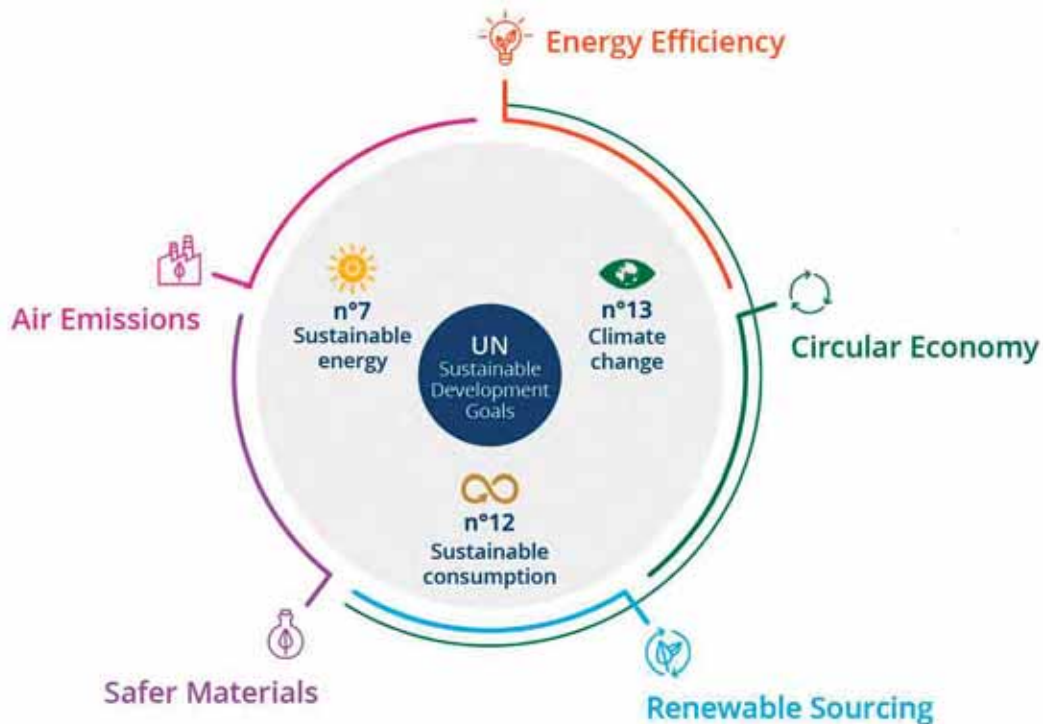
# An ESG Program aligned with United Nations Sustainable Development Goals



ALLNEX ANCHORED SUSTAINABILITY IN ITS CORPORATE STRATEGY  
A FOCUS ON SDG #7, #12, AND #13 TO MAKE MAXIMUM IMPACT

# Materiality and Impact – The 5 Pillars of Our Sustainability Program

OUR FOCUS SDG HAVE BEEN TRANSLATED INTO 5 HIGH PRIORITY AREAS, KNOWN AS ALLNEX FIVE SUSTAINABILITY PILLARS



These pillars are the basis for an ambitious Sustainability Program, going from product development, raw material sourcing, manufacturing to supply chain and service to market and customers.

Our Sustainability Pillars are a testimony of how Circularity is at the core of allnex product and market development efforts, including through energy efficiency and renewable sourcing.



# How Can allnex Create Value and Lower Carbon Footprint



RAW MATERIALS

Scope 3 Upstream

**SELECT RAW MATERIALS** with

- Lower **carbon footprint**
- **Renewable** content
- **Recycled** content
- No **chemicals of concern**



OWN OPERATIONS

Scope 1 & 2

**OPTIMIZE OPERATIONS** to

- Reduce **waste** production
- Reduce **water** usage
- Reduce **energy** usage
- Increase **purchase** of green energy



END-USE PRODUCTS

Scope 3 Downstream

**DEVELOP TECHNOLOGIES** enabling...

- Increased **end-product longevity**
- **Easier recycling** of coated objects
- **Lower application energy**
- **Second life** to finished goods



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# Sustainability in the Market: Macro Trends

Long range trends which will impact coated surfaces

## Electric Vehicles



## Regulatory Pressure



## Circular Economy



Disruptive Driver

Drive train shift from ICE to electric

Governmental policy shift to lower VOC

Growing public awareness

Technology Impact

Battery technology & 'Light-weighting'

Pressure on solvent borne coatings

Repurposing end-of-life materials

Opportunity

'New' substrates multi-material combinations

Technology switch to WB & Powder

Alternative polymer building blocks

# Sustainability in the Market: Technology Drivers

Significant activity in Ultra Low Bake and growing interest in rPET

## Ultra Low Bake



Reducing cure temperature <math><130^{\circ}\text{C}</math> saves energy & opens up new substrates

MDF, natural wood, plastics & composites

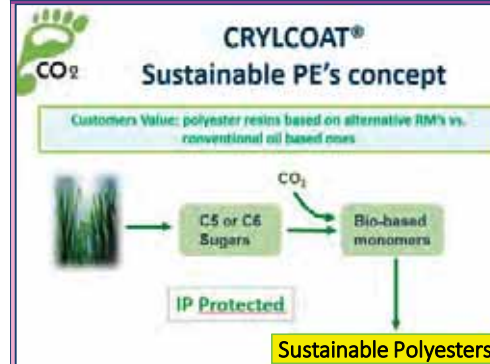
## Recyclables



Circular economy has become a focal point in the sustainability discussion

Using plastic waste (rPET) as building blocks for polymers

## Renewables



Protecting Earth's natural resources and reducing CO<sub>2</sub> emissions

Finding alternatives to oil-based raw materials

## Regulatory



Eliminating Substances of Very High Concern is of paramount importance

Trimellitic anhydride, tin & organotin catalysts

# Sustainability in Powder Coatings

Bio  
Based  
Polyesters



Renewable  
Sourcing

rPET  
Based  
Polyesters



Circular  
Economy

Low  
Temperature  
Cure



Energy  
Saving



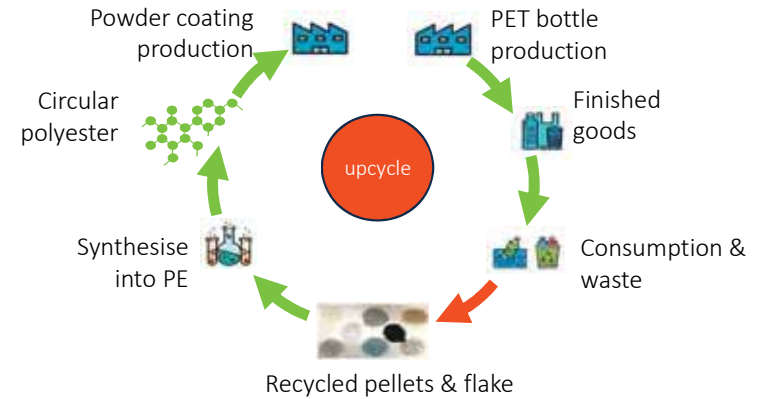
# Sustainability in the Market: rPET Polyesters

## Post Consumer rPET



- Post-consumer rPET is derived from articles such as used PET water bottles
- allnex is looking at this as a potential feedstock

25% of rPET in all resins, +10% of rPET for superdurable to retain the weathering resistance



## Technology Development

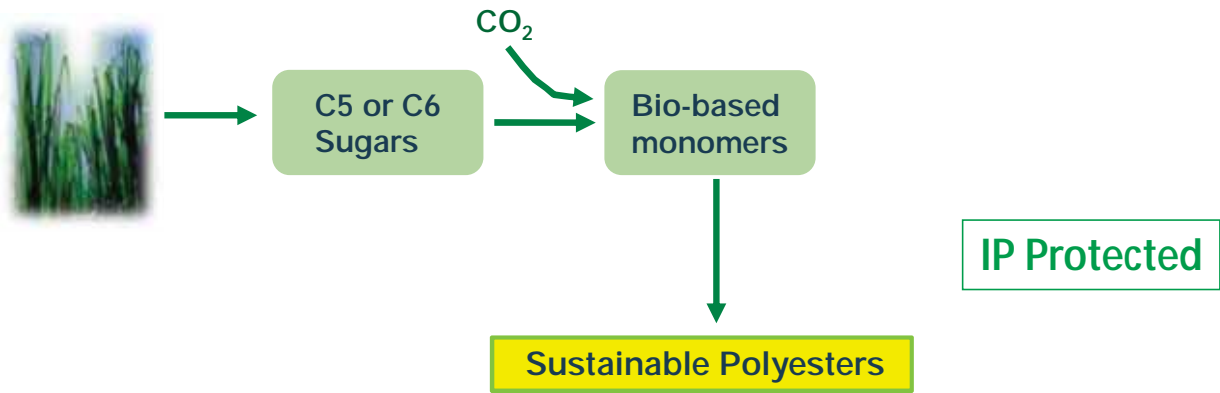
Product Group	Typical Segment
Hybrids	Metal Furniture Domestic Appliance
Standard Durable	Industrial Outdoor Architectural
Superdurable	Architectural <sup>+</sup>

*rPET CRYLCOAT OCEAN range is commercialised*

# Sustainability in the Market: CRYLCOAT® polyesters concept



Customers Value: polyester resins based on alternative RM's vs. conventional oil based ones



CRYLCOAT®	Glass transition T [°C]	Viscosity at 200°C [mPa.s]	AV ASTM D 1613	Characteristics
E 04342	60	6000	35	Indoor 70/30 Hybrid. Pilot sample available
E 04367	59	4000	33	Outdoor 5% HAA Industrial. Pilot sample available

*The combination of green bio-based raw-materials suitable to produce polyesters for powder coating applications*



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# Low Temperature Cure Portfolio

CRYLCOAT®	Glass transition T [°C]	Viscosity at 200°C [mPa.s]	AV ASTM D 1613	Ratio PE/HA	Resin characteristics	Curing (°C x min)
2608-6	60	4000	33	95/5 HAA	5% HAA outdoor industrial	160 x 12
2696-6	60	4000	37	95/5 HAA	5 % HAA outdoor industrial	160 x 10
2679-6	60	5000	30	95/5 HAA	5 % HAA outdoor architectural	160 x 12
E 04709	60	5000	31	95/5 HAA	5 % HAA outdoor architectural	160 x 12
4655-2	58	5800	31	95/5 HAA	5 % HAA outdoor superdurable	160 x 12
4648-0	50	1800	38	94/6 HAA	6 % HAA outdoor superdurable	160 x 12
4643-3	62	7500*	50	93/7 HAA	7 % HAA outdoor superdurable	160 x 12
2668-6	60	12000	18	97/3 HAA	3 % HAA outdoor architectural	160 x 12
2693-6	60	11000	54	93/7 HAA	7 % HAA outdoor architectural	160 x 12
E 04681	52	5000	69	50/50	50/50 Hybrid for indoor glossy system	130 x 10
E 04735	52	5500	69	50/50	50/50 Hybrid for indoor matte dry-blend system	130 x 10
E 04632	53	7900	20	80/20	80/20 Hybrid for indoor matte dry-blend system	130 x 10
E 04815	44	2000	100	50/50	50/50 Hybrid for indoor matte one-shot system	130 x 10
BECKOPOX E 04743	38	250 (@175 °C)	450 (EEW)	-	Epoxy resin for glossy and matte systems	130 x 10
BECKOPOX E 04749	36	175 (@175 °C)	550 (EEW)	-	Epoxy resin for matte system	130 x 10

*broad range of low bake and/or fast cure products for indoor & outdoor*

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THANK YOU FOR JOINING OUR PRESENTATION



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