



Solutions for a Better Tomorrow

Pipe Customer Event > Site Wesseling-Knapsack

Bonn, Germany

October 12th, 2023



Solutions for a Better Tomorrow

Site

Wesseling-Knapsack > Site

Site Premises Wesseling 2.7 km² & Chempark Knapsack 1.6 km²

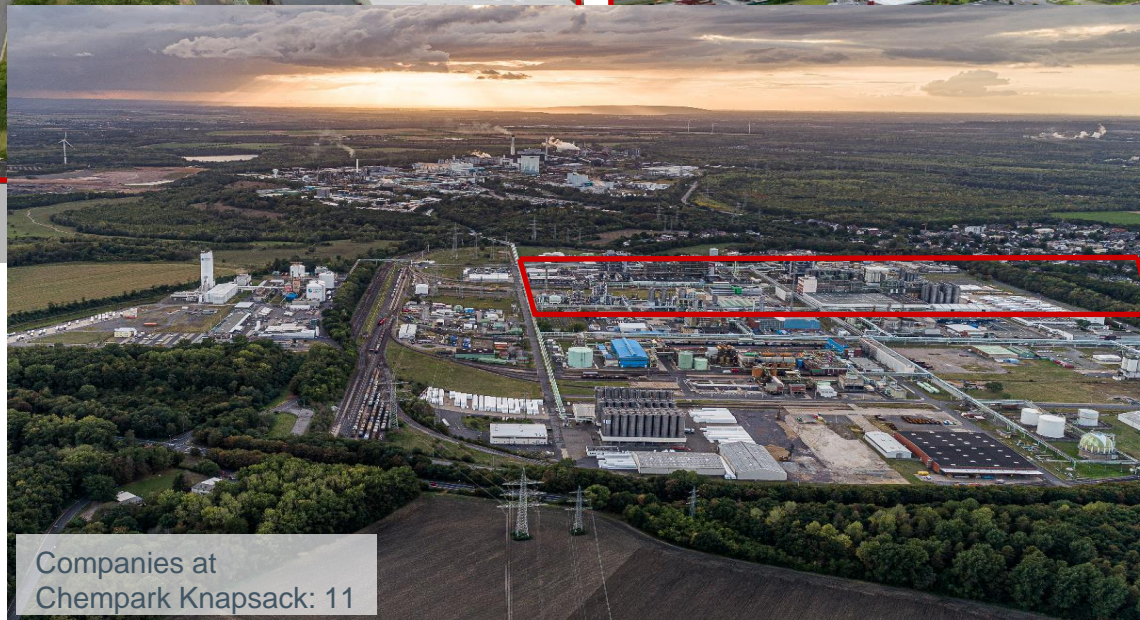


Site Wesseling - View to the North



Pipe racks	18 km
Pipelines	610 km
Railway	12 km
Roads	22 km

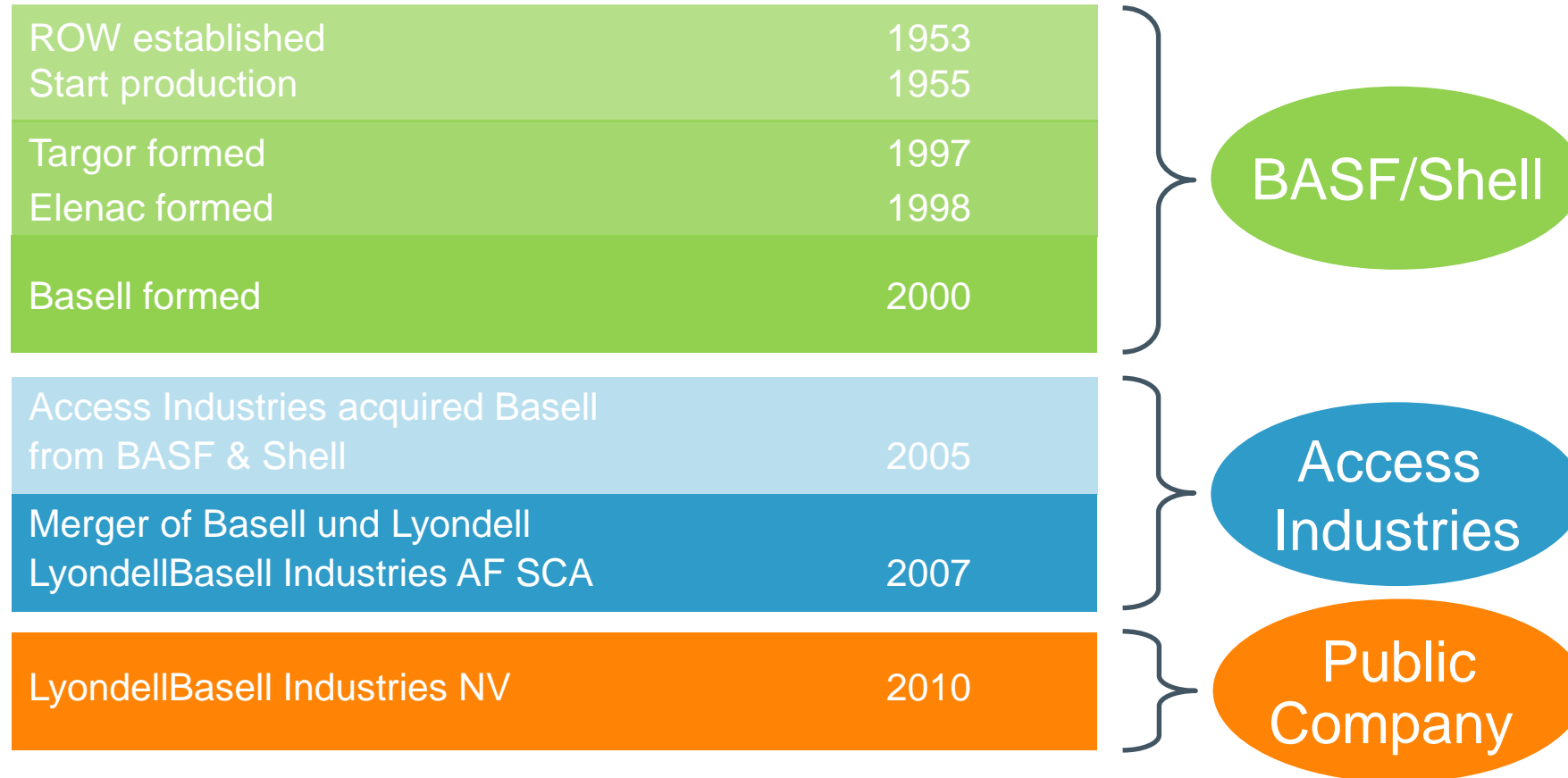
Site Wesseling - View to the South



Companies at
Chempark Knapsack: 11

Chempark Knapsack

Wesseling-Knapsack > Site Site History Wesseling



Site Wesseling 70th anniversary on August 27, 2023

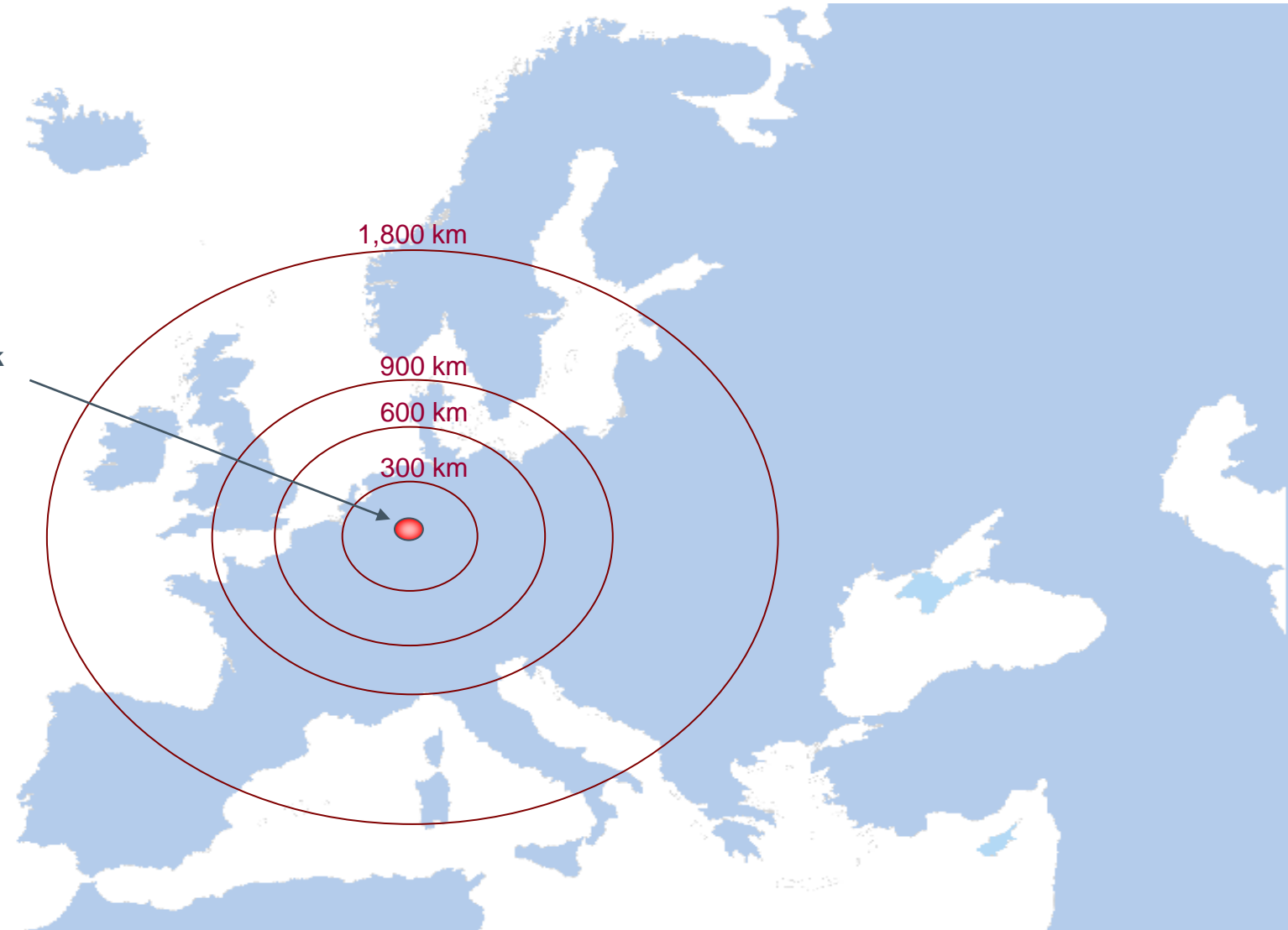
Wesseling-Knapsack > Site Proximity to the European Key Markets for Olefins & Polyolefins

PEOPLE

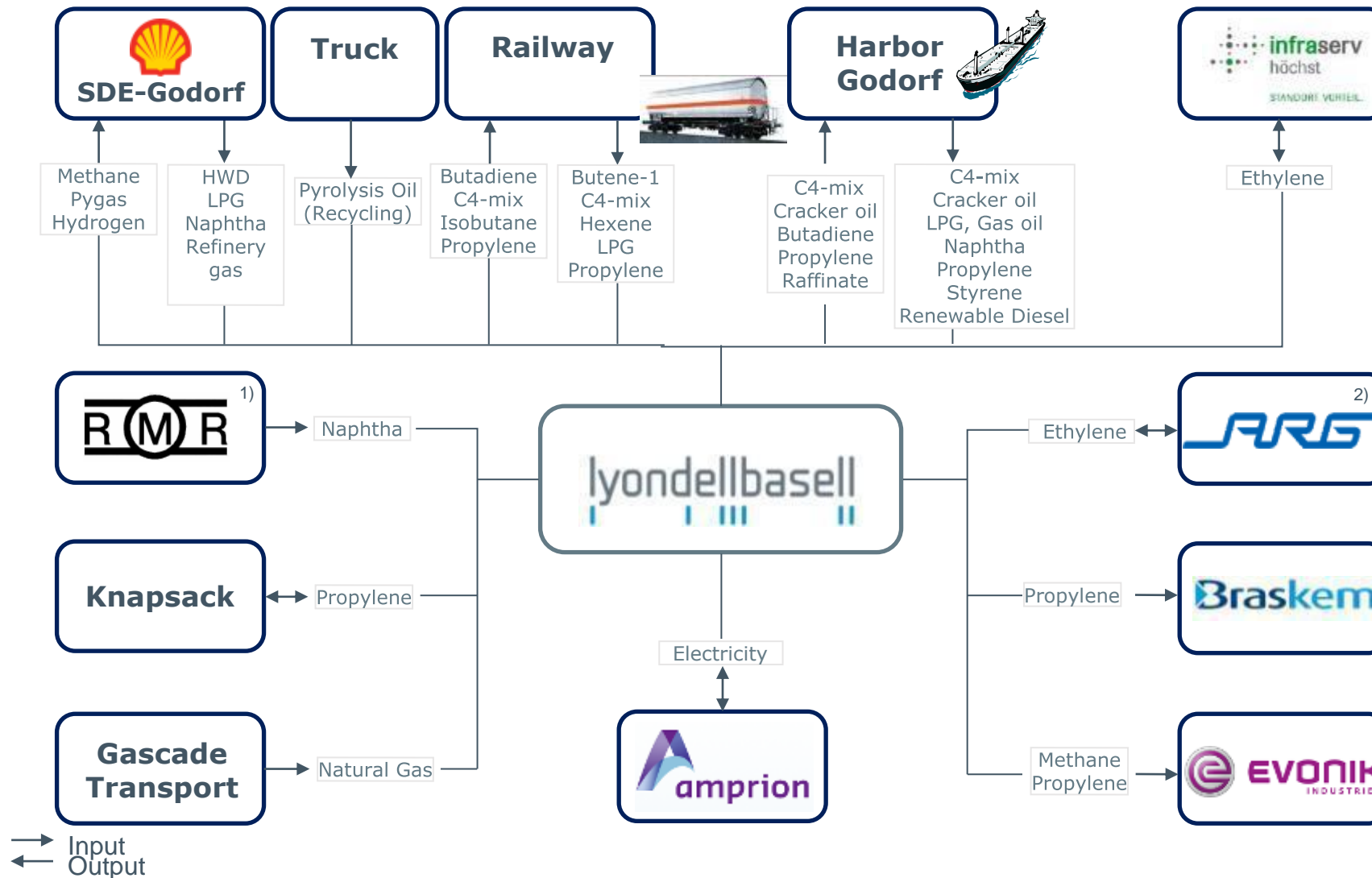


- ~ 1,600 employees
- ~ 150 apprentices
- ~ 1,000 contractors

Wesseling-Knapsack



Wesseling-Knapsack > Site Integrated in the Cologne Petrochemical Hub



1) Rhein-Main-Rohrleitungsgesellschaft 2) Aethylen-Rohrleitungsgesellschaft

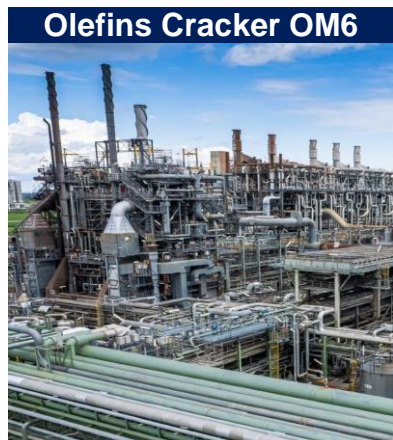


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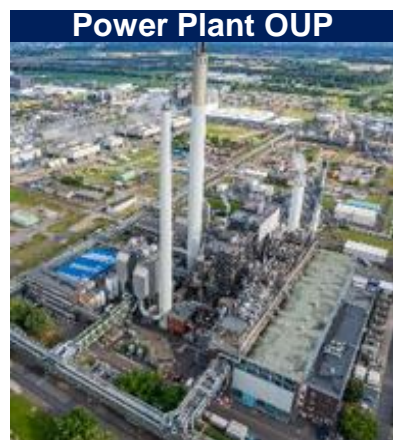
Assets

Overview Process Technologies & Benchmark Capacities

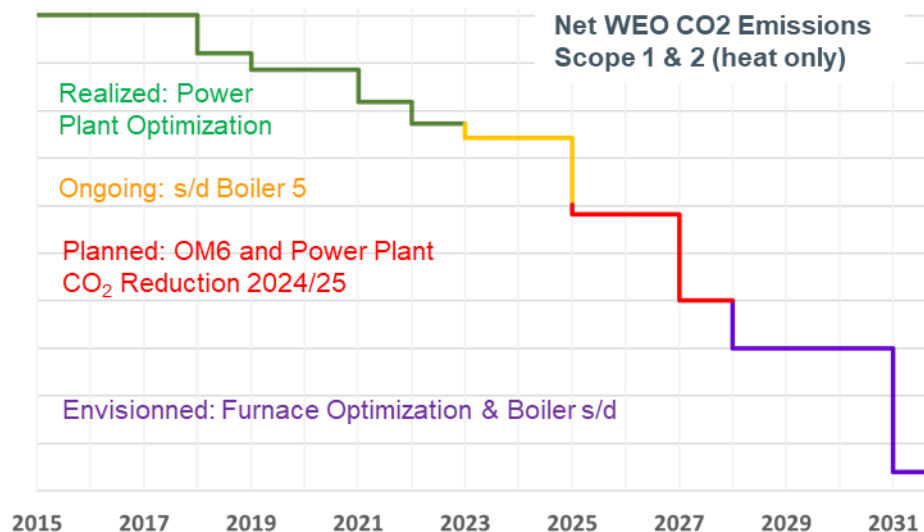
Business	Area	Unit	Process/Technology	Capacity By Unit	Capacity By Cluster	Capacity By Business
OLA	Ethylene	OM4	Hydrowax	310 kt/y	1.090 kt/y	1.320 kt/y
		OM6	Naphtha	780 kt/y		
	Butadiene	WBD	Crude C4	230 kt/y	230 kt/y	
PE	HDPE	OG2	<i>Lupotech</i> G Gas Phase	280 kt/y	820 kt/y	1.270 kt/y
		OH	<i>Hostalen</i> ACP Slurry	325 kt/y		
		OL4	Phillips Slurry Loop	215 kt/y		
	LDPE	OT3	<i>Lupotech</i> T High Pressure Tubular	200 kt/y	450 kt/y	
		OT4	<i>Lupotech</i> T High Pressure Tubular	250 kt/y		
PP	PP	ONC	Novolen Stirred Gas Phase	255 kt/y	515 kt/y	515 kt/y
		OS	<i>Spheripol</i> Slurry	260 kt/y		
APS	Compound	OA	Extrusion Process	215 kt/y	215 kt/y	215 kt/y
Utilities	Power Plant	OUP	Electricity (7 Turbines) Steam (Gas Turbine)	150 MW 52 MW	202 MW	
	Water & Technical Gases	Ouw	Waste Water Plant		1.250 m ³ /h	



- Sustainability Focus: CO₂ reduction through implementing our Carbon Reduction Plan projects during 2024 Turnaround



- Sustainability Focus: s/d lignite boiler after steam connection with Evonik is realized
- The Power Plant covers 2/3rd of the site energy demand
- Steam production is 3.9 million t/a
- The site power consumption is 1.3 billion kWh (equals a city with 300,000 inhabitants)



The Site Carbon Reduction Program matches the LyondellBasell company target of 42% CO₂ reductions, scope 1 & 2, until 2030



- Capable to running fully on renewable feedstocks, if required



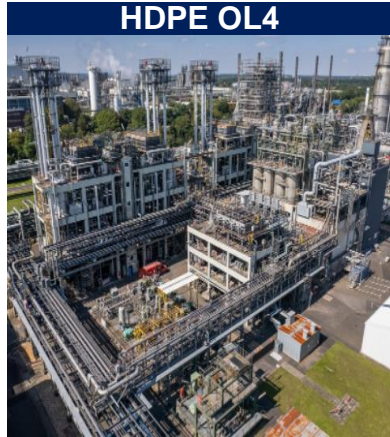
- Straight conversion of renewable-based feedstock into *CirculenRenew* PE grades possible



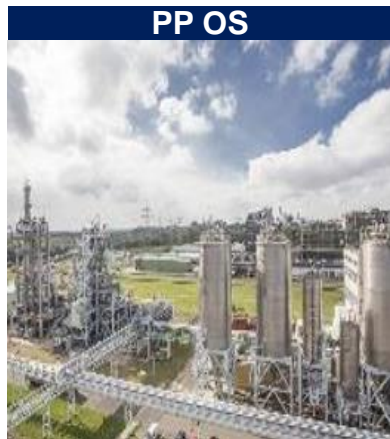
- Straight conversion of renewable-based feedstock into *CirculenRenew* PP grades possible



Polymers made from **renewable feedstocks**



- Easy scaling up of *CirculenRecover* PE grades possible, thanks to multiple extrusion and storage capabilities



- Easy scaling up of *CirculenRecover* PP grades, thanks to direct connection of the plant with a multitude of compounding lines



Polymers made from plastic waste through a **mechanical recycling process**

Wesseling-Knapsack > Assets

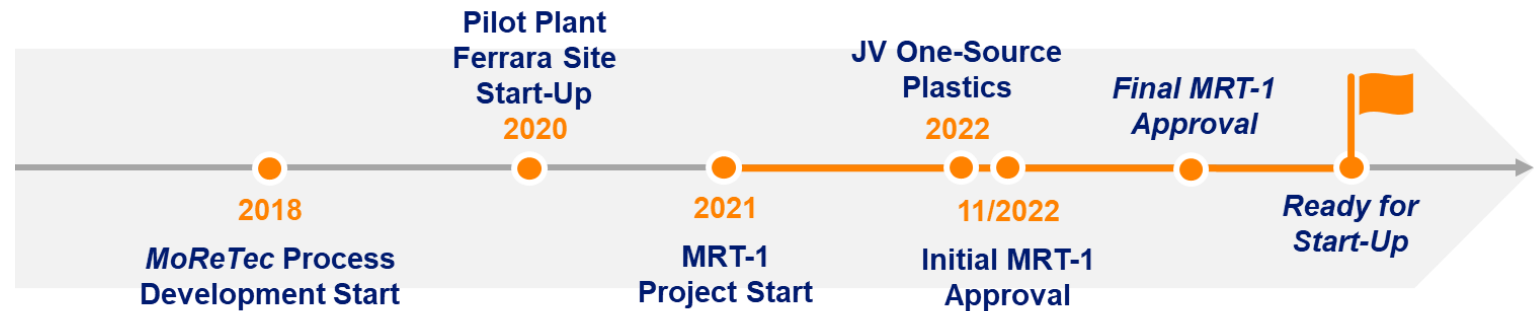
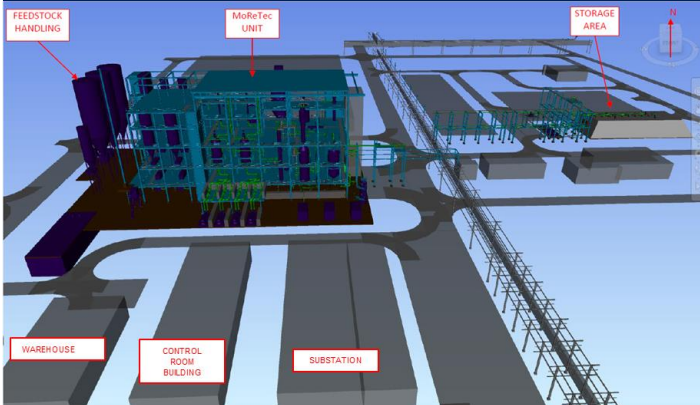
Focus *Circulen*Revive Production

MoReTec Pilot Plant, Ferrara, Italy



Polymers made by converting plastic waste into feedstock to produce new polymers using an **advanced recycling process**

Project MoReTec Plant, Wesseling



HDPE OH



- Main market served: Well, You!

HDPE OG2



- Main markets served: Automotive & Industrial

PPC OA



- Integrated with OS PP plant for inline powder supply to OA lines
- World biggest capacity for compounding of polypropylene
- Main markets served: Automotive & White Goods

Cooling Water



- 18 wells supply app. 20,000,000 m³ water per year for steam production and to compensate condensation in the cooling system
- In the cooling tower centres East and West, app. 80,000 m³ cooling water are transferred per hour
- The cooling water pumps are capable of filling an Olympic size pool in roughly one minute

Waste Water



- Own mechanical and biological Waste Water Treatment Plant
- Waste water treatment (hydraulic) 1,250 m³/h (corresponds to the requirements of a city with 100,000 inhabitants)

Flare Center West

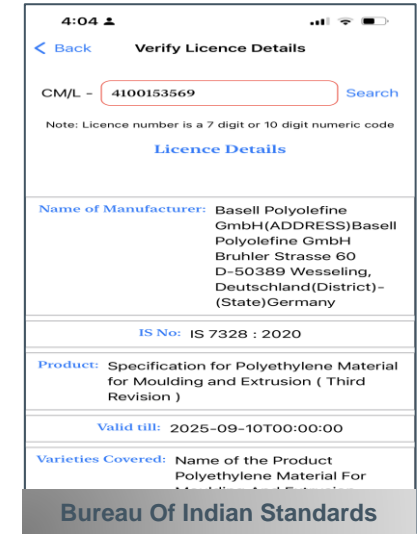


- Two Flare System Centers (East & West) with total three ground flares and four elevated flares



- Process safety assessments are carried out in all 19 plants regularly, one iteration across all plants consumes around 25,000 manhours
- The 19 plants are segregated in approximately 3,500 individual plant areas and equipment which are subject to process safety assessments
- Over 14,000 process steps are continuously subject to risk assessment and risk reduction measures, if required
- Results of all assessments are collected in a safety report and are the basis for informing authorities and Corporate safety management
- In addition, authorities run regular process hazard inspections in all plants

Wesseling-Knapsack > ... also an Asset Management System Certifications



Wesseling-Knapsack > ... and another asset

Apprentices Formation

150 apprentices in training on site with 50 apprentices passing their final examinations at LyondellBasell Wesseling every year

- Chemical Operators
- Electricians
- Mechanics
- Industrial Clerks

In addition, training available to drive continuous improvement of all staff on site

- Manufacturing-specific technical and administrative training
- Management training
- Language training
- IT training



We select our own apprentices and develop them to master highly qualified operator or handyman positions

- **The Site is located in the center of the European market and close to LyondellBasell's customers**
- **The site is LyondellBasell's largest site for polyolefin production globally**
- **The site is internally integrated from steam crackers to polymers, including utilities**
- **The site is externally integrated in the Cologne chemical hub and has a far-reaching logistics network for all inbound and outbound streams**
- **The site operates efficient plants with state-of-the-art proprietary technologies, supported by a highly skilled work force**
- **The site runs a strategic program to continually reduce CO₂ emissions**
- **The site uses its unique asset base to drive the conversion to the Circular Economy**

... and now the most important part of the presentation!

The Site Safety Video!



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Thank you for your attention! Questions?



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Backup

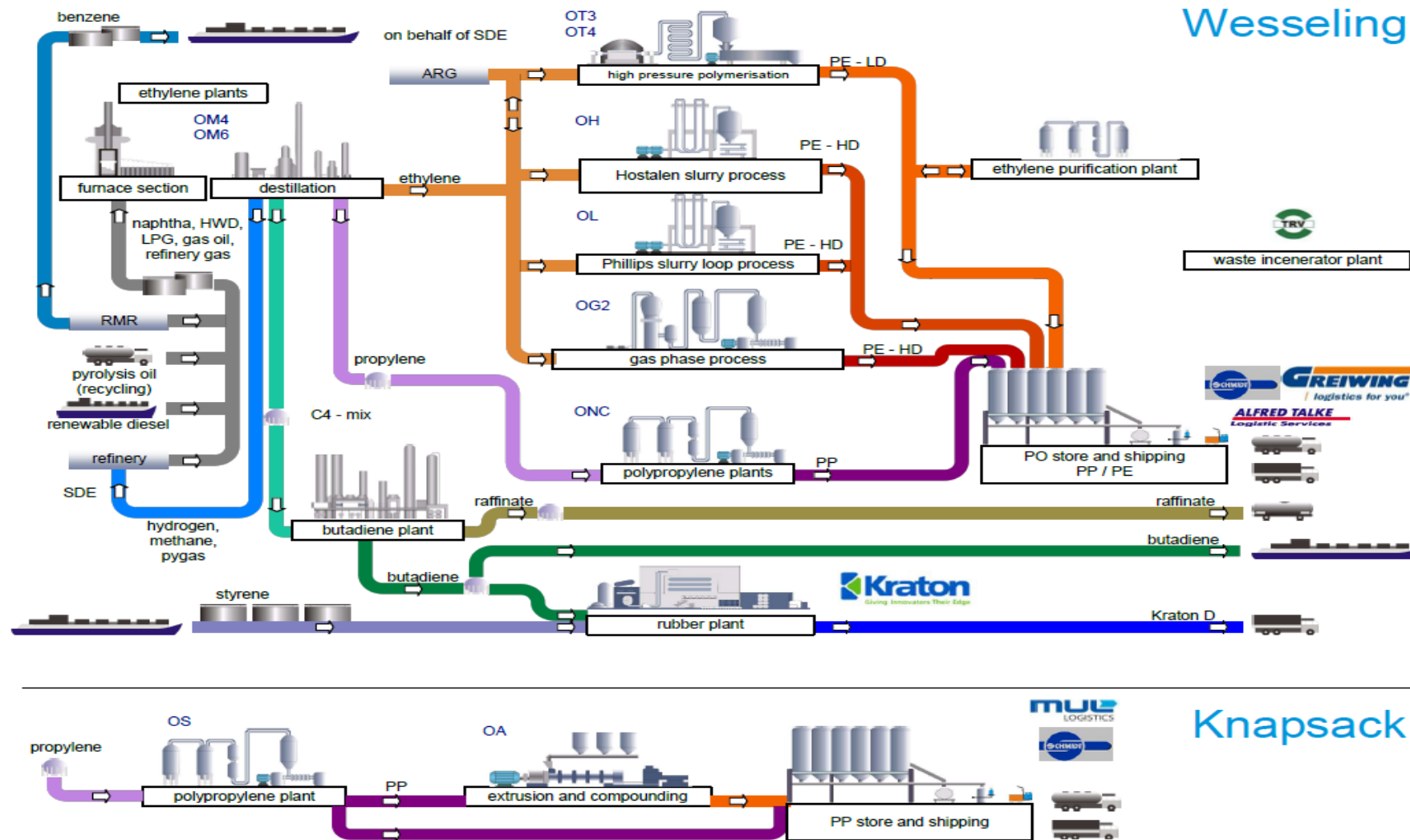
Wesseling-Knapsack > Assets

Overview Process Technologies

Business	Area	Unit	Process/Technology
Olefins	Ethylene	OM4	Hydrowax
	Butadiene	OM6	Naphtha
		WBD	Crude C4
PE	HDPE	OG2	<i>Lupotech G</i> Gas Phase
		OH	<i>Hostalen ACP</i> Slurry
		OL4	Phillips Slurry Loop
	LDPE	OT3	<i>Lupotech T</i> High Pressure Tubular
		OT4	<i>Lupotech T</i> High Pressure Tubular
PP	PP	ONC	<i>Novolen</i> Stirred Gas Phase
		OS	<i>Spheripol</i> Slurry
APS	Compound	OA	Extrusion process
Utilities	Power Plant	OUP	Steam & Electricity from Power Plant and Turbines
	Electricity Supply	OUE	Transformers and Power Supply System
	Utility Generation & Supply	Ouw	Water Supply & Disposal, Techn. Gases
Logistics	Tank farms, Pipelines, Rail car, Harbor	OML	

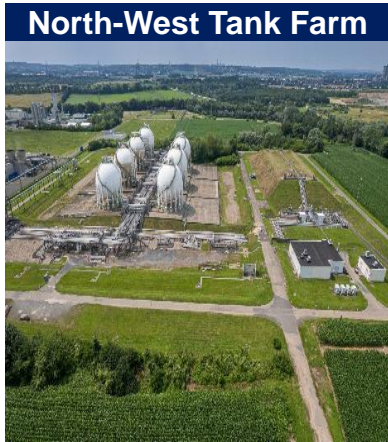
Wesseling-Knapsack > Assets

Logistical Integration of and Utilities Supply to all Own Assets

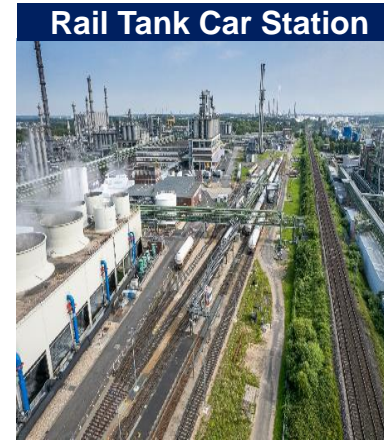


Wesseling-Knapsack > Assets

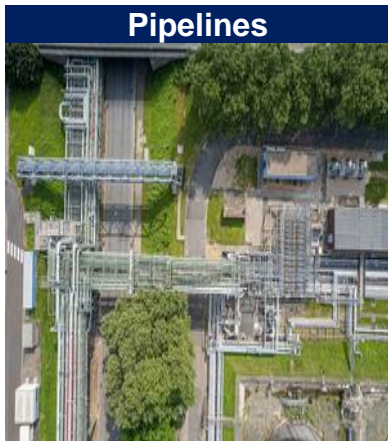
Tank Farms, Import/Export Facilities



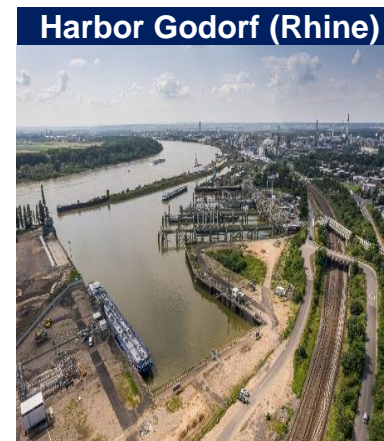
- Two Tank Farms
- Tanks for Liquids and for liquid gases



- Three Rail tank car stations with total six loading or unloading stations



- Pipe racks on about 18 km with 260 internal pipelines
- Two pipeline routes for connection with Shell Refinery



- Two basins at Harbor Godorf

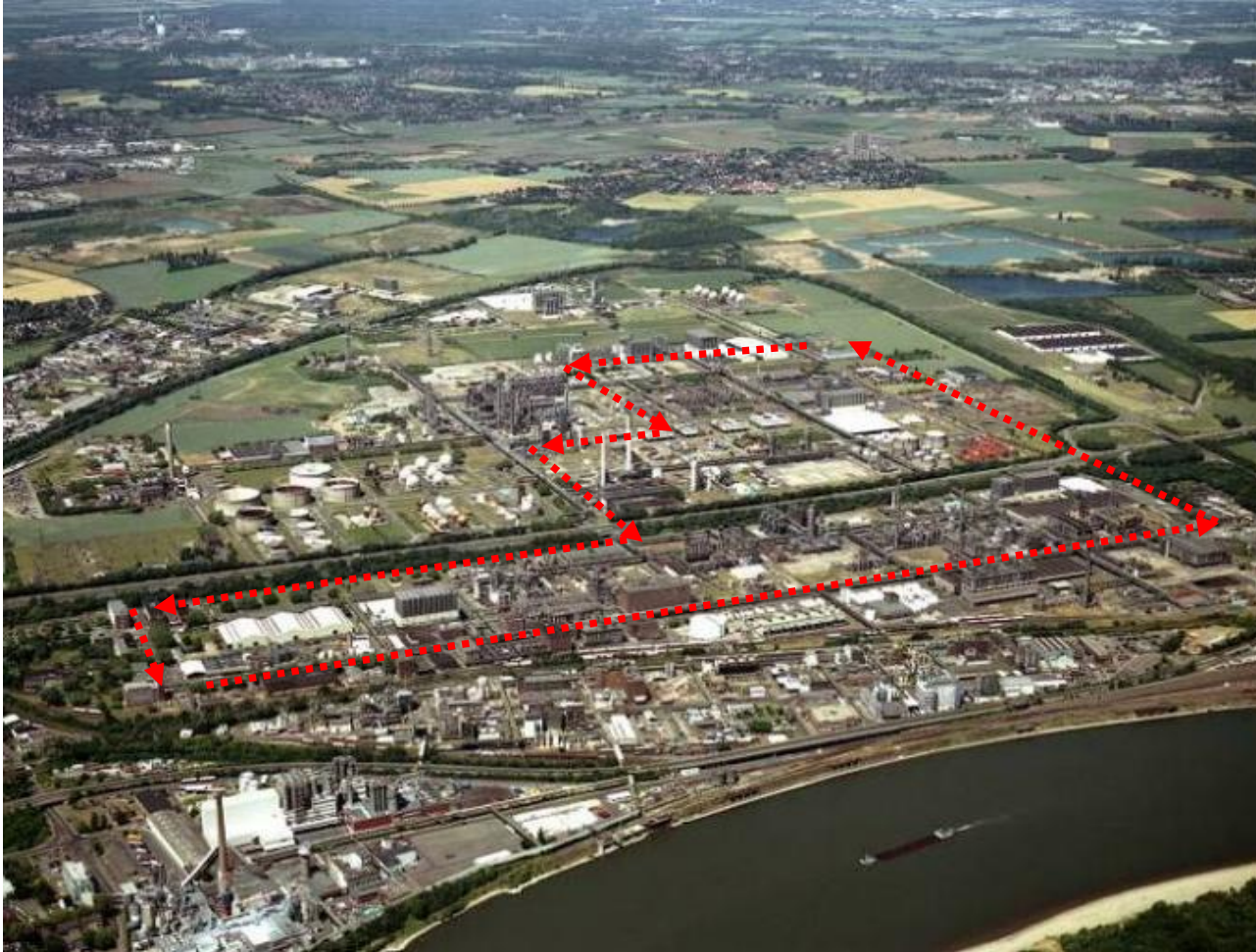
Polyolefins logistic and feedstock supply

- **Maximum use of intermodal transport services (rail & inland waterway) via Köln-Eifeltor and Bonn Harbor (Container export via seaports)**
- **Optimization of truck loads („Payload“) to reduce truck movements**
- **„Operation Clean Sweep“ – Avoidance of granulate losses**
- **Use of circular systems (PRS, RESY, RIGK) for packaging materials**
- **Primary Feedstock supply methods via**
 - Shell refinery
 - RMR pipeline
 - ARG pipeline
 - Barge (Harbor)
 - Railcar



PRS = Pallet Return System
RESY = RESY Organisation für Wertstoffentsorgung GmbH
RIGK = RIGK GmbH (Return and recycling of packaging and plastics for the industry and agriculture)
RMR = Rhein-Main-Rohrleitungsgesellschaft
ARG = Aethylen-Rohrleitungsgesellschaft

Site tour



- No smoking
- No mobile phones outside the offices
- No photography
- Please remain with your guide all times
- Please use the safety belt in the bus during the site tour
- Please use hard hats and high visibility jackets which are provided in the bus
- In the event of an emergency follow the instructions from your guide
- Do not remove any documents from the site

Cautionary Note Regarding Forward-Looking Statements

The statements in this presentation relating to matters that are not historical facts are forward-looking statements. These forward-looking statements are based upon assumptions of management of LyondellBasell which are believed to be reasonable at the time made and are subject to significant risks and uncertainties. When used in this presentation, the words “estimate,” “believe,” “continue,” “could,” “intend,” “may,” “plan,” “potential,” “predict,” “should,” “will,” “expect,” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain such identifying words. Actual results could differ materially based on factors including, but not limited to, market conditions, the business cyclicality of the chemical, polymers and refining industries; the availability, cost and price volatility of raw materials and utilities, particularly the cost of oil, natural gas, and associated natural gas liquids; uncertainties related to the extent and duration of the pandemic-related decline in demand, or other impacts due to the COVID-19 pandemic in geographic regions or markets served by us, or where our operations are located, including the risk of prolonged recession; competitive product and pricing pressures; labor conditions; our ability to attract and retain key personnel; operating interruptions (including leaks, explosions, fires, weather-related incidents, mechanical failure, unscheduled downtime, supplier disruptions, labor shortages, strikes, work stoppages or other labor difficulties, transportation interruptions, spills and releases and other environmental risks); the supply/demand balances for our and our joint ventures’ products, and the related effects of industry production capacities and operating rates; our ability to achieve expected cost savings and other synergies; our ability to successfully execute projects and growth strategies; future financial and operating results; benefits and synergies of any proposed transactions; legal and environmental proceedings; tax rulings, consequences or proceedings; technological developments, and our ability to develop new products and process technologies; potential governmental regulatory actions; political unrest and terrorist acts; risks and uncertainties posed by international operations, including foreign currency fluctuations; and our ability to comply with debt covenants and to amend, extend, repay, redeem, service, and reduce our debt. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the “Risk Factors” section of our Form 10-K for the year ended December 31, 2020. which can be found at www.LyondellBasell.com on the Investor Relations page and on the Securities and Exchange Commission’s website at www.sec.gov. There is no assurance that any of the actions, events or results of the forward-looking statements will occur, or if any of them do, what impact they will have on our results of operations or financial condition. Forward-looking statements speak only as of the date they were made and are based on the estimates and opinions of management of LyondellBasell at the time the statements are made. LyondellBasell does not assume any obligation to update forward-looking statements should circumstances or management’s estimates or opinions change, except as required by law.

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Approved by Corporate Communications on July, 29 2022