Innovative Solutions for **Grain based Biorefinery.**



Grain based Biorefinery. Best utilization of raw material.

Grain is more than an important source for food and feed. It is also increasingly being used as a source for Biorefinery products, thus innovative solutions are required to gain the best utilization of all grain ingredients.

Integrated solutions.

Bühler's technologies for grain processing consist of machines and components which hold a worldwide technological leadership position. The seamless implementation into a fully integrated process, from raw material to finished product, ensures maximized performance, high yield, increased efficiencyand consistent finished product quality.

Energy efficient processes.

Bühler's aim and commitment is to enable environmentally sound, economical and socially responsible grain based Biorefinery production processes. Milling systems from Bühler are optimized to achieve the best out of every single grain kernel with minimal energy consumption.

Consistent finished product quality.

In Biorefinery plants, every operation must be implemented with the utmost care to ensure overall process efficiency. Finished grain products produced on Bühler equipment stand for consistency, high yield, high quality and high food safety standards.



Wheat



Corn/Maize.

Retrofit of existing plants.

Bühler offers various innovative modernization and retrofit packages for existing grain based Biorefinery plants.

Customer service.

To ensure consistent operation of Biorefinery plants, Bühler offers both individualized services and comprehensive service solutions. More than 1,000 highly trained Bühler service engineers, in over 140 countries worldwide, advise and support our customers on site – with preventive maintenance, fast repair and support services.

Advantages at a glance:

- Integrated solutions
- Energy efficient processes
- High finished product quality
- Capacity increasing retrofits for existing plants
- Worldwide service network



Barley

Grain and Finished Products Processing. **Bühler, your professional partner.**

Bühler solution provider.

However the raw material is received at the Biorefinery plant – by truck, rail or ship – Bühler has the right unloading and intake system. Bühler is able to provide the complete process solution for all subsequent process steps: precleaning, cleaning, milling and product delivery to the wet process. Furthermore, Bühler offers solutions for processing finished products such as wheat gluten, corn gluten, corn gluten feed (CGF), dried distillers grain and solubles (DDGS), starch and bran.

Services.

In addition to supplying complete solutions for grain and finished product plants, Bühler offers a wide range of additional services:

- Engineering
- Technology center and test facilities
- Analytics laboratory
- Plant automation
- Installation and start-up
- Training and process optimization
- Customer service

Bühler partnership.

Bühler supports your project from the very beginning. Every Biorefinery plant is unique and Bühler has the engineering capability to meet your specific requirements.



Engineering.



Technology center and test facilities.



Equipment supply



Training and process optimization.



Plant automation.



Customer service.

Optimized Milling. For high value products.

A perfectly adopted and integrated milling system has a significant influence on the overall efficiency of grain based Biorefinery plants and the finished product quality. An optimized milling system reduces investment and operating costs of the subsequent downstream processes substantially.

Optimized wheat milling.

Wheat is a perfect source for high value semi-finished food and feed products, including high quality vital wheat gluten, proteins, glucoses, native or modified starch or DDGS. An optimized milling process generates high value products and tremendously decreases the overall energy consumption of a Biorefinery plant.

For example, the separation of fibrous bran from the starchy endosperm reduces the load of non-fermentable solids in the fermentation, distillation, evaporation and drying process by more than 50%. The alcohol production process will be streamlined and the capacity will increase. Compared to a "whole grain grinding" process, DDGS drying energy can be reduced by up to 40%.



Wheat based Biorefinery Process

Grain based Biorefinery process.

Various grains such as corn, barley, rye, sorghum, peas and broken rice can be used as raw materials for grain based Biorefinery plants. Bühler's solutions for milling, pelletizing and finished product handling are engineered and optimized for each combination of raw material and finished products. As a market leader for grain processing solutions, Bühler offers a wide range of milling systems for grain based Biorefinery plants.



Grain based Biorefinery Process.

Grain Processing. Selective, efficient and reliable.



TAS Cleaner.

The TAS Cleaner is the cornerstone of efficient high capacity grain cleaning. Available in four models with a capacity range of up to 250 t/h this heavy-duty cleaner is designed for 24/7 operation. The large number of screens in the TAS guarantees high throughput rates with a small footprint. The continuously adjustable air volume regulation on the machine, a vertical air sifter with an adjustable cross-section and inspection window ensure optimized cleaning quality.



Roller Mill Diorit.

The Four- and Eight-Roller-Mill Diorit provides exceptional grinding with a narrow particle size distribution. With its sturdy design, it stands for effective milling with maximum sanitation standards. The energy consumption of the Diorit is approximately 30% less compared to traditional Hammer Mills. Uniform distribution of the product and feeding to the rolls create the conditions for impeccable grinding.



Sifting.

Plansifters efficiently sift and sort product. The Arenit is notable for its exceptionally robust frame structure and low energy consumption. The NOVA generation of sieves is distinguished by a greater sifting area and optimized utilization of space. That means maximum throughput with a minimum space requirement. Ultradynamic acceleration increases the intensity of the sieve motion, consequently improving the sifting effect.

Pelleting and Finished Product Handling. Flexible and dependable.



Hammer Mill.

Hammer Mills are mainly utilized for size-reduction within grain processing. The horizontal Hammer Mill Granulex[™] DFZP is capable of processing a wide range of raw materials in both coarse and fine grinding applications. The Hammer Mill achieves grinding capacities of up to 75 t/h. Double guided sliding doors on both sides provide a particularly user-friendly access to the grinding chamber. The screen-clamping mechanism enables fast and easy screen changes.

Pellet Mill.

The Bühler pellet mill DPHE is specifically designed for the production of high quality pellets. The integrated machine panel with touchscreen controls all process parameters. The Pellet Mill DPHE stands for optimized pellet durability, easy maintenance and high flexibility.



Bagging Carousel.

The effective and flexible Bühler bagging carousel MWPL is suitable for bagging open-mouth bags made of paper, plastic, jute, or cotton with a filling weight ranging from 10 kg to 50 kg. The bagging capacity of the MWPL is as high as 18 bags per minute. Various options are available for the bagging carousel: automatic bag attacher, automatic bag closer, net-weight and differential-weight scale.

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