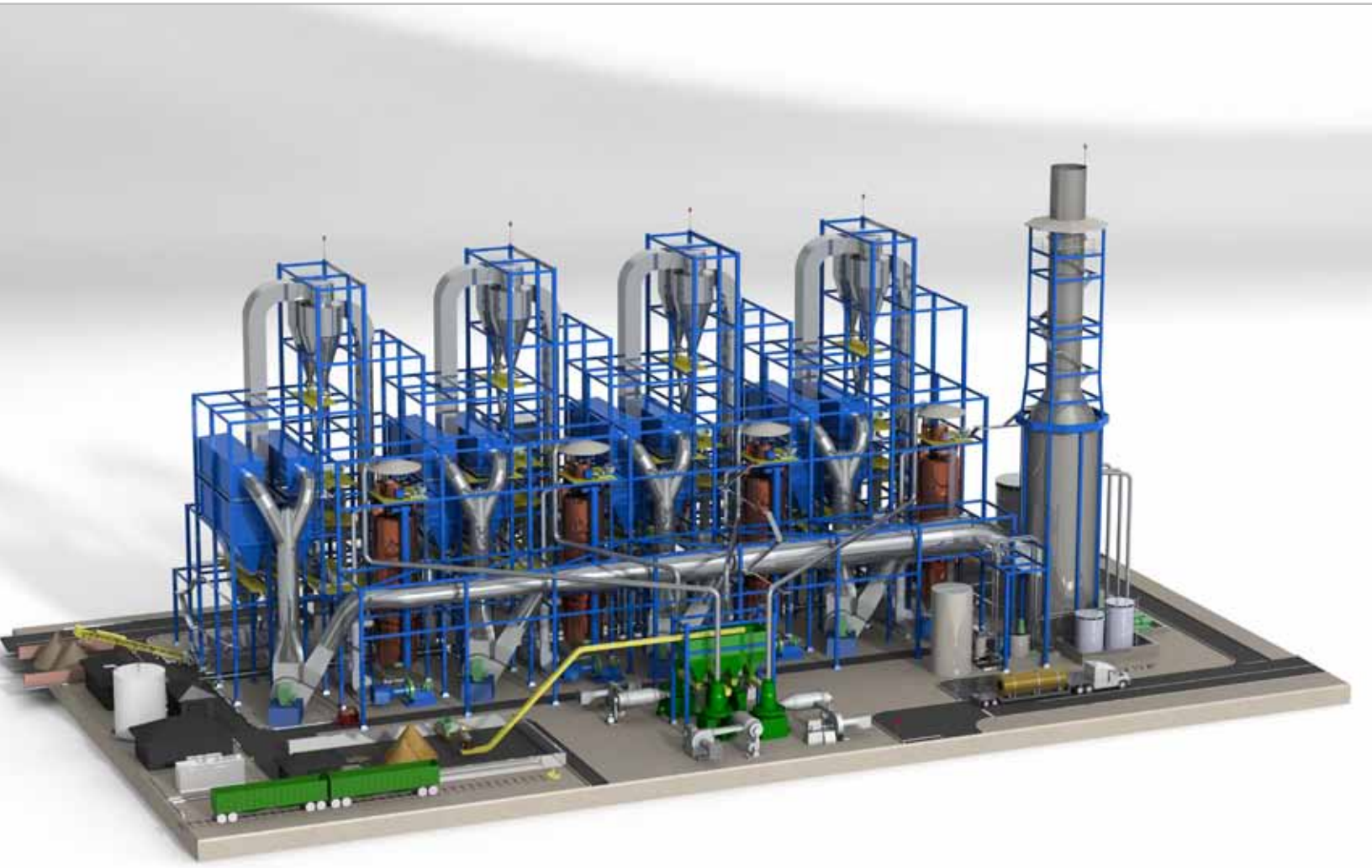


GEA Barr-Rosin
Thermal Processing in the Mining Industry

engineering for a better world

GEA Process Engineering

Thermal Processing Systems

GEA Barr-Rosin has extensive experience in the design, manufacture and installation of thermal processing equipment for the Mining Industry.

We have supplied numerous units to leading producers throughout the world. Designs are based on in-house 'know-how' as well as licensed technology.

Unit operations include:

- Drying
- Cooling
- Granulation / Conditioning
- Coating
- Thermal cycling
- De-dusting
- Calcining

Some of the materials processed include:

- Potash
- Phosphate Rock
- Iron Ore
- Kaoline
- Limestone
- Nickel
- Rare Earths
- Sand
- Bauxite
- Bentonite
- Clays
- Coal
- Copper
- Dolomite
- Lithium

Tailored Systems

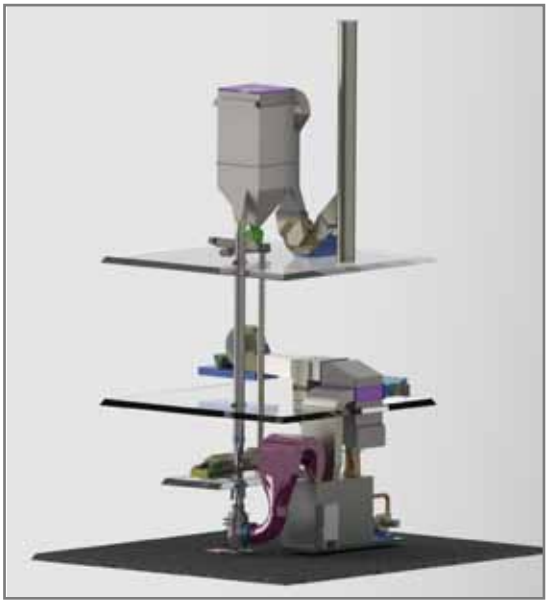
All GEA Barr-Rosin systems are tailored to our customers' needs. Each application is carefully considered and the best solutions are provided based on proven designs so to meet specific product, customer and site requirements. An additional strength of GEA Barr-Rosin lies in the custom designed technology based on Research & Development efforts and Pilot Plant trials. A fully operational in-house Pilot Plant facility is in Broisbriand, Quebec, Canada and equipment designs are proposed according to specific operating conditions as well as process behavior to optimize process flow and operation. Particular attention can also be paid to energy-savings through recuperation and/or equipment integration.

GEA Barr-Rosin is a leading supplier of thermal processing equipment. Previous experience in the mining industry has enabled GEA Barr-Rosin to develop a range of technologies for mining applications, including fluid bed dryers/coolers/de-dusters, rotary dryers, conditioning/polishing/coating drums, contact column coolers, and flash and ring dryers.

Thermal Processing Systems

Flash and Ring Dryers

Pneumatic flash dryers are used with products that dry quickly due to the easy removal of free moisture or where any required diffusion to the surface occurs readily. Drying takes place in a matter of seconds. Wet material is mixed with a stream of heated air (or other gas) which conveys it through a drying duct where the high heat and mass transfer rates rapidly dry the product.



Applications in the mining industry include products of fine grades and particle sizes, the drying of filter cakes, crystals, granules, pastes, sludges and slurries; in fact, almost any material where a powdered product is required. Proper feed conditioning is the key to drying materials with a high initial moisture content and it can be achieved by using twin shaft paddle mixers. As the drying air also conveys the product, this system can be used to discharge at elevation.

The product is separated from the drying gas in either single or multi cyclones, and/or bag filters. Sometimes the cyclones are followed by scrubbers for a final cleaning of the exhaust gases. The Ring Dryer employs the same basic principle as the flash dryer in that the material to be dried is dispersed and conveyed through the dryer in a hot air stream. However, the Ring Dryer incorporates a centrifugal classifier which allows for selective internal recirculation of solids, effectively lengthening the retention time of larger particles in the dryer, while finer material, which dries more rapidly, exits the dryer with the exhaust air. Internal recycle also provides for additional feed conditioning by reintroducing dry material to the feed point.

Rotary

The Rotary Cascade Dryer and Cooler are widely used in the mining industry. The robust, yet, simple construction combines flexibility and reliability, enabling it to operate continuously under the arduous conditions experienced in the mining industry.

Moisture or heat is removed by showering the product through a hot gas, ambient or conditioned air stream flowing in either a co-current or counter-current direction. Heat transfer, product distribution and efficiency are influenced by the internal design, while the long but variable retention time governs the rate of water diffusion or degree of cooling.

Granulation drums, with flexible internal rubber panels, ammoniator and sparge pipework can also be supplied, along with coating or conditioning drums for production of controlled release fertilizers.

Fluid Bed

GEA Barr-Rosin Fluid Beds are increasingly used for a broad range of mineral products. Capital cost, size and weight are reduced compared with conventional systems. Drying and cooling times are also shorter since the high heat transfer coefficient is achieved in the fluidized state. The fluid beds can be designed for high inlet temperatures for an increased efficency with an all-metal washable design. Fluid Beds can also be designed to elutriate fines from the product if required. We have supplied numerous units throughout the world with capacities of up to 780 tons/hour.

Combined drying and cooling can also be achieved in a single unit with two fluidizing zones, with the option of exhaust air recycle, which significantly reduces energy consumption and off-gas volumes. Hot air is supplied to the first zone and ambient or conditioned air to the second zone.

Contact Column Cooler

The GEA Barr-Rosin Contact Column Cooler has been developed in response to the ever increasing stringent environmental specifications. Product cooling is frequently used to permit handling and prevent caking of products during storage.

The Column Cooler operates on the principle of gravity. The product slowly descends in plug flow through a column incorporating bundles of cooling tubes and through which the cooling medium flows. This tube design permits the use of the energy that is transfered to be reused for maximum savings. The tube bundles are arranged in separate sections allowing the unit to be configured for specific thermal duties, both by means of physical bundle geometry and if advantageous, independent water flows and temperatures.

The design may also incorporate a small counter current upward air flow to carry away residual moisture. The GEA Barr-Rosin Contact Column Cooler has no moving parts other than feed and discharge conveyors and water/air circulation equipment. It is both an ecological and economical solution.

We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

GEA Process Engineering

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