

Metallurgy

By “metallurgy” we understand on the one hand the manufacture of metals, i.e. the metallurgy industry, and on the other hand, metal processing, i.e. the manufacture of high-performance materials from metal powders. AVA supplies mixers, granulators and dryers for these industries.

Special heavy-duty mixers and granulators are used in the metallurgy industry. AVA has developed particularly maintenance-free and wear-resistant designs for this purpose. Numerous mixers have been in operation for decades to the utmost satisfaction of our customers.

However, in the metal processing industry, on the one hand, extremely high demands are made on the homogeneity of the various metal powders to be mixed, and on the other hand, particular attention is given to cleaning and residual discharge during formula changeover as well as the surface characteristics for the prevention of metal abrasion.

Thanks to AVA's developments, numerous outdated treatment processes have been adapted and replaced by modern economical processing technologies.



Steelworks industry - metallurgy

Dust treatment

The following products are moistened and partially granulated in the AVA system:

- Foundry dust
- Sinter dust
- Electric furnace dust
- Blast-furnace dust
- Converter dust
- Furnace burdening dust
- Cupola furnace dust
- ... As well as numerous other types of dust.



In addition, in some cases dusts of $> 400^{\circ}\text{C}$ can be cooled by means of adding water and can be treated until dust free. Any vapours created can be fed via AVA-spezifische Brüdensysteme, while the sludge of the product is reintroduced.

Special compacting process for achieving stable granules enables, for example, sinter dust to be introduced directly back into the steel melt.

Sludge processing

Sludge is created in various areas of steel manufacture and processing which contain numerous recyclable materials. In the AVA system, this sludge is dried in order to enable further processing, or alternatively e.g. oil is vaporised out of the mill scale sludge and thereby reclaimed. AVA has expertise in all of the processing technologies and can fall back on the experience of numerous supplied plants. This experience then serves to facilitate the user-oriented planning of new systems



Sinter mixing

In the past, rotating drum mixers were often used for mixing various substances with returns, limestone, quartz and coke.

AVA has developed a mixer especially for this purpose which achieves higher production economy and availability.

The primary advantages for the customer include:

- Considerably lower space requirements
- End product improvement by means of a paddle mixing system
- Short detention times
- Possibility to add water
- No caking of the agitator, even in the event of over-moistening of the product
- Simple maintenance
- Quick exchange of wearing parts
- High throughput performance up to 2,000 t/h per mixer
- Special drum lining for increased durability
- Drive of agitator via hydraulic systems, and therefore high flexibility in speed control.



Metal Processing – Metal Powder

Both horizontal and vertically operating mixers are used for the homogenisation of various metal powders (iron, molybdenum, tantalum, niobium, chrome, aluminum, bronze, copper, tin).

Partially it is only the environmental parameters and the installation options that influence the selection of the system. In doing so, each system has its specific advantages in terms of conditioning the products.

For small batches of up to approx. 300 litres, we recommend horizontally aligned mixers with single-side bearing and seal. These mixers can be very easily cleaned by means of hinged, drive-sided head ends.

Designs with completely removable agitators are used where absolute cleaning of the machine is important. In addition, choppers / cutting heads integrated into the back wall serve to split up agglomerates.

Large batches are homogenised in vertical cylinders or conical mixers. In this respect, AVA helix systems serve to considerably reduce mixing times and improve homogeneity.

Large batches of 40 - 60 t are manufactured with a conical central tube mixing system of approx. 20,000 litres. For these systems, only a minimal drive performance is required. In addition, discharge ratios of up to 99.9% are achieved.

The vertical conical mixers have proven themselves superbly in heating e.g. iron powder. The heat transfer values (K values) of AVA conical mixers are highly efficient.

