Precision at its best.

Dies and rollers for pellet mills.

Innovations for a **better world.**

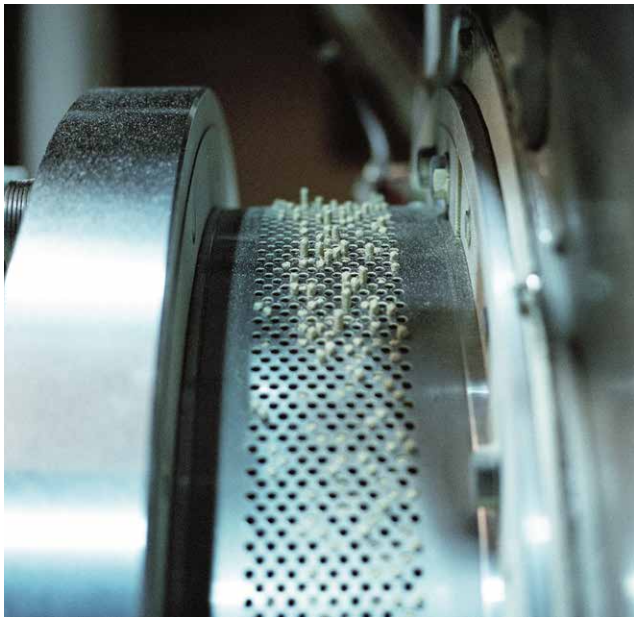
BÜHLER

Top quality for all brands.
For longer wear and more profit.

Bühler manufactures high precision, durable dies and rollers. Our wide range of offerings includes products for our own pellet mills and those manufactured by others. Customers worldwide across many industries rely on our longstanding experience and outstanding quality in the design and manufacture of dies and rollers.

Fast commissioning and expert global delivery.

Bühler's dies and rollers are characterized by easy installation and quick start-up. Thus, our customers benefit from the product advantages in the shortest possible time. Through innovative production and a comprehensive inventory of high-quality forged blanks, our dies and rollers are available worldwide.



Higher throughput rates and longer service lives.

Outstanding quality delivers higher throughput rates and ensures a longer service life than comparable die and roller products. Maximum cost efficiency means that investments are paid off in a very short time.

Bühler example calculation:

Electric energy savings per year*:
$3,750
or 37,500 kWh
or 19.8 tons CO_2 less emissions

Start-up benefit during commissioning**:
$200 additional profit

***Example calculation based on pellet mill throughput of 15 tons per hour; 150kW electric power consumption; 5,000 running hours a year; $0.10 per kWh costs for electricity; 5% electric cost savings.*

*** Start-up time to full capacity (15t/h): 0.5 hours*

The advantages at a glance:

- Up to 5% energy reduction due to Bühler-specific parallel hole pattern
- Quick commissioning up to 10 times faster due to running in of dies at the factory, producing an advantage of up to 60 tons feed production during start-up of a new die
- Efficient delivery through worldwide stock capacities
- Dies and roller shells for all brands

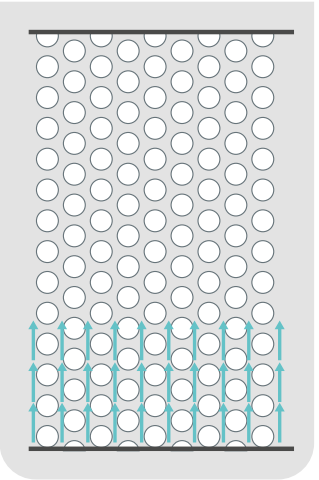
Optimized hole patterns.
Higher throughput and lower energy costs.

The design of the dies and rollers is crucial for perfect pellet quality and a high throughput. To ensure both, Bühler offers a specially designed hole pattern to increase production and reduce energy costs. This has a lasting impact, with significant increases in throughput compared to non-optimized hole patterns.

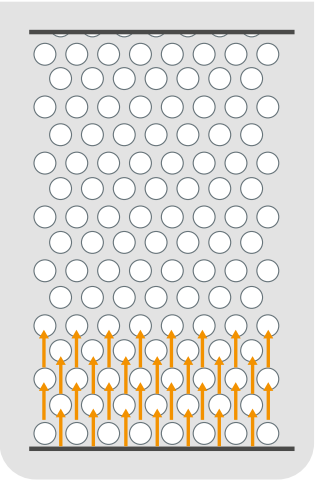
The Buhler parallel hole pattern decreases the forces between the rollers and the die. This reduces the risk of the die breaking, provides for more uniform wear, and thus a longer potential service life. The relief design also enhances throughput and can be tailored to the specific customer needs of pellet formulation. When it comes to the choice of reliefs, there are virtually no restrictions — straight, single-step, multiple-step, variable, tapered.

Our experts are happy to assist customers with the precise optimization of the hole pattern to lengthen service life and increase profitability.

Conventional:
standard hole pattern.



Bühler:
parallel hole pattern.



Customer-specific materials.
For customized solutions.

Choosing the right material is crucial.

Everything begins with the selection of the optimal material for our customer's specific product formulation. Special metal alloys ensure that the products withstand the high abrasion and corrosion levels that occur during the pelleting process.

Bühler offers roller shells in corrugated (straight, helical, open end, closed-end), dimpled, diamond and tungsten carbide styles. Steel grades 20MnCr5 and 100Cr6 are typically used. In addition, the shells can be hardened or cured to obtain a more brittle or flexible material. The design of a roller is crucial if it is to have a long service life and high throughput rate.

For most applications, the X46Cr13 high-grade chromium stainless steel is the preferred die alloy. The correct alloy in combination with the appropriate heat treatment results in a hardened, stainless die for trouble-free operation.

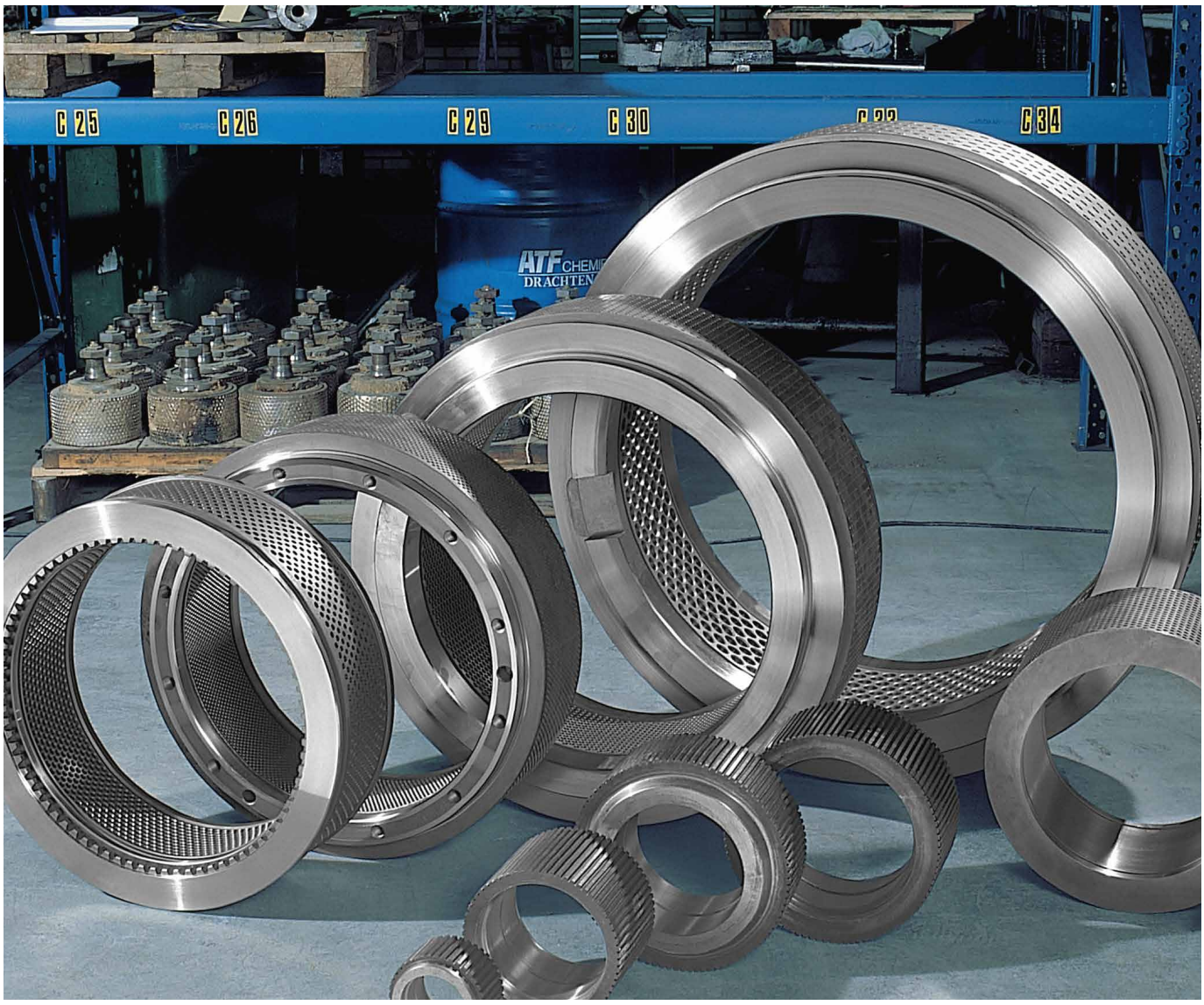
A high-precision manufacturing process.

The production of each die begins with a forged, specially rolled ring, which is carefully checked for possible flaws before proceeding with manufacturing. Computer-controlled deep drilling machines produce holes with a very smooth surface, eliminating complex post-processing. Each hole is just the right size to enable even wear.

The hardening and tempering process is crucial for a uniform die quality. Bühler uses state-of-the-art vacuum oven technology for die hardening. The heat treatment takes place in a separate building, ensuring a clean atmosphere and a uniform hardening process.

Quality assurance.
Efficient production.

Before our products leave the factory, we again check the hardness and dimensions. We also record all the measurement data for traceability. This makes certain that only flawless products leave the factory to serve customers in all corners of the world. Globally, there are nearly 4,000 Bühler die/roll shell combinations running at any given time. Our large raw-material warehouse and efficient manufacturing facilities keep production running smoothly. Additionally, Bühler stocks finished dies at various locations throughout the world.



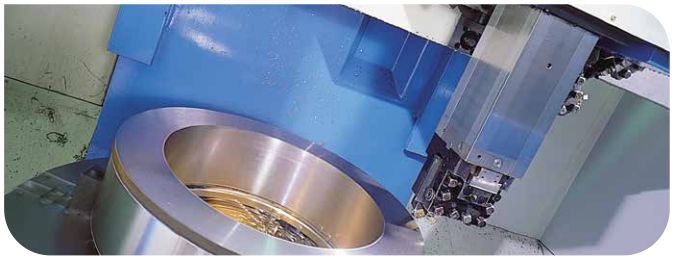
Customized solutions.
According to need.

Bühler manufactures rollers and dies according to the specific needs of our clients, their pellet mill models and the formulation of the pellet product. Our pelleting experts provide tailored advice for selecting the best die and roller specifications to produce the desired product and the longest wear life.

Step by step to an optimal solution:

Inventory maintenance

- Large store of high-quality forged blanks
- Continual assessment for timely replenishment
- Contract scheduling for replacements is available to provide spares at the right time for budgeting and maintenance



Precision machining

- CNC machining centers for meticulous accuracy
- Quality manufacturing enabling rapid, easy installation and leading to longer product life

Deep-hole drilling

- State-of-the-art drilling machines accurately drill specified rows and holes
- Choice of Buhler parallel or conventional hole patterns

Relief options

- Straight relief (single or multiple step) or tapered relief to produce the optimal pellet
- Variable relief for pelleting across the full working face and preventing outer rows from plugging

Vacuum hardening

- Quenching and tempering in a vacuum and nitrogen atmosphere
- Low distortion and a smooth surface

Quality assurance

- Measurement of hardness and dimensions
- Recording of quality data for traceability

Running-in

- Polished (run in) to deburr dies and rollers, eliminating need to run a die break-in procedure
- Easy start up to reach full throughput as soon as possible

Delivery

- Best possible delivery times
- Deliveries worldwide

Services

- Advice on optimum hole patterns and roller shell selection to produce the best pellet
- Training and digital services
- Stock services in various locations
- Local die reconditioning and roller rebuilding to extend the life of the investment and minimize costs

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