

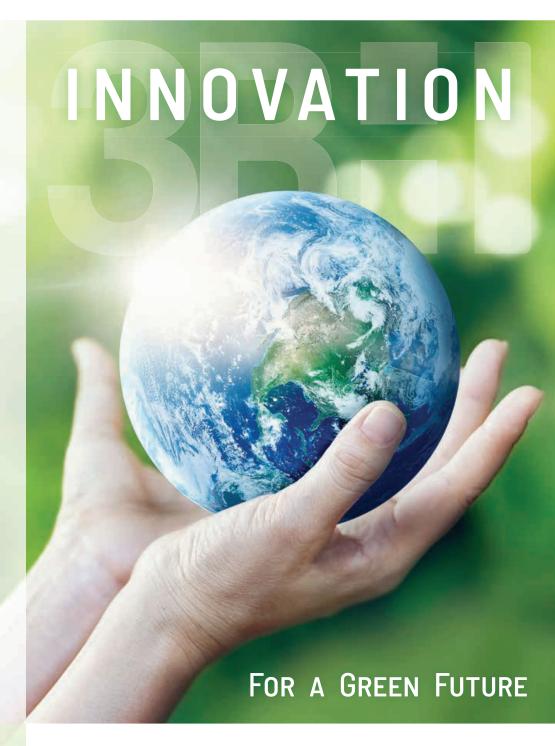




FROM CONCEPT TO IMPLEMENTATION

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We offer industry-specific technologies for communal waste and alternative fuel treatment with over 30 years' experience. Our wide product range enables us to ensure modern one-stop waste management solutions.

With the help of our machines we can recover valuable materials from waste or turn them into energy sources. This way we can reduce the extraction of primary raw materials and the size of waste landfills. Our development programmes focus on sustainability and quality.

We have had several projects and product developments behind us. We deliver our products worldwide. It is our goal to leave behind a cleaner world with better resource management for future generations.

Sorting plants for commercial waste

3B offers turnkey waste processing plants for selectively collected and mixed commercial waste. Our company undertakes the design and construction of the complete technology.



We are able to install simple manual sorting lines as well as completely automatic systems. With our optimized equipment and solutions we provide permanent, economical and optimal solutions.

Quality components ensure low-cost maintenance.









All from One Hand: Concepts, Products and Implementation



During classification, waste is sorted out into different material types; valuable fractions, such as metals, can be removed in the early stage of the process and recycled properly. For separating metal, magnetic belts and non-ferrous separators are used, and other types of materials are sorted by the help of optical sorters.

The post-shredding ensures the appropriate size of the clean fuel. We design simple, low-budget waste sorters that are capable of processing waste with little space requirement, and as little labour employment as possible, at low cost.





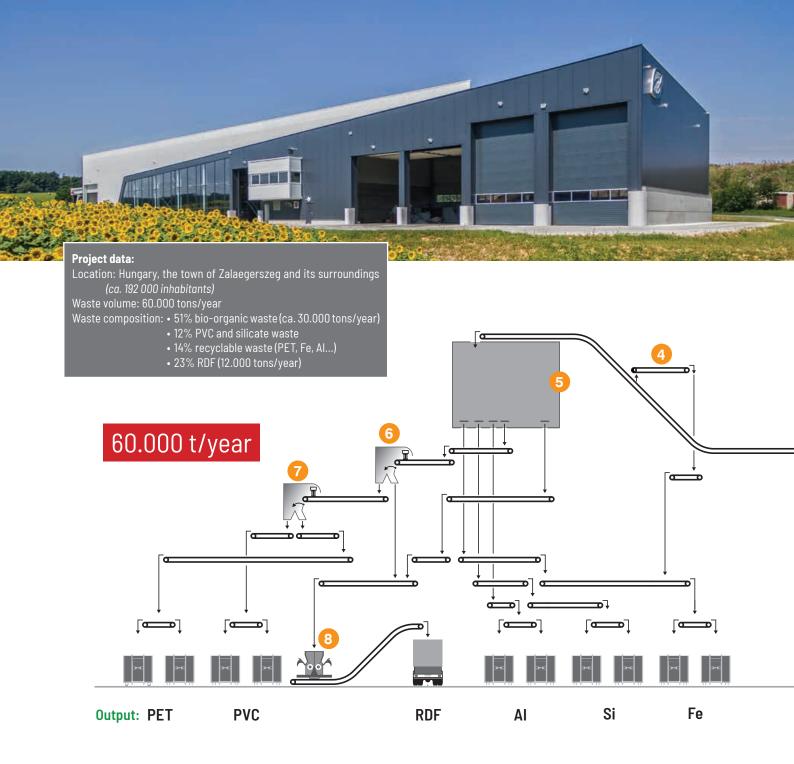


Refuse-derived fuel (RDF) is a valuable substitute for primary fossil fuels, for example gas, oil and coal. 3B offers a modern and efficient processing technology for RDF production. This process involves shredding and classifying of materials, as well as the removal of metals, inert and organic materials.

Advantages:

- · fully automatically controlled
- remote access provided
- low running costs
- small space requirements
- · quality components and equipment
- optimised specifically for the given task, individual solutions
- designed for continuous operation
- constant availability







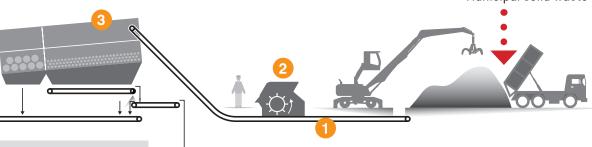








Input:Municipal solid waste



- Chain belt conveyor
 Pre-Shredder
- 3. Drum screen
- 4. Magnet belt

- 5. 5F Separator6. NIR optical sorter I.7. NIR optical sorter II.
- 8. Fine-Shredder







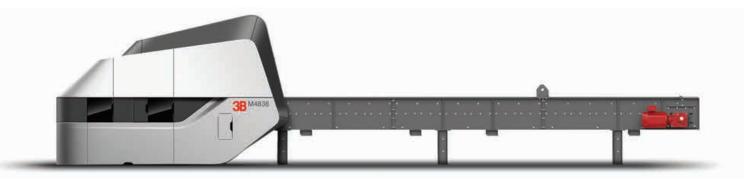


Optical sorting

NIR (near infrared) refers to a spectrum in the range between 950 and 2190 nm, which is invisible to humans. Each material has a well-identifiable light reflection curve, a so-called spectral fingerprint. The control system of the sorter examines these 'fingerprints' with the help of a hyperspectral imaging camera, and distinguishes them from each another. Even the smallest differences in the chemical composition of the detected substances can be evaluated.

Optical sorters with conveyor belts

The materials, spread out optimally, reach the detection area via a fast-moving conveyor belt. Once they have arrived, sensors 'scan' the material flow based on the colour, shape and type of material. The control unit activates the pneumatic unit with precise timing and positioning, and that unit removes impurities and contaminants from the material flow. The optical sorters are universal; they sort different types of waste, such as PET, PP, PE, PS, PVC, PA, paper, cardboard, wood, TETRA, textiles or glass accurately and efficiently. The detected particle size range is 3-300 mm. Our sorting systems are always prepared for the given field of application.



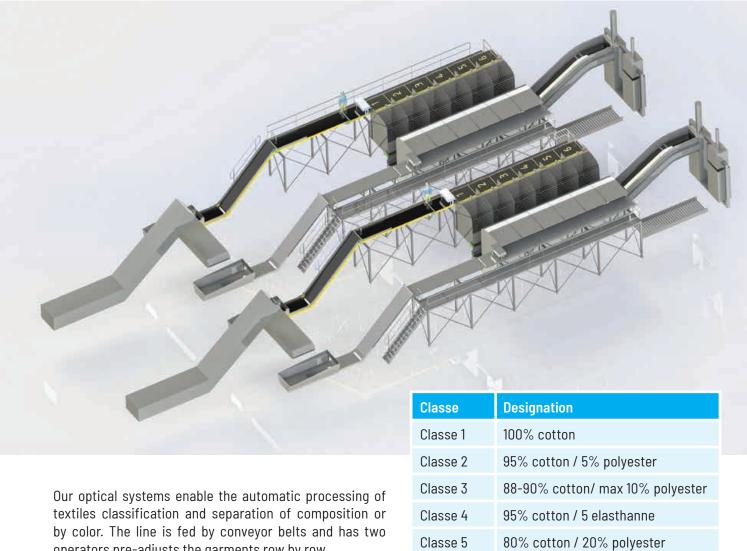
Robotic sorting

This module is an improved version of the optical unit with a conveyor belt. There is a robot after the optics, above the conveyor belt, which can remove the elements selected by the optics from the belt in a very fast way. The camera system identifies the individual items and then directs the sorting robotic arm in a targeted manner to select the individual objects and waste. We can increase the extent of recycling and the efficiency, while labour dependency in these areas can be reduced.



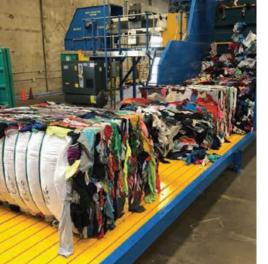
Textil sorting

We offer optical sorting lines for textile recycling, with automatic bale opening and baling up to a capacity of 6 tons/hour.



operators pre-adjusts the garments row by row.

Optical unit **Bale opening Baling**







RDF/Biomass Reception & storage systems

Feeding alternative fuels

In the future the use of alternative fuels will become more and more important in energy production instead of the more expensive fossil fuels. These materials are various biomasses and pre-treated communal waste, like the RDF/SRF which can be utilized energetically as well. A further advantage is their relatively high heat value, some may even exceed the heat value of coal.



3B has taken part in many projects where our task was to create a high capacity reception and delivery plant. On these premises alternative fuels are received, delivered i. e. pre-treated for power plant application purposes.





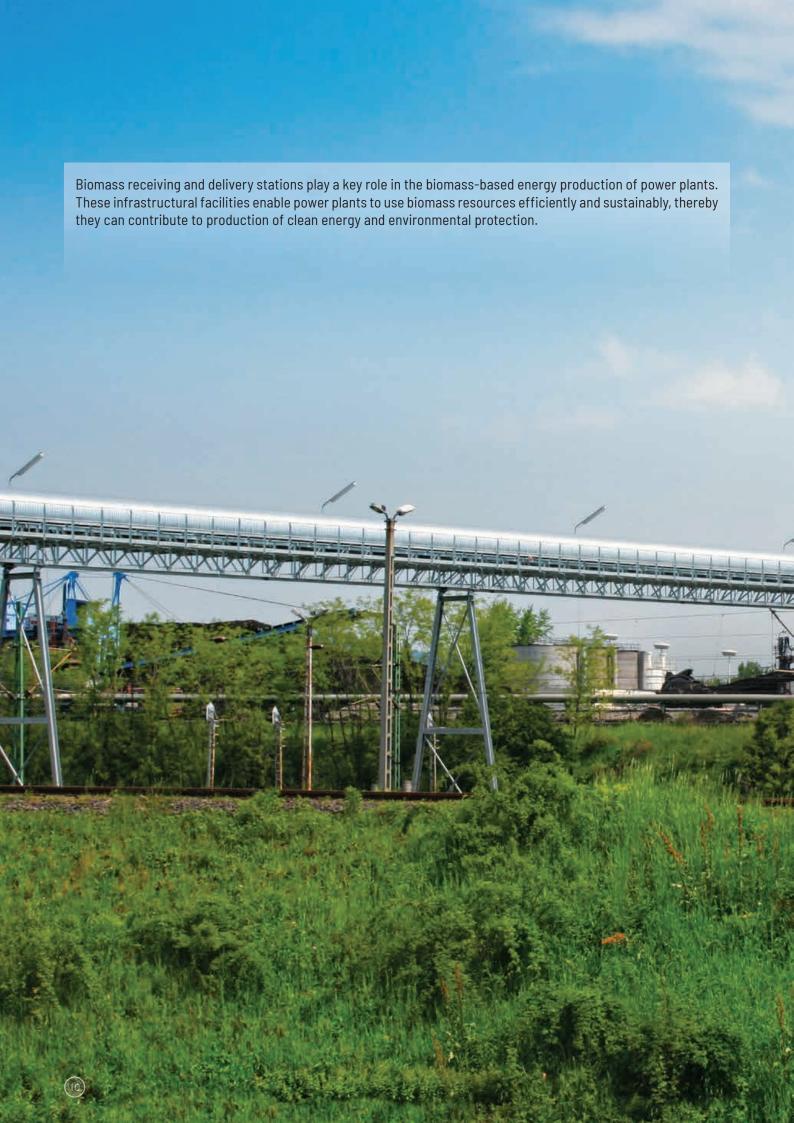


For complete systems we have the following portfolio:

- Walking floor unitsStorage silos & Silo extraction screw
- Chain conveyors
- Magnetic separators
- Star screen
- Pipe conveyors
- Belt conveyors
- Eddy current separator







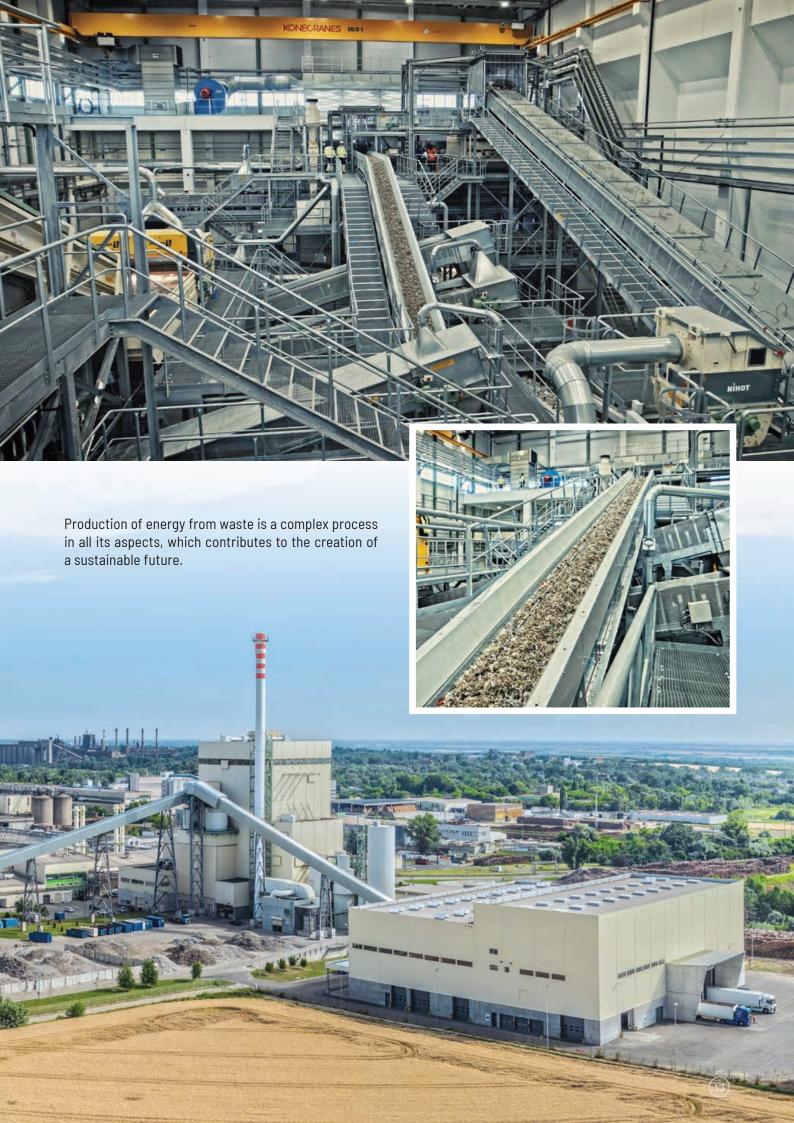




Recycling is not only important from the point of view of protecting our environment, but increasingly, it also means increasing the diversity of energy sources. When waste cannot be recycled, turning waste into energy offers an opportunity to make the most of our resources.

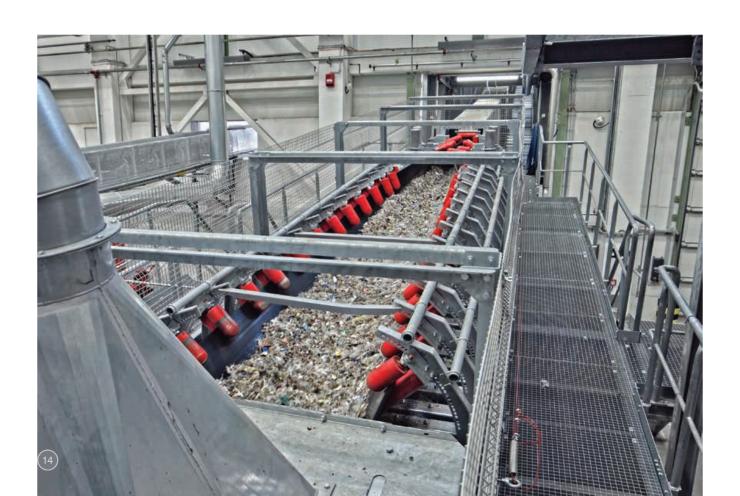
This option not only offers a solution to the problems of waste management, but also provides new, clean energy sources. Producing energy from waste is not only an environmentally friendly solution but it can be economical, too. Thanks to technological development, the efficiency and reliability of this type of energy production is also increasing continuously, so it is becoming a more and more competitive alternative to traditional and conventional energy sources.







The energy industry is constantly looking for such innovative solutions that can help them operate more efficiently and in a more environmentally conscious way. For power plants, fuel preparation plays a critical role in terms of energy efficiency and emissions.





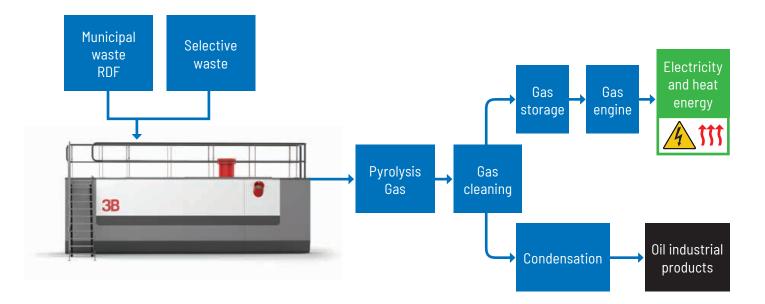
We offer technologies that enable the efficient combination of different types of fuels, such as coal, biomass or waste, in order to achieve the best results. These solutions also contribute to the overall sustainability and competitiveness of the energy industry, keeping pace with developments to operate in an even more environmentally friendly and economical way.



Thermochemical recycling

3B Hungária Ltd. works on such waste management projects that offer solutions for a sustainable environment. Our goal is to "Use everything that is possible locally".

The technology works on the principle of thermochemical decomposition (TCD) of carbon-based input materials in an oxygen-free environment. The pyrolysis process produces hydrocarbon gases and oils, as well as carbon black with a high calorific value, at moderately high temperatures (400-600 C degrees), with the exclusion of oxygen.



All manufactured products can be stored, transported or used on site. The technology is in continuous operation, it has got a number of safety features that prevent emissions, and in addition to that it does not produce by-products or pollutants, only industrial raw materials that serve as raw materials for other industries, therefore our process is partly a waste treatment process that can also recover the waste in its material form.

The modularity and customisability of the technology opens up the opportunity for universal use.



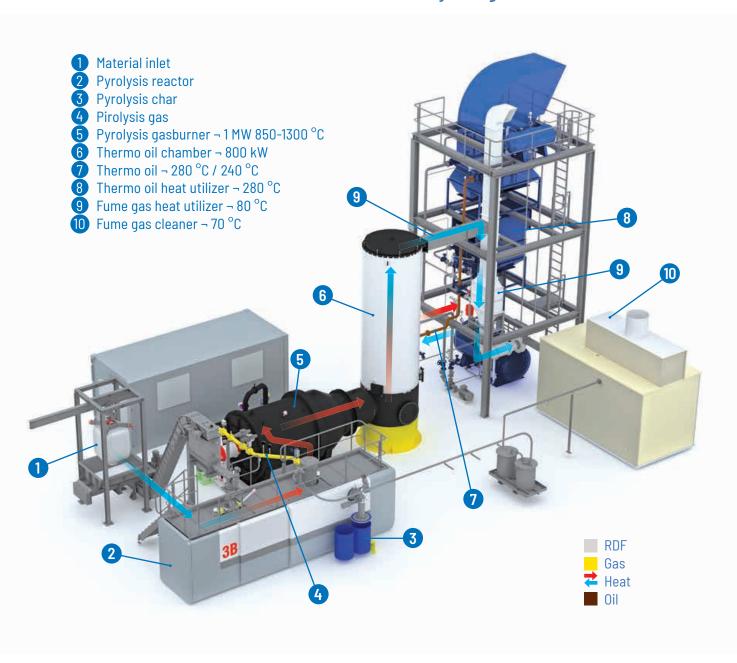




Energy recovery from waste

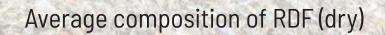
One of the main directions of our development is an energy-based waste recovery method that is capable of converting RDF, and even the contaminated mixed plastic waste that cannot be utilized in its material, into energy carriers, and ensure safe and clean energy production thereby. The quality and quantity of the resulting products depend on the quality of the raw material processed.

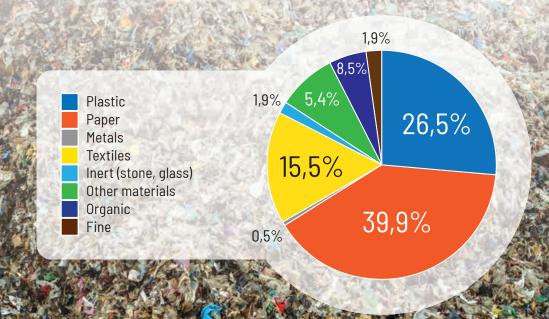
Thermochemical recycling



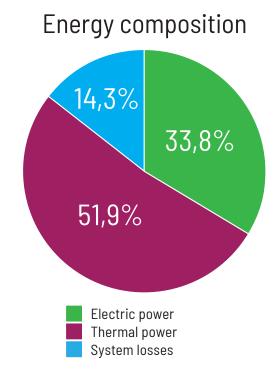
Currently, we are testing and perfecting the equipment with a capacity of 200 kg/h. This can provide a rational option for the local utilization of waste, instead of costly and expensive transport, storage and loading.





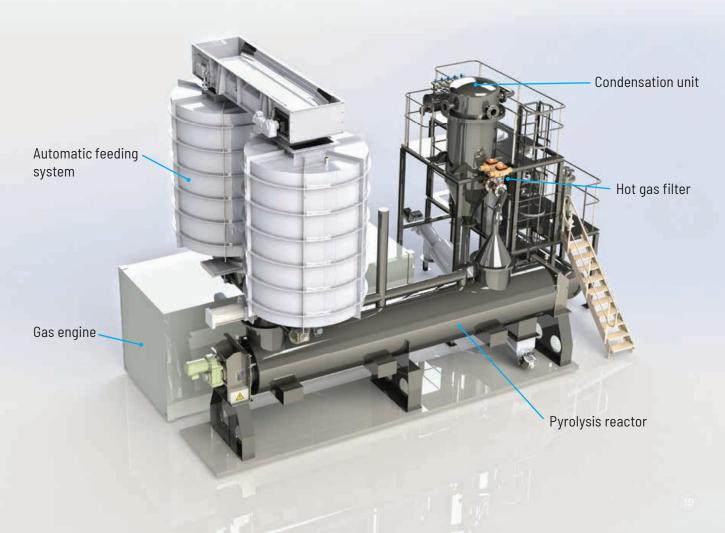






In the next step, we would like to build a small power plant equipped with 4 blocks using a 500 kg/h power reactor, next to the municipal waste treatment plant of our town. The plant currently produces approximately 12,000 t/year of RDF with an energy content of 51,000 MW. Electricity is generated by gas engines, and the waste heat is used for the pre-treatment of RDF. The planned payback can be projected within a period of 4-6 years, based on calculations with 6,000 operating hours per year. In terms of profitability, the sources of income are electricity, thermal energy, gate fees and oil.

Reactor module





Our company has been participating in the construction of several major e-waste recycling plants. Each recycling plant uses unique solutions and technologies, the related material handling machines and technological steel structures are delivered by 3B.

The recycling process aims at gaining possibly clean marketable secondary raw materials possessing the highest possible grade of cleanliness while pollutants are eliminated safely by this technology. Relying on well-tried and tested solutions our machines cope successfully with the shredded machine parts that may turn out to be difficult to manage during delivery. The constantly rolling, popping condensers and magnets meant a highly challenging task to solve during the construction of our first plants. By now we have developed conveyor belt models and construction solutions that ensure the smooth delivery of all types of materials without problems.

In addition, their operation requires few wear parts.











The suppliers of in-built components have representations and factories in each point of the world, thus whenever a machine part is needed it can be purchased within a short term.







3B Hungária Ltd.

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