

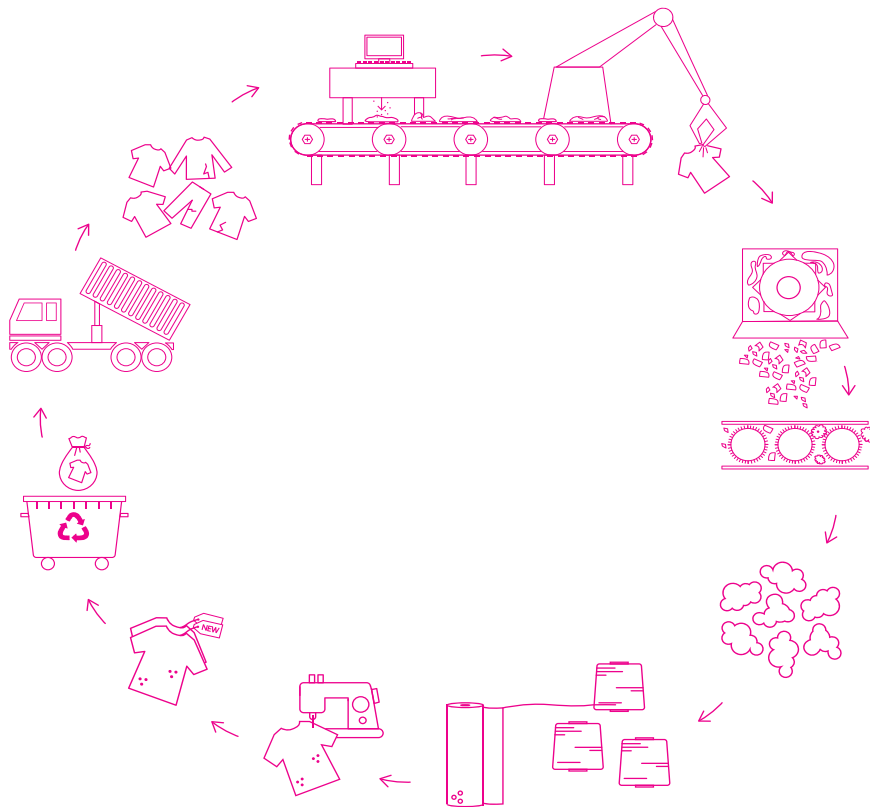
TECHNOLOGY CATALOGUE

AUTOMATIC SORTING LINES FOR TEXTILE WASTE WITH FULL TRACEABILITY



 **New Retex**
Textile Sorting and Recycling

NEWRETEX.COM



OUR MISSION

IS TO INCREASE THE RECYCLING OF TEXTILES WITH
AUTOMATIC AND TRACEABLE SORTING TECHNOLOGIES

About Us

We specialize in sorting textiles for recycling and operate a sorting plant in Denmark. We have developed a fully automatic sorting line, based on industry-leading technologies from the laundry sector, with more than 150 lines running globally today. By incorporating a proprietary sensor package and traceability system, we have innovated a state-of-the-art sorting line for efficient textile recycling. With more than 10 years of technical development behind us, we are now selling our sorting for recycling technologies in Europe, to scale up sorting and textile recycling.

Background

According to a study by the EEA, every single European produces more than 19 kg of textile waste per year. Most of which have previously been burned or ended up in large landfills. We turn this waste into a valuable resource through proper sorting and recycling.

EU Legislation

The forthcoming legislation brings new legal requirements to the European waste and textile industries. It will promote textile recycling while requiring traceability, and transparency.

While separate textile waste collection is already mandatory in the EU, the Waste Frame Directive (WFD) mandates EPR schemes for textiles to be implemented by member states by early 2028.

Upcoming legislation includes:

- Digital product passports
- Waste export restriction
- Mandated recycled content in textile products

The NewRetex sorting line is the missing link to recover the value of textile waste by accurately and efficiently sorting the textiles for:

- Resale
- Mechanical fiber-to-fiber recycling
- Chemical textile recycling
- Open-loop textile recycling

HUGINN: TRACEABILITY SYSTEM

HUGINN is a Manufacturing Execution System (MES) designed for traceability and streamlining sorting operations. It enables real-time monitoring of machine performance, material flow, and storage, ensuring maximum efficiency while tracing the textiles throughout the value chain. The system registers all incoming material and traces it throughout the sorting plant; from the waste input to the sorted textile and recycled fiber outputs.

The HUGINN interfaces are web-based, allowing easy access for workers through their phones or computers. Off-site access is enabled through HUGINN Cloud, allowing your customers to access their data directly through the browser.

Data Collection & KPI monitoring

HUGINN automatically tracks materials from delivery to shipping through machine integration, mobile apps and QR codes, enhancing process transparency and storage management. In other words, every sorted textile is registered and traced in the system.

A digital dashboard gives live insight into KPI's throughout the sorting plant, integrating with all processes from receiving the waste to shipment of sorted or recycled materials.

The system can be integrated with ERP-systems for automated invoicing, storage management and accounting.



Traceability & Reporting

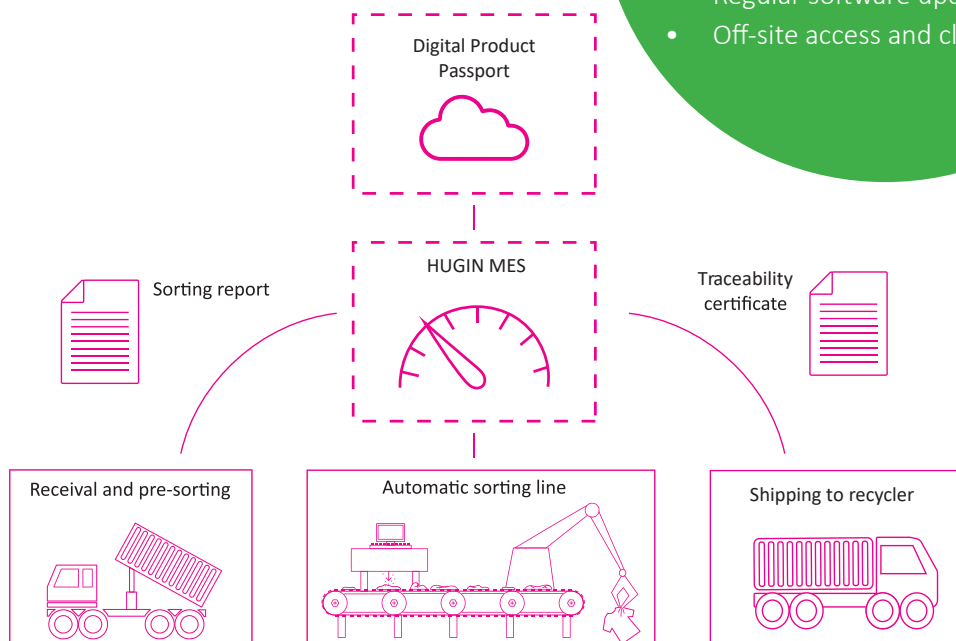
From all the collected data, HUGINN generates reports for suppliers showing how much textile waste is received, how it's sorted, and how it is expected to be recycled.

Meanwhile, reports can be generated for downstream customers, tracing the sorted textiles and recycled materials back to the original waste deliveries. Thereby, HUGINN is fully integrated and ready for the Digital Product Passport. HUGINN also allows for easy adaptation of certifications and industry standards, such as GRS and others.

HUGINN seamlessly transmits verified process and material data to our digital platform, Fiber Family, through a secure API connection that enables real-time traceability across the value chain.

HUGINN offers

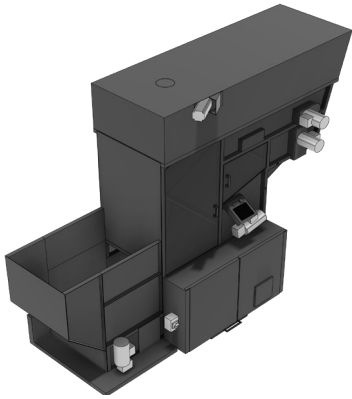
- End-to-end data collection
- Real-time KPI monitoring
- Traceability reports for certification
- Ready for Digital Product Passport
- Access to the Fiber Family
- Regular software updates
- Off-site access and cloud backup



SORTING LINE OVERVIEW

MAIN MODULES

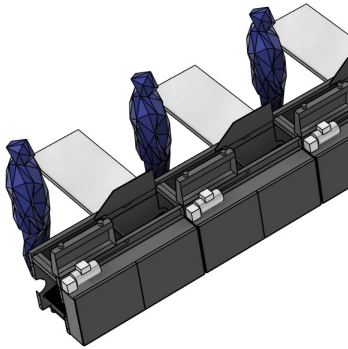
FEEDING - ROBOTIC OR MANUAL



THOR feeding robot is an industry-leading feeding robot for textiles. The robot is fed with pre-sorted textiles from a conveyor belt and uses 3D computer vision to detect textiles and pick them one by one to feed the sorting line. The robot has an optimised up-time with easy service access for removing the occasional stuck textile.

The robot delivers reliable textile separation with a low double-pick rate for all textiles, ranging from small socks and underwear to large bedsheets.

The NewRetex sorting line can be equipped with 2 THOR feeding robots, running at a combined throughput of 2.000 pieces/hour during normal operation. A single robot sorts up to 1.200 pieces/hour.



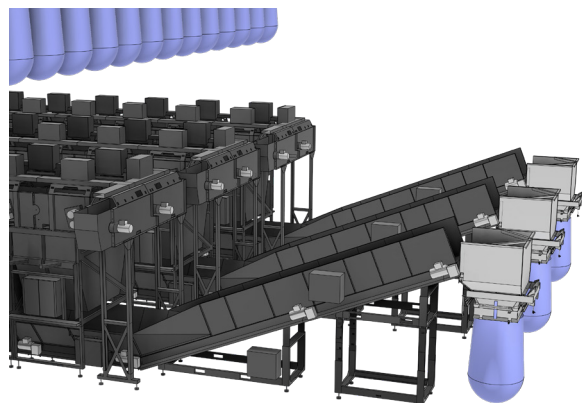
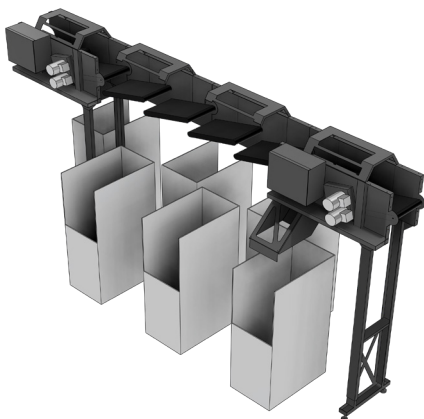
The **Manual feeding station** features several pre-sorting tables and short conveyor sections for efficiently feeding the line from multiple workers, allowing for integrated pre- and main-sorting. The tables can be outfitted with barcode, QR or RFID scanners for registering data from the textiles.

This option requires 3-5 workers to match the throughput of 2.000 pieces/hour.

BIFRÖST CONVEYOR SORTING - INTO CAGES OR BAGS

The sorting output section is built around a module of inclined conveyors, that reverse when the textiles reach their destination, to then be dropped down the chutes and into either roller cages or buffer bins. All conveyors are directly driven with frequency inverters, meaning lower: power consumption, noise contamination, and dust in the air (compared to air-blowing systems). A sorting line can be outfitted with any number of BIFRÖST sorting modules.

The BIFRÖST conveyor sorting modules can be outfitted with automatic buffer bins at each sorting output, which are emptied into a centralised output. Thereby, the sorting lines can be completely integrated with a laundry bag system. Such a solution is preferred for larger setups and provides automated internal logistics and buffering between sorting outputs and post-processing.



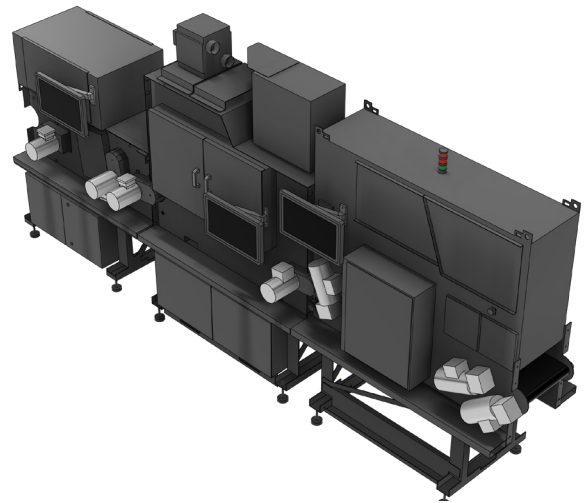
THE NEWRETEX SENSOR PACKAGE

Features a combination of up to four sensors, and a decision server to do high accuracy sorting for recycling. Each sensor works as a separate module with an HMI to monitor the sorting process and changing settings. The classification results from each sensor module are combined in the Decision Server and filtered through the current sorting recipe to sort out the textiles. The sorting recipe setup is modular and can easily be adapted to accommodate changing sorting needs through a drag-and-drop interface.

HEIMDAL RGB camera module for colour detection and AI classification of textile item types. While color detection can be used to make accurately color sorted fractions, the AI classification can be used to identify certain types of textiles. The HEIMDAL RGB camera module can also be outfitted with an RFID scanner for receiving data from laundry or DPP systems.

MIMIR NIR sensor module for detection of material composition and wet textiles. The sensor has over 50 pre-trained material compositions, including pure materials as cotton, polyester, nylon 6.6, viscose, wool, silke etc. The system can detect blends of up to three materials e.g, cotton/elastane, polyester acrylic, and cotton/polyester/elastane

ODIN X-ray sensor module uses AI to detect dense materials, such as buttons and zippers in metal and plastic, and other disruptors as elastic bands. Furthermore, it accurately measures the weight of each textile.



ADDITIONAL SERVICES

Technical development - We can support you in your technical development, covering all needed equipment for a turnkey textile sorting and recycling plant.

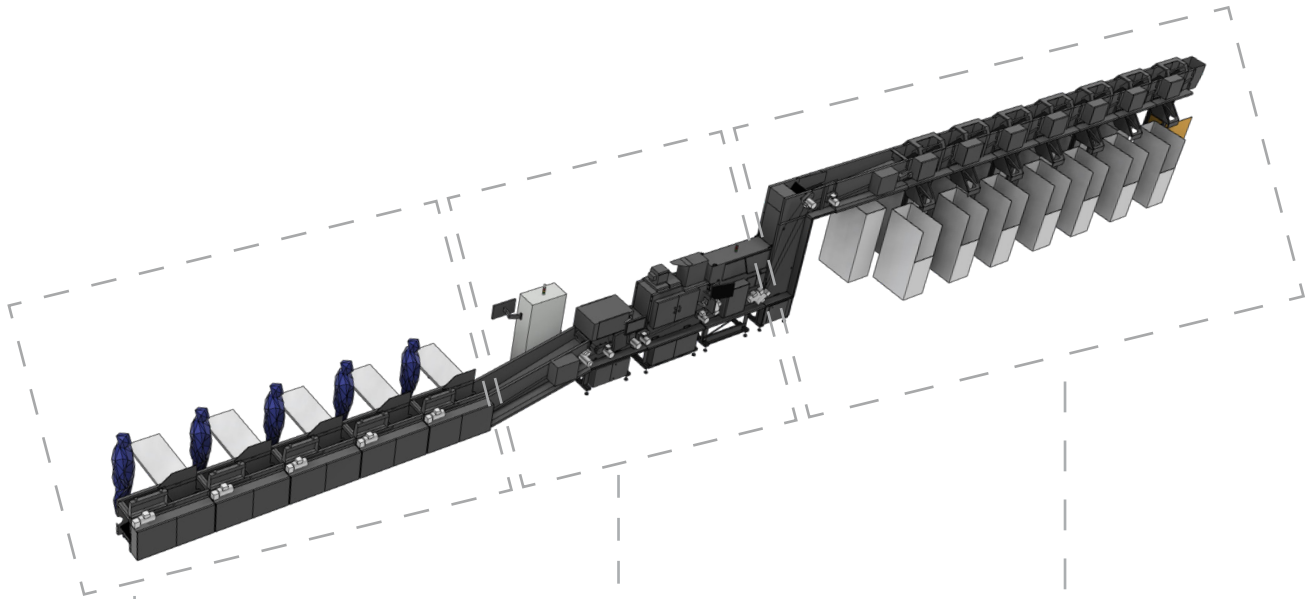
Operational training- We can provide training for employees in your production, using either our site or your site, and provide training for your managers to help you get your sorting operations up and running efficiently.

Sorting services - We can receive your textile waste for sorting and deliver detailed data to support the development of your local market. We can also assist you in your communications design, providing selling points, brochures, graphics, and even recycled product samples.

Fiber Family - A marketplace that makes procuring recycled fibers from textile waste easy, transparent and efficient. Fiber Family is designed to connect collectors, sorters, recyclers and end-customers. Seamlessly integrated with HUGINN, the marketplace allows sorting plant managers to easily sell standardized fractions of sorted textiles for recycling. Using our plug-and-play value chains, we can help you turn your waste textiles into new products. Scan the QR code to access the site, and learn more about Fiber Family.



SEMI-AUTOMATIC SORTING LINE



MANUAL FEEDING

5 manual feeding stations requiring 3-5 workers for optimal utilization, depending on the working pace.

Can be outfitted with barcode, QR or RFID scanners for additional data registration.

Allows for integrated pre- and main-sorting.

NEWRETEX SENSOR PACKAGE

MIMIR NIR for accurate measurement of material composition and moisture detection.

HEIMDAL RGB camera for consistent colour detection and AI-based textile type identification.

SORTING OUTLETS

15 BIFRÖST sorting outlets for sorting into roller cages or containers.

Conveyor-based sorting for low power consumption, dust pollution and noise levels.

BUDGET PRICE

550.000 EURO

Not including

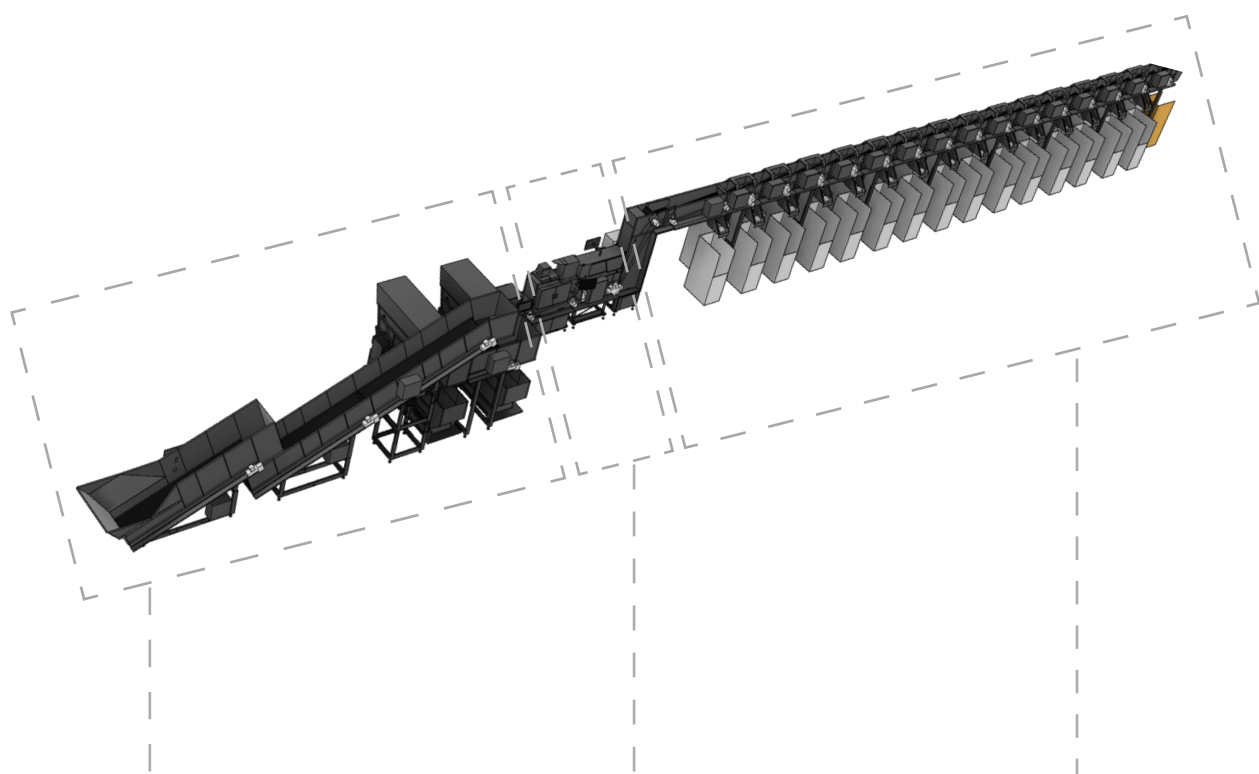
- Shipping and installation
- HUGINN license
- Employee training
- Roller cages or containers
- Extra equipment such as a suction unit

SPECIFICATIONS

- Manual feeding
- 3-5 operators/line
- Up to 2.000 pieces/hour (depending on feeding)
- Up to 1.000 t/year/shift
- Less than 10 kWh energy consumption
- Footprint 25 x 4 x 4 m
- Engineered and manufactured in Denmark

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FULLY AUTOMATIC SORTING LINE



FULLY AUTOMATIC FEEDING

2 THOR robots for fully automated feeding, requiring less than 1 full time worker to run the line.

Includes a feeding conveyor with a chute for emptying roller cages, containers, big bags or bales into the line.

NEWRETEX SENSOR PACKAGE

MIMIR NIR for accurate measurement of material composition and moisture detection.

HEIMDAL RGB camera for consistent colour detection and AI-based textile type identification.

ODIN X-ray for hard part detection and accurate measurement of textile weight.

SORTING OUTLETS

31 BIFRÖST sorting outlets for sorting into roller cages or containers.

Conveyor-based sorting for low power consumption, dust pollution and noise levels.

BUDGET PRICE

1.100.000 EURO

Not including

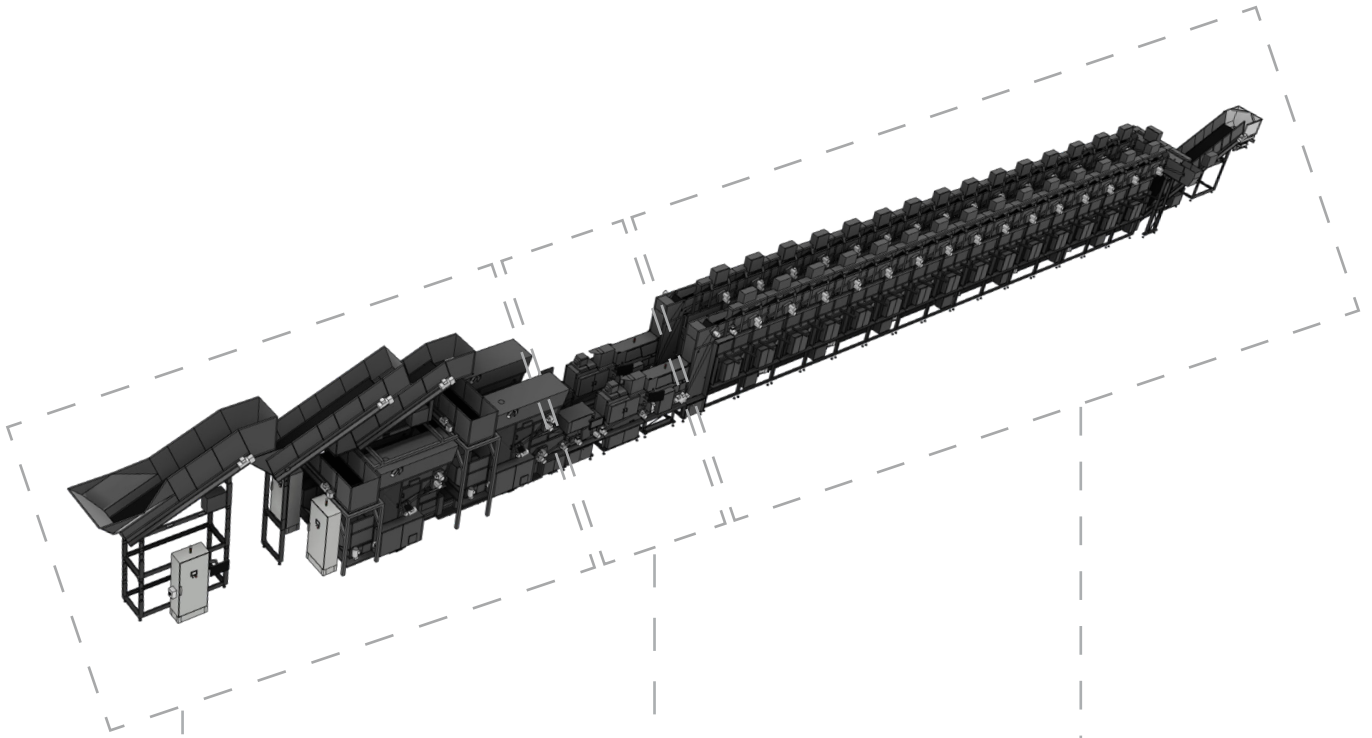
- Shipping and installation
- HUGINN license
- Employee training
- Roller cages or containers
- Extra equipment such as a suction unit

SPECIFICATIONS

- 2 automatic feeding robots
- 0,5-1 operator/line
- 2.000 pieces/hour in average operation
- Approx. 1.000 t/year/shift
- Less than 10 kWh energy consumption
- Footprint 40 x 4 x 4 m
- Engineered and manufactured in Denmark

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FULLY AUTOMATIC DOUBLE LINE



FULLY AUTOMATED FEEDING

4 THOR robots for fully automated feeding, requiring less than 1 full time worker to run the line.

Includes a feeding conveyor with a chute for easy integration with laundry bag systems or conveyors.

NEWRETEX SENSOR PACKAGE

2 MIMIR NIR for accurate measurement of material composition and moisture detection.

2 HEIMDAL RGB camera for consistent colour detection and AI-based textile type identification.

2 ODIN X-ray for hard part detection and accurate measurement of textile weight.

SORTING OUTLETS

2x31 BIFRÖST with 30 automatic bins for a centralized output. Can be easily integrated with laundry bag systems or fed unto conveyors, into roller cages or other containers.

Conveyor-based sorting for low power consumption, dust pollution and noise levels.

BUDGET PRICE

2.650.000 EURO

Not including

- Shipping and installation
- HUGINN license
- Employee training
- Roller cages or containers
- Extra equipment such as a suction unit

SPECIFICATIONS

- 4 automatic feeding robots
- 0,5-1 operator/line
- 4.000 pieces/hour in average operation
- Approx. 2.000 t/year/shift
- Less than 20 kWh energy consumption
- Footprint 50 x 5 x 6 m
- Engineered and manufactured in Denmark
- Integrated with laundry bag systems

New Retex
Textile Sorting and Recycling

SORTING FOR A BETTER FUTURE

The NewRetex sorting lines provide accurate sorting of waste textiles to realise efficient high-value textile recycling, with full traceability. Thereby closing the gap in post-consumer textile recycling.

Please reach out if you are interested in learning more!



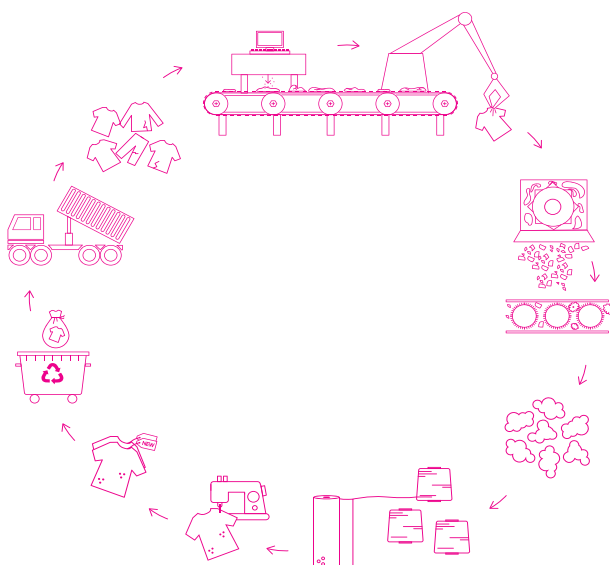
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