

VÍXLA

Plastic Waste To Value

VÍXLA Plant



A state-of-the-art pyrolysis plant, which transforms plastic waste into a high-value and renewable resource. The output circulates back into the raw material cycle, creating a circular economy for recycled plastic.

VÍXLA

A solution which transforms a critical environmental problem

into a renewable and valuable resource



The Problem

Plastic has evolved into an essential component of our modern world, proving irreplaceable in numerous critical applications. Despite its widespread use and increasing production, the challenges lie in addressing the consequences, particularly the disposal.



The Solution

Crude oil stands as a fundamental component in the creation of plastic. Leveraging from insight and experience with drill cuttings, we've successfully reversed this process with the VÍXLA system. Through advanced pyrolysis technology we transform plastic waste back into a valuable resource.

Plastic Waste



HDPE

Common plastics:

grocery bags, detergent bottles, shampoo bottles, etc.



LDPE

Soft plastics:

plastic foil, frozen food packaging, bread bags, cling foil, etc.



PP

Hard plastics:

bottle caps, straws, yogurt containers, medicine bottles, etc.

VÍXLA system

- Up to 5 t/d throughput capacity
- Decentralized solution
- Containerized & Scalable
- Modular & Mobile
- Highly automated system
- Revolutionary feeding system
- High energy efficiency
- Close to net-zero emissions

Value

Valuable Pyrolysis Oil

The oil derived from recycled plastic can be profitable traded on the market and/or be further refined for various purposes.



Energy-rich gas

Utilizing a generator, the residual gas produced in the process can efficiently power the system, leading to a nearly net-zero-emission process, or it can serve as a power source for the grid.

Technical Data



- 40 feet container + day silo
- Highly Automated
- No additives are required

Capacity

VÍXLA P5 5t pr 24hr

Interfaces / Utilities

Plastic inlet:	QC, OK-160
PSV gas outlet:	Flange, DN50, PN16
Heavy fraction oil:	Flange, DN40, PN16
Naphthalene fraction oil:	Flange, DN25, PN10
Diesel fraction oil:	Flange, DN40, PN16
Non condensable gas:	Flange, DN40, PN10
Glycol inlet:	Flange, DN80, PN10
Glycol outlet:	Flange, DN80, PN10
Nitrogen inlet:	Flange, DN25, PN16
Air inlet:	Flange, DN25, PN16

Consumables

Nitrogen:	Purging of system at start up
Instrument air volume:	300 l/m
Instrument air quality:	Standard
Instrument air pressure:	7 bar
Cooling power:	400KW
Cooling pressure:	
Cooling volume:	
Cooling temp.:	

Feedstock Requirements

LDPE	PP
HDPE	PP+C
LLDPE	PE

Weight and Dimensions

Container: 12192 mm x 2438 mm x 2896 mm
Day Silo: 2438 mm x 3018 mm x 3665 mm

Approved: CSC (container) Acc MD (day silo)
 Lift attachment points: Included
 Total weight: 18 203 kg

Electric / Automatic Systems

Grid connection: 1 ea 400VAC, 50Hz, 100KW
Power system: TN-S
 • Installed Power: 250KW
 • Nominal Power: 150KW

Design Specifications

Will be delivered to the following requirements:

- Machine directive (MD) 2006/42/EC
- PED 2014/68/EU
- IEC 60364-1:2005

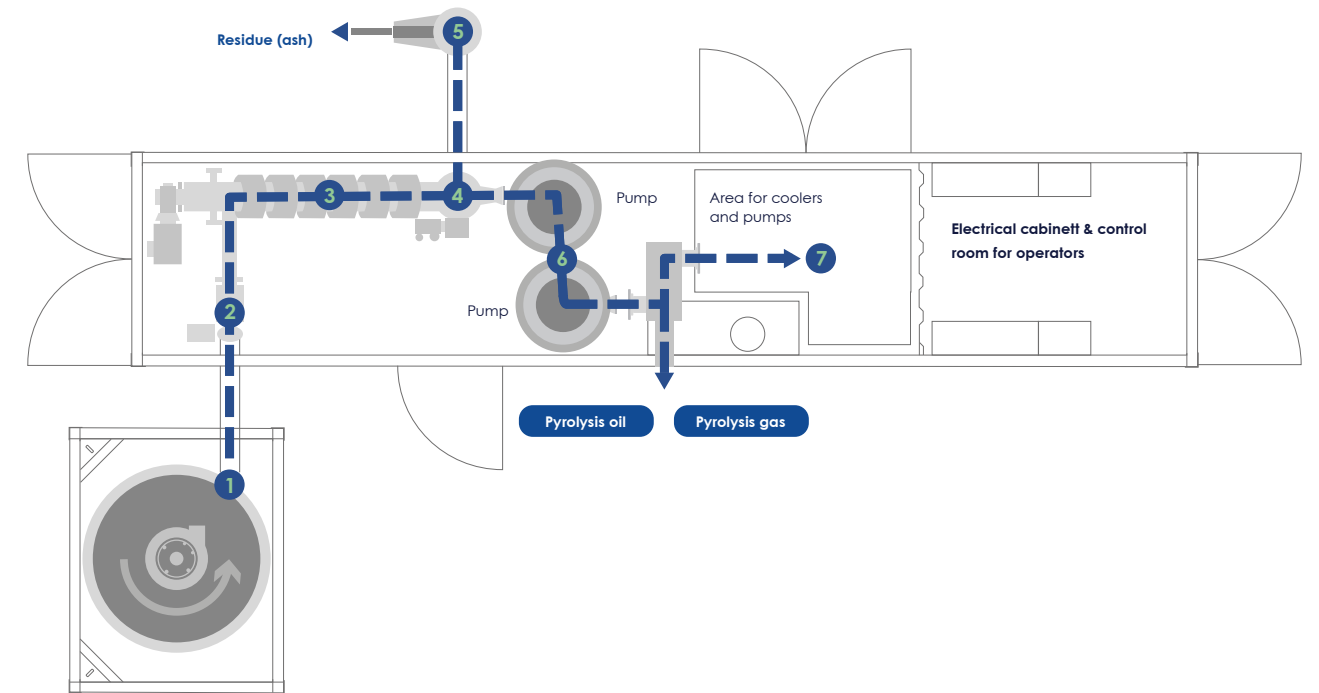
Upon request, we can assess if your material requires a pretreatment/shredding system.

Upon request, we offer a comprehensive assessment to determine if your material requires a pretreatment or shredding system. If needed, we provide customization to ensure the pretreatment system is tailored to meet your specific needs.

Disclaimer: The plant is in the final stages of its development and is subject to further improvements, therefore the values and information given in this handout should not yet be considered as binding and need to be confirmed.

How & Where Plastic is Transformed into Oil

The containerized Vixla technology features seven distinct zones designed for the efficient processing, evaporation, and condensation of plastic waste. This highly automated system minimizes residues and emissions, ensuring optimal performance.



Area 1	Buffer silo for pretreated feedstock material
Area 2	Material feed and oil wetting of the feedstock. The material is submerged in hot oil to remove any residual moisture and preheat before entering the reactor chamber.
Area 3	The pyrolysis reactor; slowly heats up the feedstock material from approx. 220° C to 450° C and thus gasifying it. The resulting pyrolysis gas contains hydrocarbons of varying chain lengths and ash particles.
Area 4	Separation of ash particles and pyrolysis gases, purification of gases through catalysts.
Area 5	Extrusion of the residue materials (black carbon / ash) into a storage container.
Area 6	Condenser units: Multi-stage recondensation of the gasified plastic into various fractions of liquid hydrocarbon product and residual pyrolysis gas.
Area 7	Pumps and cooling systems (Glycol)
Additional	Separated electrical room allowing for climate control and added safety.

The illustrations, pictures & sketches may differ from the delivered product.

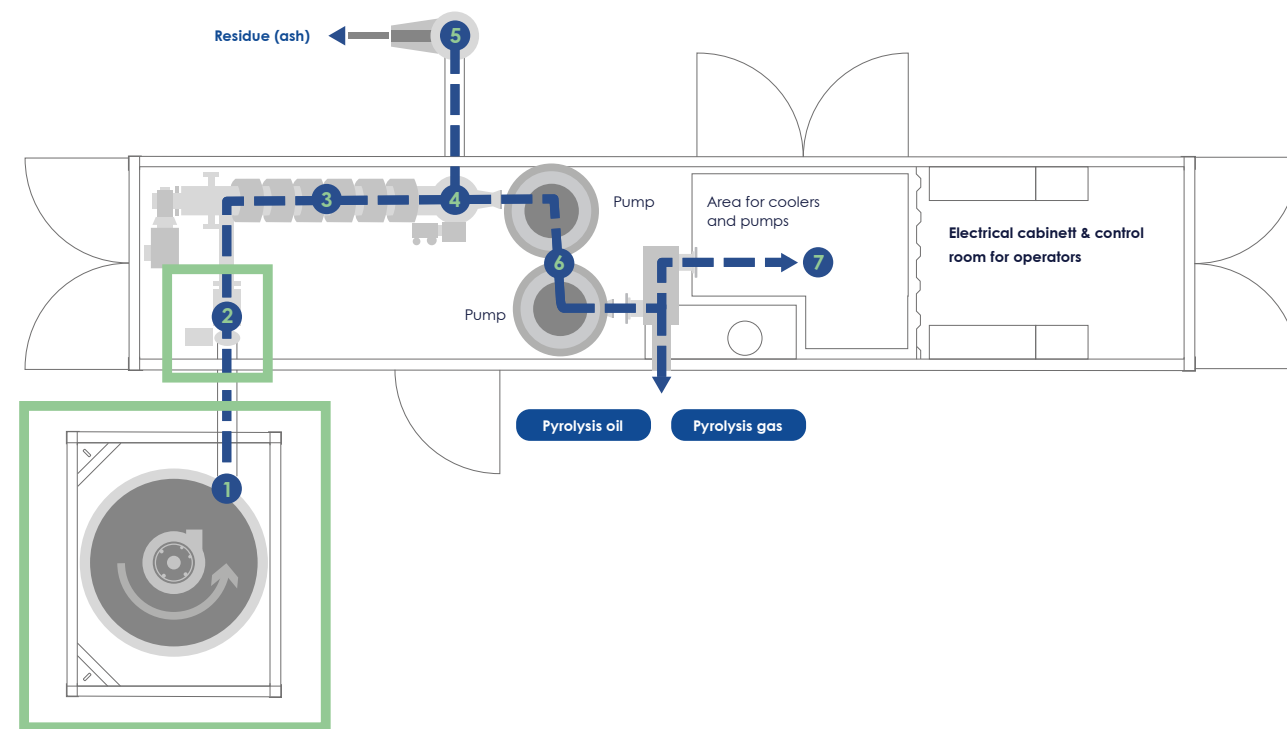
Clean Future is our Business



Areas 1 and 2

Shredded plastic (approx. 15 mm granulates) is fed into a buffer tank. From there it is sent on demand into an oil-filled extruder, supplied with oil from condensers in Area 6. The heated oil bath:

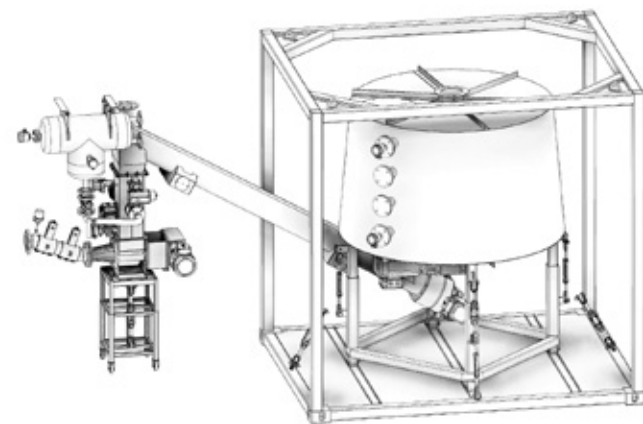
- ensures any remaining water in the plastic is evaporated;
- provides an oxygen-free atmosphere within the reactor chamber in Area 3;
- works as a heat conductor, enabling a homogeneous heat transfer to the plastic chips.



WHAT'S NEW?

Our proprietary and patented feeding system features an innovative oil wetting mechanism. This unique system utilises lower-quality output to enhance the cracking of incoming raw materials.

Result: Higher quality of the final oil product due to its re-processing



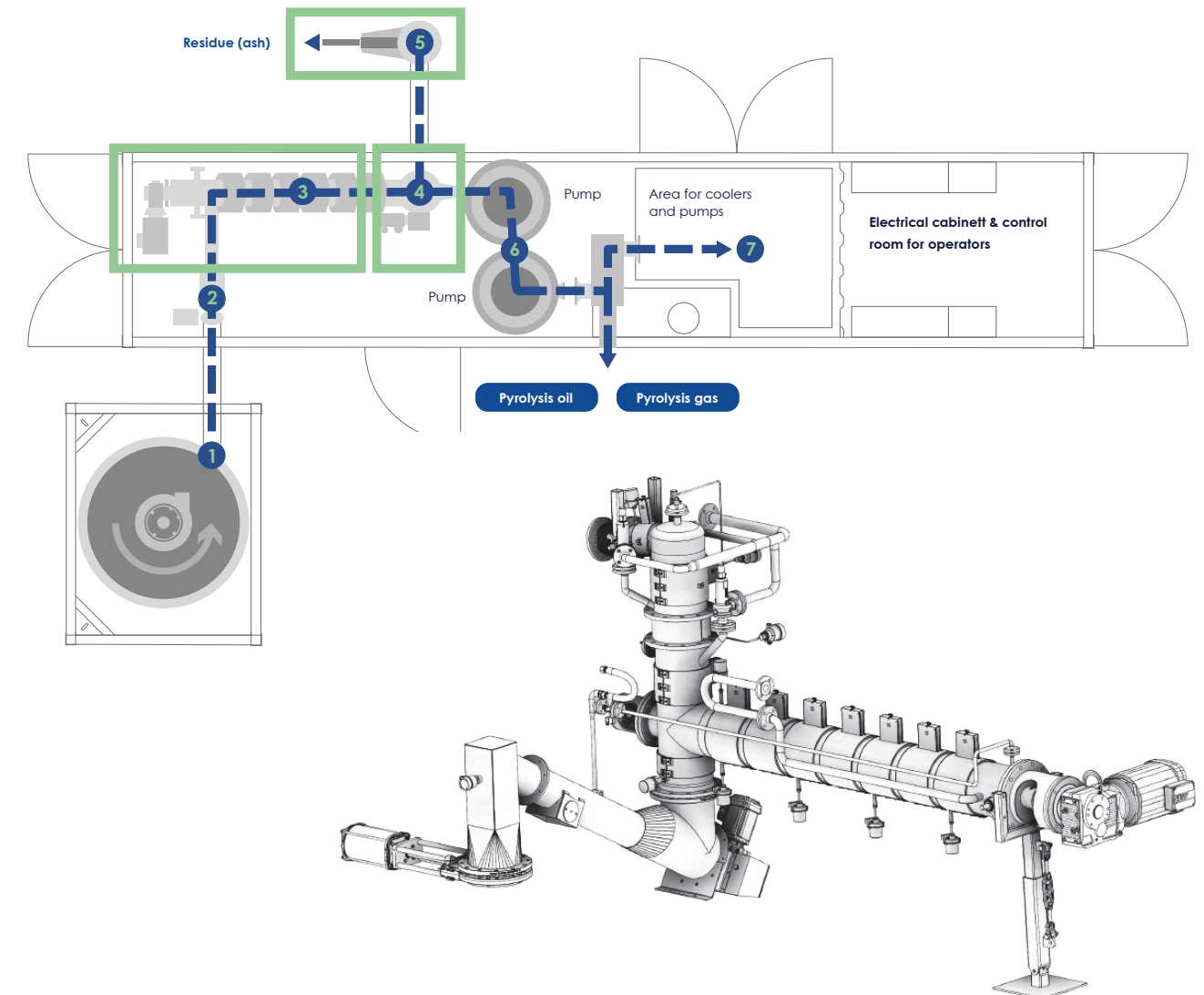
Components

Buffer tank	Reservoir for feedstock storage, allows demand-based feed rates
Screw conveyor	Conveys the material from the silo into the oil-filled extruder
Oil-filled extruder	Extrudes materials using oil as a lubricant and heat conductor

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Areas 03, 04 & 05

The oil-wetted plastic enters the pyrolysis chamber where it is gradually heated to around 450°C and thus gasified. The resulting gas is channeled through an exhaust pipe into a condenser (Area 06), while the residue (black carbon) falls into a waste box.



Components

Pyrolysis chamber	Reactor chamber with several heat zones, providing a controlled environment to gasify the plastic and minimize emissions
Separator with an exhaust pipe	Separates pyrolysis gas and ash particles. The gases are lead through catalysts and then directed into the condenser units
Residue material extraction	Extruder screw & an actuated knife valve; Removal of residual materials by feeding them to the waste container whilst keeping an oxygen free atmosphere in the unit.
Residue storage	Waste box & waste skip

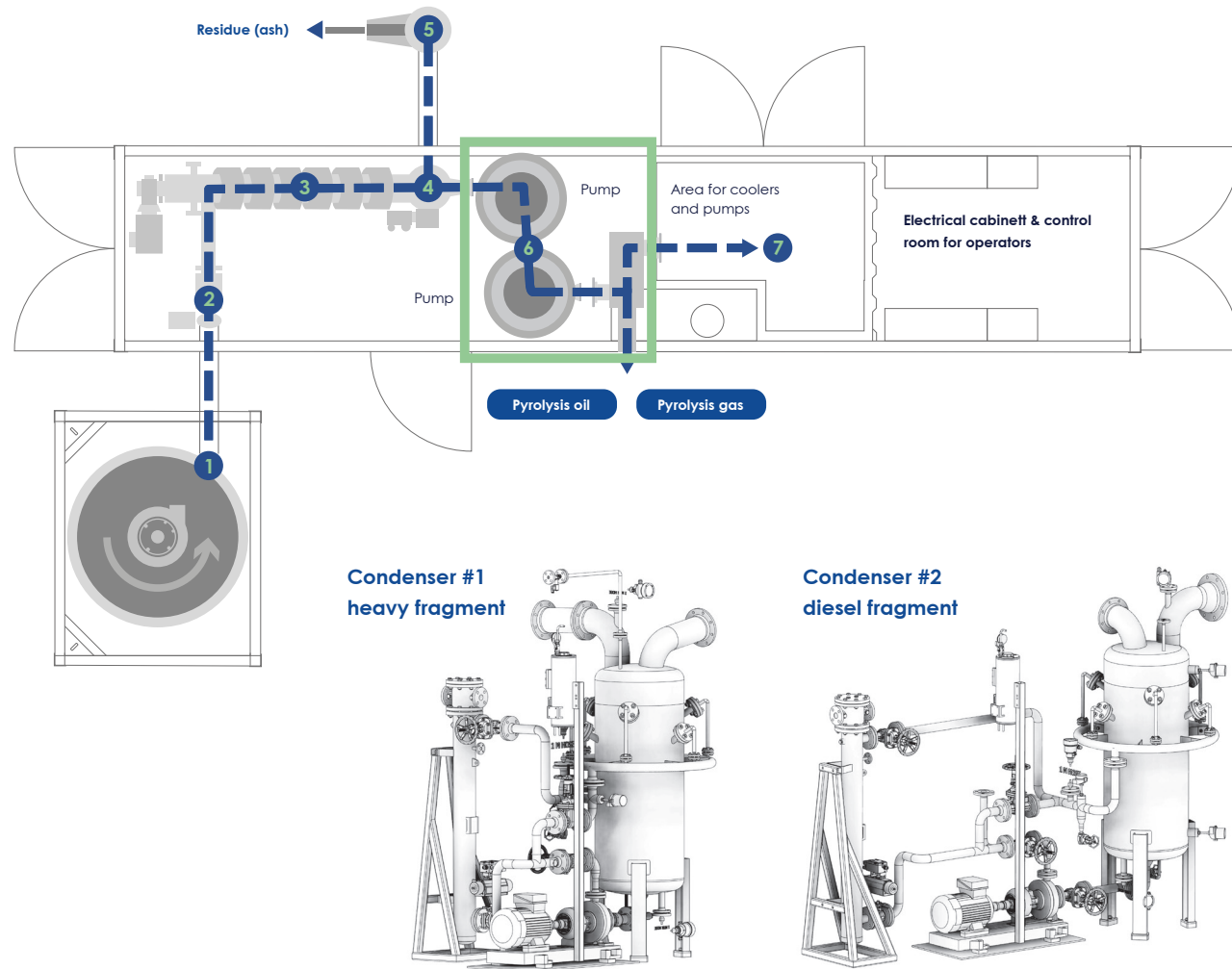
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Areas 06

Non-condensable gas is channeled through a gas scrubber and can be used to re-power the system with a generator.



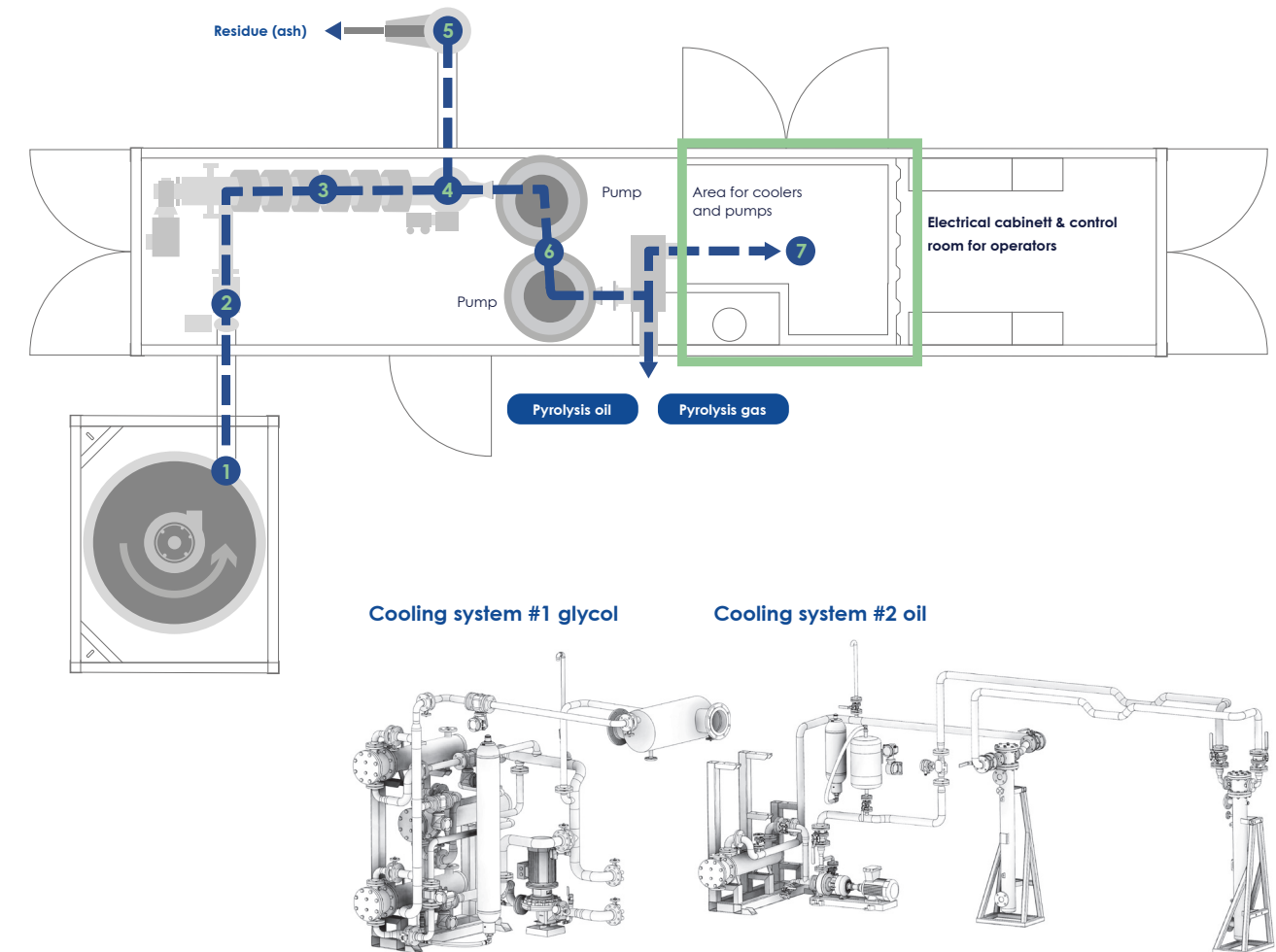
Components

Heavy fragment condenser	Liquifies the heavier fractions of gas into product oil
Diesel fragment condenser	Liquifies the lighter fractions of gas into product oil
Coolant cycles	2x circulation pumps & 2x heat exchangers for temperature regulation
Naphtha	A third condensation step, collecting the lightest oil fractions and separating it from the non-condensable gases
Optional Generator	Can be used to re-power the system

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Areas 07

The oil-wetted plastic enters the pyrolysis chamber where it is gradually heated to around 450°C and thus gasified. The resulting gas is channeled through an exhaust pipe into a condenser (Area 06), while the residue (black carbon) falls into a waste box.



Components

Naphtha cooler	Heat exchanger designed to cool naphtha product
Diesel outlet cooler	Heat exchanger designed to cool Diesel fragment product
Heavy fragment outlet cooler	Heat exchanger designed to cool heavy fragment product
Cooling oil cooler	Temperature regulation of oil cooling cycle
Fan coolers	Temperature regulation of glycol cooling cycle
Heavy fragment condenser cooler	Cool and condense heavy fragment vapor
Diesel fragment condenser cooler	Cool and condense Diesel fragment vapor

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Pre-treatment for the feedstock

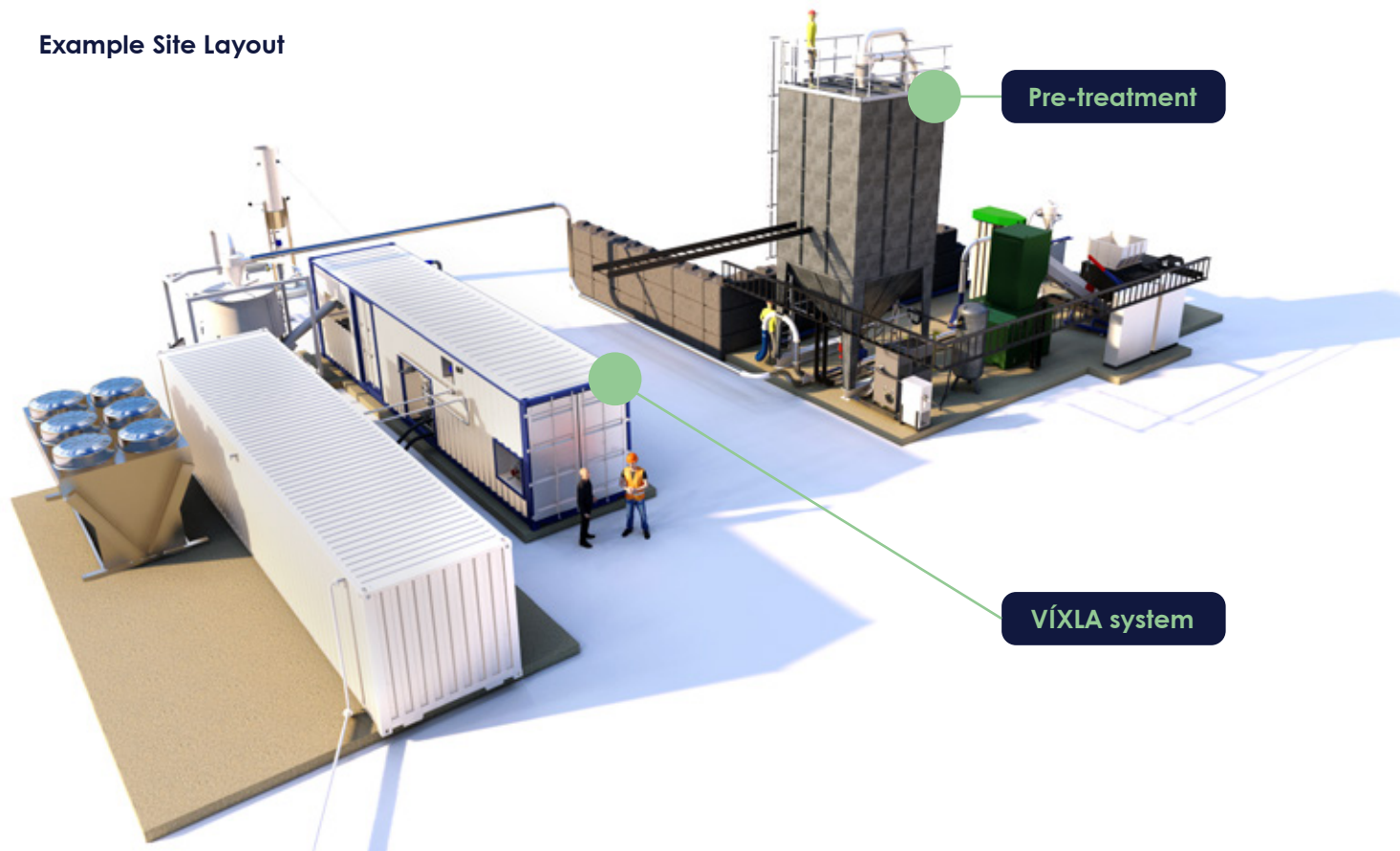
Why is it necessary?

The quality of the output and its value are directly linked to the quality of the feedstock for the VÍXLA system.

When is it necessary?

If your feedstock is bigger than 15 mm shredded chips, with high contamination and not predominantly polyolefin plastics.

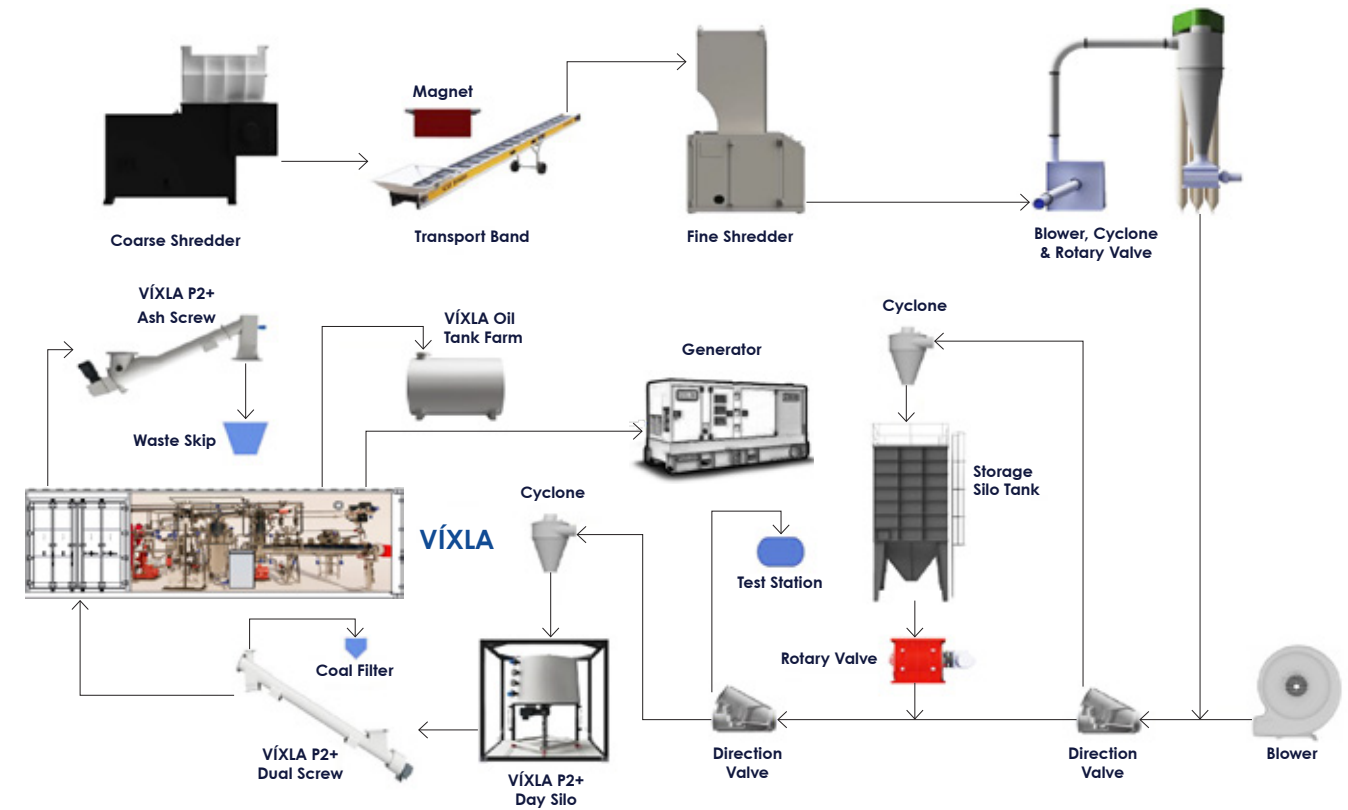
Example Site Layout



Pre-treatment system

Example of a full system:

Pre-treatment + VÍXLA Unit + Generator + Storage Tank Oil



The design and set-up will be tailored-made according to your specifications and individual requirements.

Technical Data

Modules for a typical dry-cleaning system

- Coarse Shredder
- Transport Band
- Fine Shredder
- Blower, Cyclone, Rotary Valve
- Blower
- Storage Silo + Cyclone

Throughput

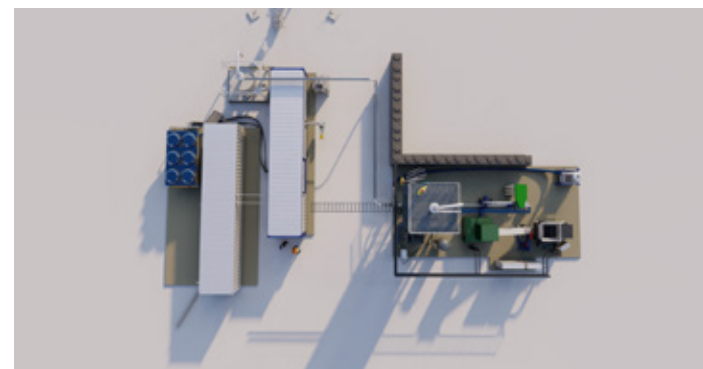
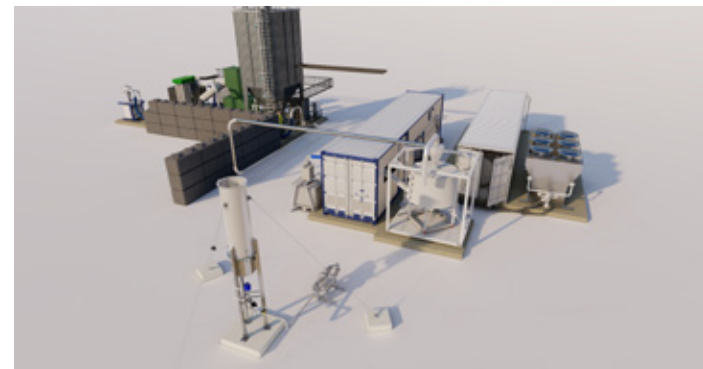
Eagle can offer pretreatment systems with a capacity ranging from 200 kg/h up to 1200 kg/h.

Storage capacity

Capacity can be adapted according to your requirements.

Cleaning

Pretreatment can be delivered with and without water cleaning.



Production plant in Zepce, Bosnia and Herzegovina



Certificates

ISO 9001:2015 certified
Eagle Technology has been certified according to latest publication of ISO 9001:2015.

DIN EN ISO 3834-3:2006

Quality system according to DIN EN ISO 3834:2006
Standard quality requirements

Welding certificate

In compliance with EN 1090-1, Tab. B.1 Execution class EXC2 according to EN 1090-2

Pressure vessels

Certified pressure vessel manufacturing according to EN 13445-4:2016 and AD 2000 Merkblatt HP0.

We design and build environmentally friendly systems and solutions that are delivered to customers around the world

Clean Future is our Business



Why Víxla?

Víxla is the Norse word for transformation. A fitting description for our core purpose:

Transform Waste into a Valuable Resource.

A Distinctive Identity:

We intentionally chose a name that sets us apart from our competitors, steering clear of common terms such as plastic, waste, recycling, and green energy. However, the distinction goes beyond the name. While our competitors focus on building large plants, we made a strategic decision to develop a smaller and more compact system making it available to a broader market. Hence, the name Víxla serves as a compelling narrative foundation, distinguishing and emphasizing the uniqueness of our technology and our market offerings.

A Nordic touch:

Embracing our Norwegian roots, we aim to capitalize on the global recognition of Norwegian technology as a symbol of quality, and that is what we deliver - quality. Our brand and design incorporate internationally recognized elements, such as the Northern Lights, establishing a profound connection to our roots. This not only reinforces our cultural identity but also elevates the visual appeal and uniqueness of our product.

The Eagle Gene:

Embracing the Eagle gene symbolizes our transformative journey. With roots in the maritime and shipping industry, we have emerged as a prominent player in the green shift. Our unwavering commitment to the vision of a «Clean Future is our Business» propels us to deliver cutting-edge technologies, exemplified by the Víxla system.

Víxla, Eagle Technology and its advantages:

Decentralized Approach:

We bring the solution directly to the source of the problem – plastic waste. A decentralized approach results in substantial financial and environmental savings, distinguishing us from established concepts with centralized super sites.

Containerized and Mobile:

Our container-based solution facilitates mobility, allowing for targeted waste cleanup on-site. After completing the task, our customers can relocate the system, providing unparalleled flexibility.

Modular and Scalable:

The Víxla system is designed to handle 5 tons per day but can be easily scaled for larger projects. The modular approach facilitates for multiple systems on the same site to achieve as high capacity as needed.

Efficient and Clean:

With a conversion rate exceeding 80-85%, our technology effectively transforms the majority of waste into a renewable product. The residual byproduct predominantly comprises non-condensable gas, which serves to power the system, leading to a significant reduction in energy consumption and an impressively low carbon footprint. Additionally, a minimal percentage of carbon ash is produced, offering versatile applications or options for responsible disposal.

Low Entry Barriers:

Our solution has significantly lower CAPEX compared to competitors, ensuring accessibility to a broader market.

One-Stop-Shop:

We have formed strategic partnerships with companies that offer our customers a comprehensive end-to-end solution for plastic waste recycling, spanning from pretreatment systems to the final stages of off-take and sales of the end product

About Eagle Technology

Commitment to continuity and stability is deeply rooted in every aspect of our operations



Today, Eagle Technology employs more than 230 professionals across three departments at our offices in Norway, Bosnia, Vietnam, and Brazil.

We are a Norwegian family-owned company, our commitment to continuity and stability is deeply rooted in every aspect of our operations. Furthermore, our 40-year history and extensive track record of global success are defined by a portfolio of innovative products and technologies for water treatment, drill cuttings treatment, and our flagship waste plastic to oil system Vixla.

In addition, we have extensive expertise in fabrication of tailored-made solutions in any alloy in accordance with our customers' specifications for products delivered to offshore wind, oil and gas, carbon capture, and beyond, ensuring the highest standards of quality and reliability.

Our strategic transition towards green technology in 2015 has resulted in the development of one of the most advanced plastic recycling system on the market. Our success in developing the Vixla system has several key elements, the two most important ones are:

Experience and Expertise:

With years of experience in pyrolysis technology through our patented ITDU technology (Induction Thermal Disruption Unit) in Norway, treating 70 metric tons of drill cuttings daily, we laid the foundation for the Vixla system.

Integrated Value Chain:

Controlling the entire value chain, from conceptual development to customer handover, ensures seamless operations. Our in-house R&D team, project management, production facility, skilled operators, and support team provide comprehensive coverage and credibility for our customers.

The Vixla plastic recycling system evolved from our ITDU technology.

A dedicated team with a singular goal of creating the best plastic recycling system on the market transformed the ITDU into the Vixla system in record time. Construction commenced in Bosnia in February 2023, and by July, our first system successfully completed the FAT. This achievement was made possible because we control of the entire value chain, agile resource allocation, and our unwavering commitment.

Eagle Technology's Vixla system is not just a solution; it's the best solution, combining experience, an integrated approach, strategic partnerships, and the most advanced waste handling system in the market. We are finally ready to make a global impact with our state-of-the-art system, paving the way for a sustainable and cleaner future.

Clean Future is our Business

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