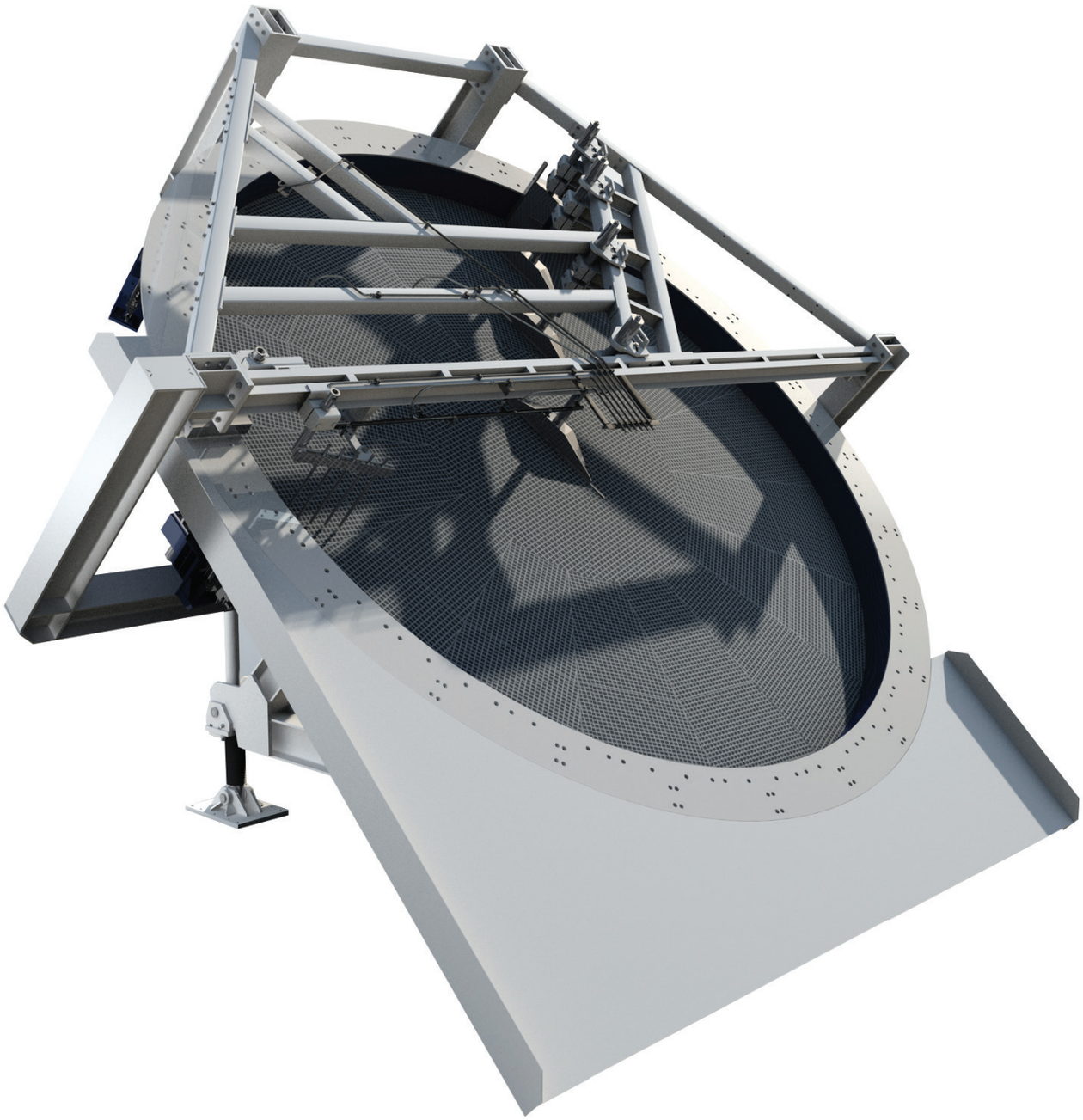
HAVER & BOECKER

NIAGARA

THE SCARABAEUS® 7500 PELLETIZING DISC



EFFICIENT IRON ORE PELLETIZING
IMPROVE RESOURCE EFFICIENCY

IMPROVED PRODUCT QUALITY

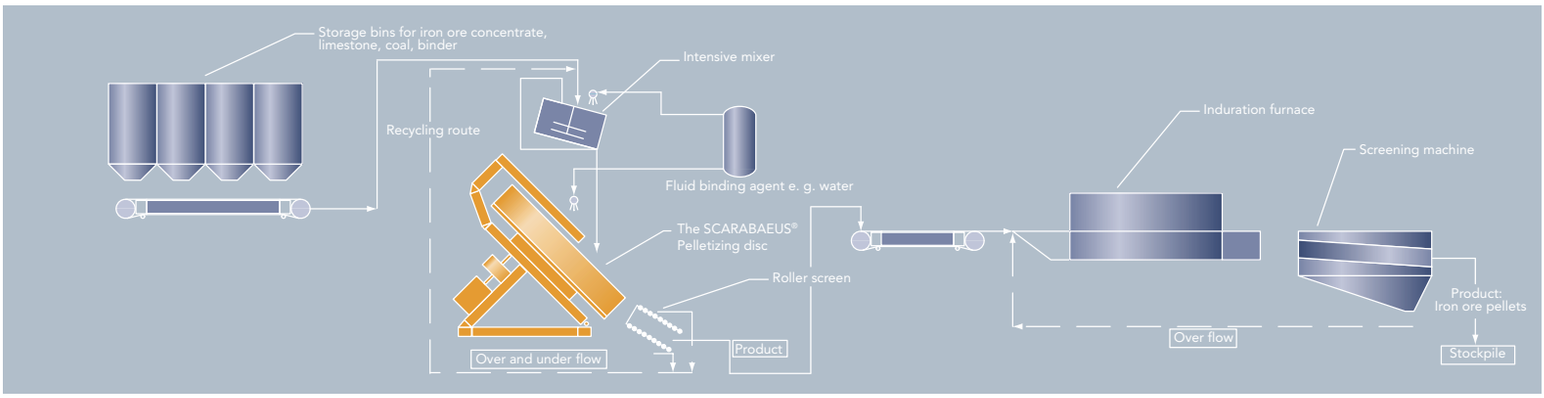
The Scarabaeus process creates higher quality pellets, which can be sold at better prices due to significant tighter pellet size distribution and a higher iron content.

INCREASED PRODUCT OUTPUT

The Scarabaeus process generates higher tonnages by minimizing the material return rates and avoids double processing of over- or undersized pellets due to automatic machine parameter adjustment, which can also adapt to varying material property fluctuations in the feed material.

REDUCED CO_2 EMISSIONS

The Scarabaeus process creates pellets so high in quality that they can be utilized for the direct reduction process.



Pelletizing – Why?

The undiminished demand of iron ore leads to mining of even lower-valued deposits. The reduced quality of the natural resources stands in opposition to the economic, ecological and technological restrictions, which require an intensive mineral processing of the iron ore. An enrichment of iron components is achieved by separation of undesirable components. However, for this it is necessary to crush the ore to the decomposition grain size and to supply sorting processes such as magnetic separation and flotation. To improve the process and product properties of the fine-grained iron ore concentrates, it is necessary to agglomerate these concentrates. Pelletizing of iron ore concentrates in pelletizing discs leads to significant tighter distributed pellets with smooth surface.

Pelletizing – How?

The process chamber of a pelletizing disc is made by an inclined, rotating, flat cylindrical pan. Due to rotation of the pan, the fine material is pulled along to the disc uppermost point and then rolling down onto a material bed. Caused by the special movement of the material itself and the addition of water onto the material, nucleation and growing occurs as a result of the settings of the pelletizing disc.

Typically, final pellets with a very tight particle size distribution are discharged continuously over the board of The SCARABAEUS® 7500.

Pelletizing – Service!

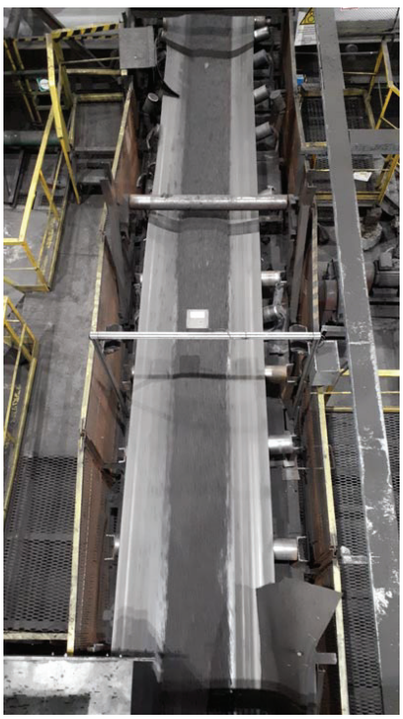
HAVER & BOECKER NIAGARA supports you to develop and optimize your processes, machines and plants. In our test facility various test equipment for pelletizing is available. The objective of HAVER Process Engineering is to meet your technical requirements and economic benefits. To achieve this, it is necessary to concentrate on the whole pelletizing process, starting with raw materials preparation, dosing and mixing and binder treatment. The core-components of pelletizing are focused in detail to minimize the efforts of final product classification, material circulation as well as de-dusting, safety and environmental protection. Applying recognized technical norms and standards with tailor-made processing leads to a production process that saves energy and resources.

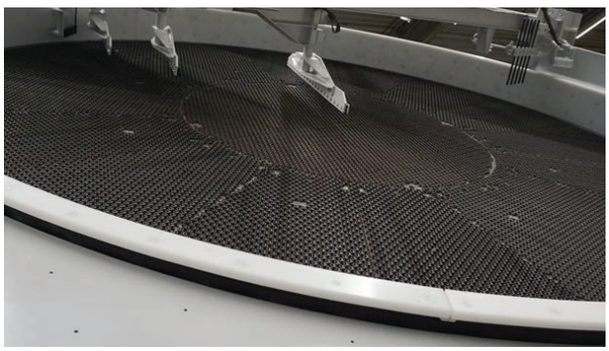
TECHNICAL SPECIFICATION

The SCARABAEUS® pelletizing discs by HAVER & BOECKER NIAGARA are used for sustainable and efficient production of iron ore pellets. The unique design minimizes circulation, increases productivity and profitability. The pelletizing discs used for agglomerating iron ore concentrates into pellets are remarkable for their significant tight particle size distribution with a target size of 10 to 14 mm, important for DR-Processes.
The powdery (powder-type) feed material is formed into pellets with use of water as the liquid binding agent. The optimum operating parameters can be set by changing the inclination, the rotational speed, mass flow rate, and now also the rim height thanks to the innovative automatic pelletizing disc control system.

In order to develop customized solutions for our clients and to determine which process is the best for their individual iron ore pellet requirements, HAVER ENGINEERING GmbH (Associated-Institute of TU Bergakademie Freiberg) is conducting iron ore tests in a specialized test facility. Proving the possibility of achieving the desired parameters with the main aim - to create added value for our customers through sustainable technically valid sound solutions, perfect quality, guaranteed reliability and absolute flexibility!

- Remote monitoring / controlling
- Completely automated inline analysis system
- Measuring of pellet size distribution directly (of unconsolidated material) on the product belt
- Real time measurement without disrupting the production
- Scarabaeus process control with expert system
- Continuous target/actual comparison of key performance indicators
- Automatic readjustment of process parameters

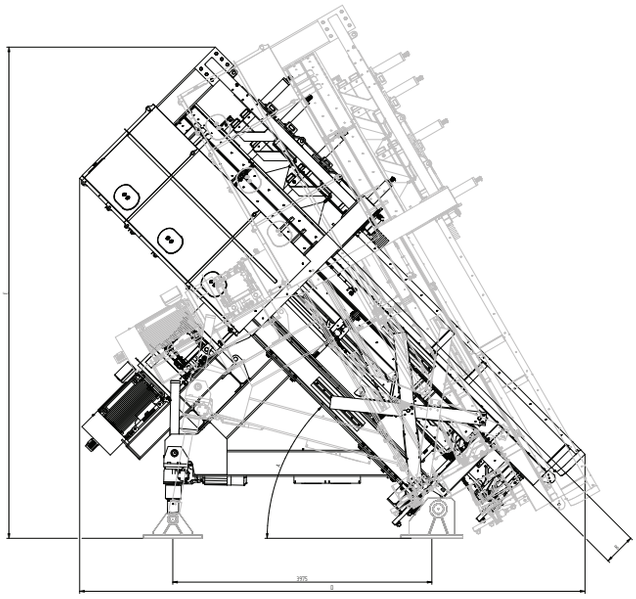




THE SCARABAEUS PELLETIZING DISC

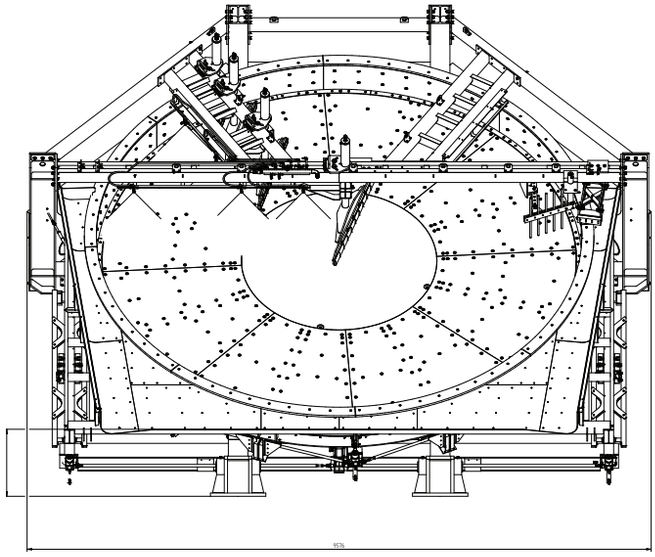
ADVANTAGES

- Automatic adjustment of the sidewall height during operation
- Stepless rotary speed adjustment during operation
- Automatic inclination adjustment during operation



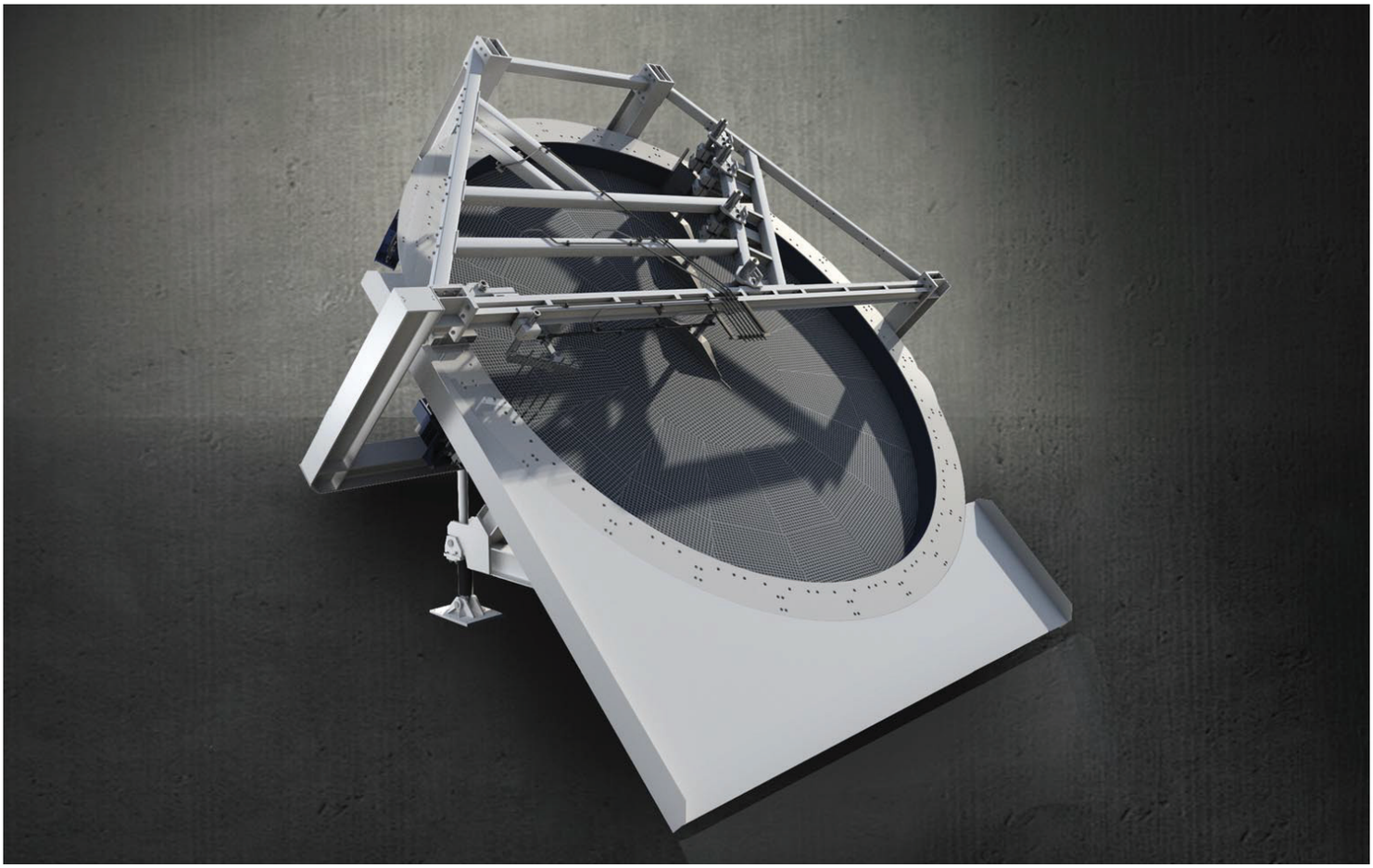
TECHNICAL SPECIFICATIONS

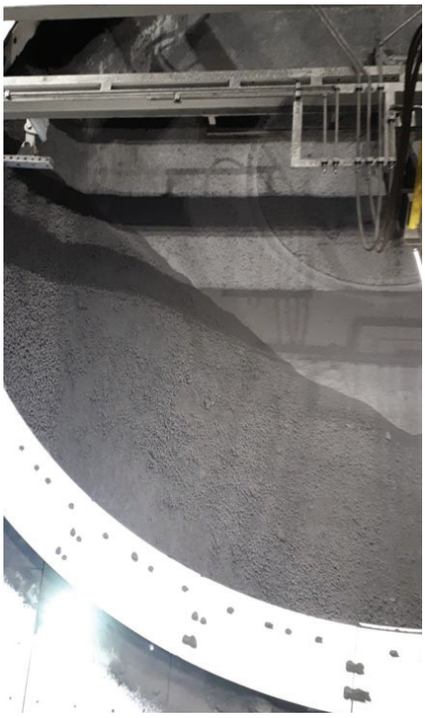
Disc diameter	7,5 m
Rotary speed	4,5 - 9,0 rpm
Adjusting of sidewall	450 - 650 mm stepless
Adjustment of inclination	45° - 60° stepless
Drive unit	200 kW



Main dimensions

Length	9576 mm
Width	6480 - 7683 mm
Hight	7535 - 8180 mm





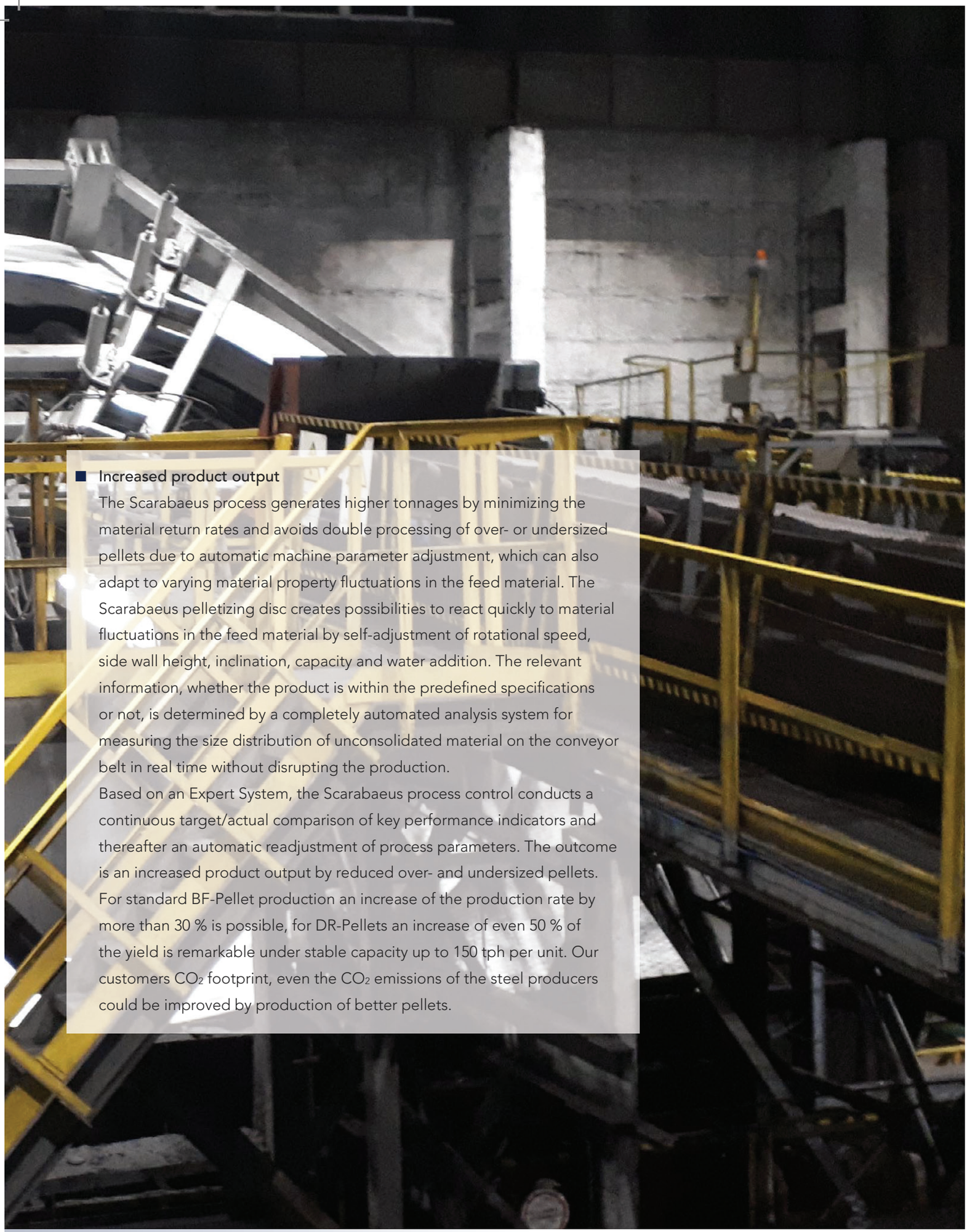
YOUR BENEFITS

- **Reduced CO_2 emissions**

  The Scarabaeus process creates pellets so high in quality that they can be utilized for the direct reduction process. This in return can create enormous CO_2 emission savings, thus minimizing the mine´s impact on the environment. The Scarabaeus pelletizing disc and the Scarabaeus process control are the tools to produce a tight pellet size distribution. The specifications of iron ore pelletizing are no longer anymore only 9 to 16 mm. With these tools, even 10 to 14 mm is possible. Consequently, the Scarabaeus system did not only improve our customers CO_2-footprint, even the CO_2 emissions of the steel producers could be improved by production of better pellets.

- **Improved product quality**

  The Scarabaeus process creates pellets of highest quality, which can be sold at better prices due to significant tighter pellet size distribution and a higher iron ore content. The Scarabaeus pelletizing disc gives the operators a full range of influencing parameters by the machine itself. Desired material quality, e.g. pellet strength and pellet size could be achieved by changes of machine parameters, no longer only by addition of more and more binders and additives. Thus, the total iron content of the green pellets corresponds approximately with the total iron content of the concentrate – improvement of product quality – without backward rolls.



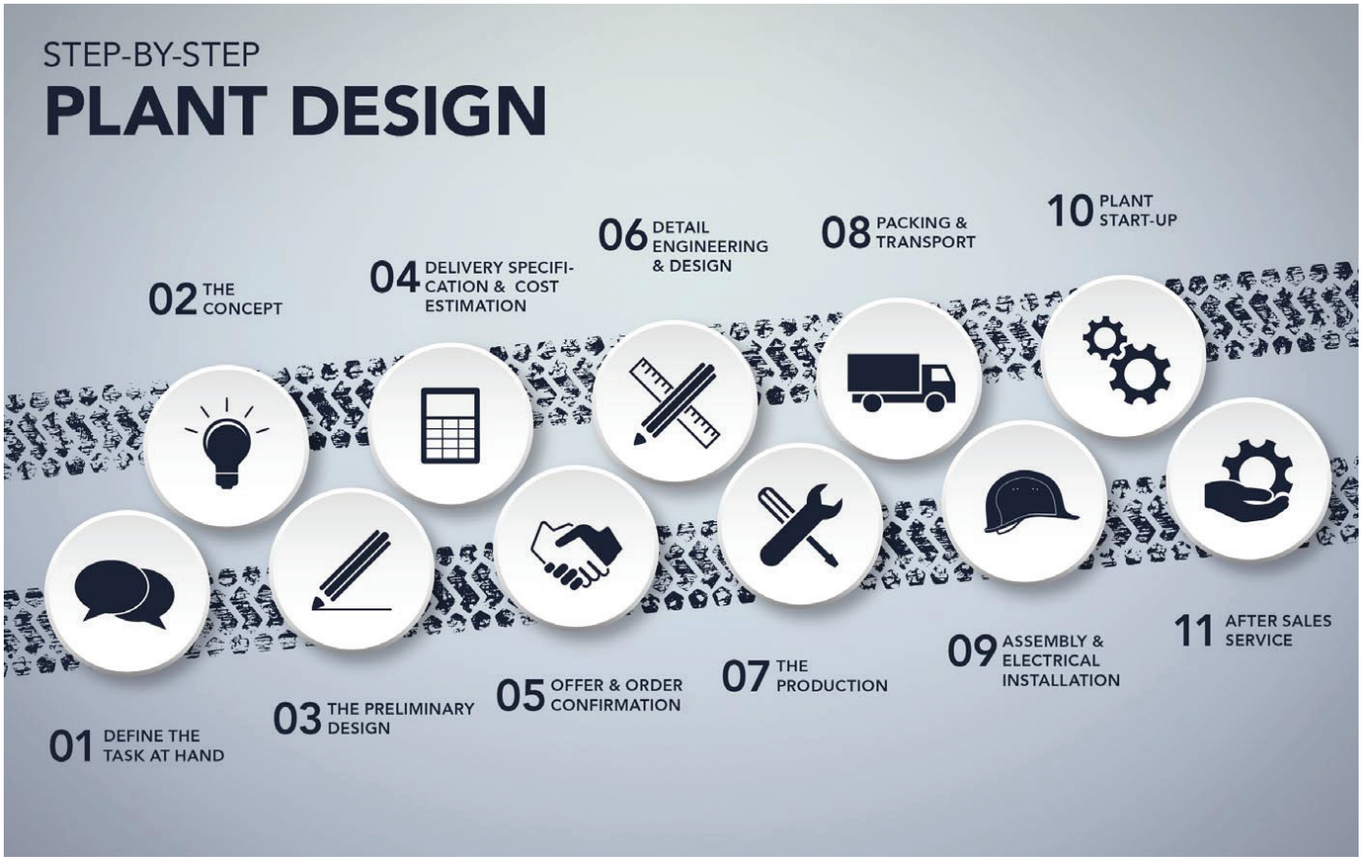
Increased product output

The Scarabaeus process generates higher tonnages by minimizing the material return rates and avoids double processing of over- or undersized pellets due to automatic machine parameter adjustment, which can also adapt to varying material property fluctuations in the feed material. The Scarabaeus pelletizing disc creates possibilities to react quickly to material fluctuations in the feed material by self-adjustment of rotational speed, side wall height, inclination, capacity and water addition. The relevant information, whether the product is within the predefined specifications or not, is determined by a completely automated analysis system for measuring the size distribution of unconsolidated material on the conveyor belt in real time without disrupting the production.

Based on an Expert System, the Scarabaeus process control conducts a continuous target/actual comparison of key performance indicators and thereafter an automatic readjustment of process parameters. The outcome is an increased product output by reduced over- and undersized pellets. For standard BF-Pellet production an increase of the production rate by more than 30 % is possible, for DR-Pellets an increase of even 50 % of the yield is remarkable under stable capacity up to 150 tph per unit. Our customers CO_2 footprint, even the CO_2 emissions of the steel producers could be improved by production of better pellets.

OUR SOLUTION FOR YOUR PERFECT FLOW

FEASIBILITY. INTERPRETATION. COMMISSIONING.



With a global network of experts, HAVER ENGINEERING supports customers around the world to develop and optimize their processes, machines and plants. In specialized test facility various test equipment for pelletizing is available. The objective of HAVER Process Engineering is to meet all technical requirements and economic benefits. To achieve this, it is necessary to concentrate on the whole pelletizing process, starting with raw materials preparation, dosing, mixing and binder treatment. The core-components pelletizing and curing/drying of the pellets are focused to minimize the efforts of final product classification, recycling as well as de-dusting, safety and environmental protection. Applying recognized technical norms and standards with tailor-made processing leads to a production process that saves energy and resources.

HAVER ENGINEERING

HAVER & BOECKER
INSTITUT

HAVER ENGINEERING GmbH is an innovative engineering company for mineral processing. As a competent partner HAVER ENGINEERING develops and implements forward-looking solutions in cooperation with the customers. HAVER ENGINEERING is also recognized as an official associated institute of TU Bergakademie Freiberg. Because of this cooperation with the TU Bergakademie Freiberg the scientific research of HAVER ENGINEERING GmbH is strengthened and the joint innovative developments are given more sustainability. Together with the partner HAVER & BOECKER Niagara HAVER ENGINEERING develops process engineering solutions, machinery and innovative services. Contact us to learn more!

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