

HAZEMAG



HAZEMAG Quarry stone industry





Partnership

Quarry stone industry

Aggregates such as limestone, granite and gravel are essential to maintaining the quality of life around our world. This natural resource is used and enjoyed in nearly all aspects of our daily lives: residential and commercial construction, roads, highways, bridges, airports, fertilizers, toothpaste and even cosmetics. While the average person has a limited amount of knowledge to its origin, aggregate is making a major contribution to improving the quality of life for all of us.

With its process know-how, high quality – reliable machines and services, HAZEMAG plays an important and highly contributing role in the crushing and processing of the raw materials that ultimately result in this essential product we all call aggregate.

Partnership

Behind the operation of every HAZEMAG product is found a wealth of experience, backed by a level of partnership and product support that remains second to none. Our application knowledge, equipment flexibility and market competitiveness put us in a unique position to react to your precise project needs. We call it “Partnership Unlimited – the HAZEMAG Way”.

Since 1946: Our journey started in 1946 with our introduction of the impact crusher. Today, our customers benefit from an extensive range of HAZEMAG services; realized in our industry knowledge, qualified experts, proven products, financial resources and innovative technologies and solutions. Now, some 70 years later, we have not forgotten our strongest growth asset: our customers that have looked to us as a proven, reliable partner. Your project starts with planning. As your partner we will introduce the correct equipment and systems. Our services con-

tinue with state of the art manufacturing facilities, equipment supply and delivery, on-site installation, commissioning, training and future spare parts support. Simply put, our partnership will be there, supporting your needs through-out the life cycle of your HAZEMAG equipment; be it a single crusher or a complete system.

Going Forward: The continued operation and reliable success of any HAZEMAG component or system is directly related to trained, knowledgeable plant personnel. HAZEMAG’s training concept and support services offer a common sense approach to meeting your needs. Our team of experienced, knowledgeable service technicians are there for you, ensuring that you know and understand your HAZEMAG equipment from every aspect: operation, service needs, safety and optimization.

Material Analysis and Testing

HAZEMAG offers a range of application support services found in our material testing facility. We have the ability to offer our customers a full scale testing program for the analysis and further understanding of their raw material. For example, we can conduct crushing tests for both fine and coarse grinding. Drying as well as a combination of drying and pulverizing tests can also be carried out with the latest technology and measurements systems. The complete program offers our customers important information and data in regard to through-put rates, wear costs, energy consumption and behavior characteristics for their raw material. These practical and comprehensive results are often looked upon as the basis for the investment decision.



The Processing of Aggregates

As varied and different is the geological makeup of this natural resource, so are the systems and technology that are selected in order to meet a vast range of construction specifications and consumer demands.

However, a common factor always remains in place; the basic material must be crushed.

In simple terms, crushing can be defined as the process of changing the size and quality characteristics of the raw stone by the use of an external source, such as a crusher. The targets of crushing are rather easy to define, such as:

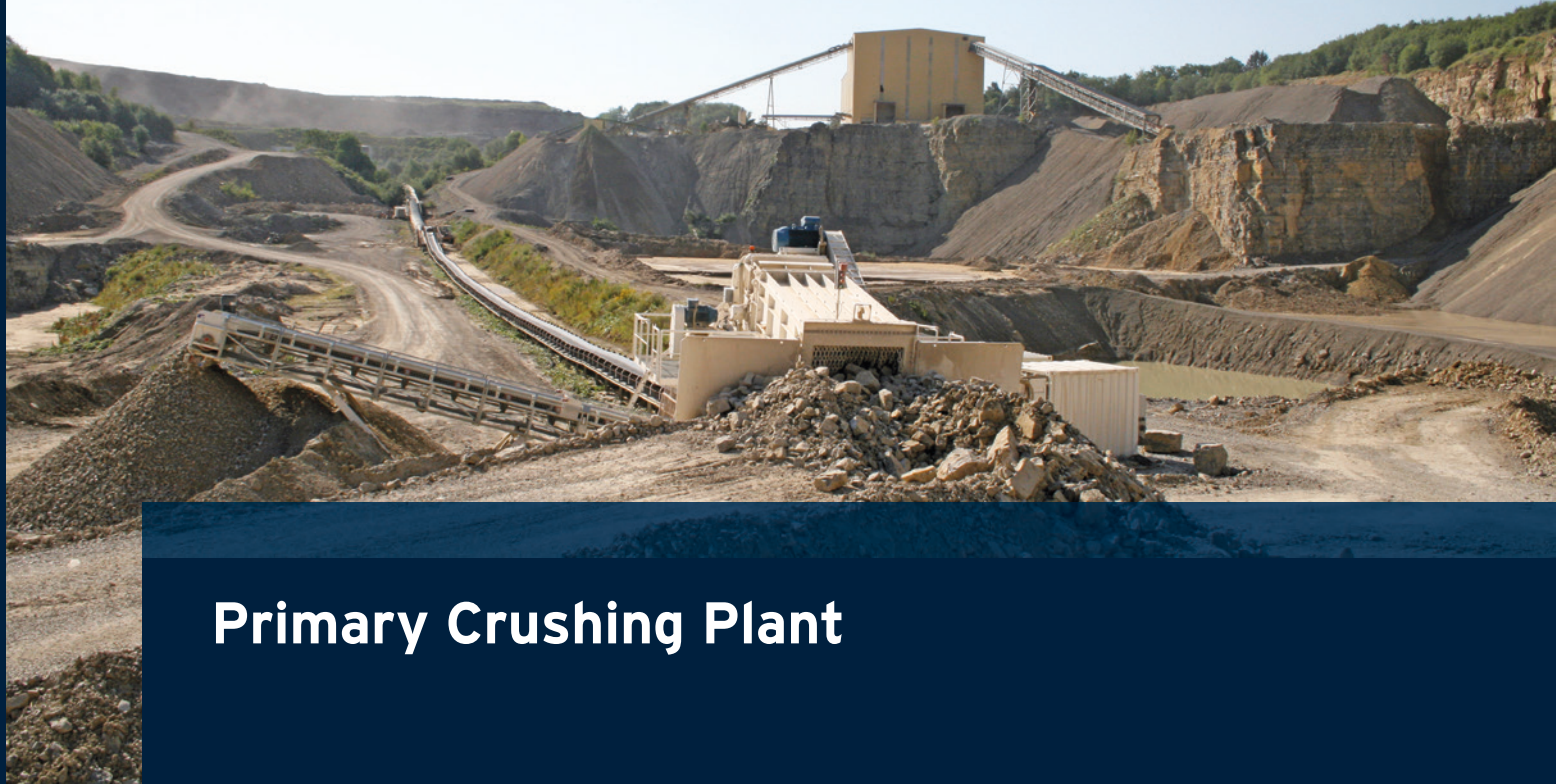
- Target 1: The process of taking the raw material in its natural state and changing its size in order to meet a range of construction specifications commonly associated with concrete, road base, asphalt chips and even finer materials utilized in paints, fertilizers and medicines.
- Target 2: The process of changing the shape of the raw material in order to meet those construction specifications that call for the stones to be a more cubical shape.
- Target 3: The process of increasing the quality of the raw material, known as beneficiation or selective crushing, which enhances the raw material by the elimination of softer, unwanted materials or inclusions.
- Target 4: The process of increasing the quality of the material, known as upgrading, which eliminates the stones natural cleavages or internal weaknesses.

In order to achieve these targets, the processing plant normally consists of a combination of crushing and screening in multiple stages: primary, secondary and at times tertiary processing.

Understandably, aggregate processing systems can be complex and normally require a high investment cost. The decision making process of selecting the correct equipment is highly important; however, individual pieces of equipment alone do not ensure the success of any project. The ability to produce the products you need at the lowest possible cost are found in the overall system design; a design that offers proven equipment / technology, flexibility, efficient operation, safety / maintenance considerations and the ability of limiting the production of unwanted materials. Equally as important, the success of your project and investment decision must be backed, by a trusting project partner, one that can deliver proven experience and a solid history of success.

The key is to find that correct solution; at HAZEMAG you will always find what you are looking for – expertise, proven experience, a range of equipment solutions / technology and a trusting partner.





Primary Crushing Plant

The Primary Crushing Plant

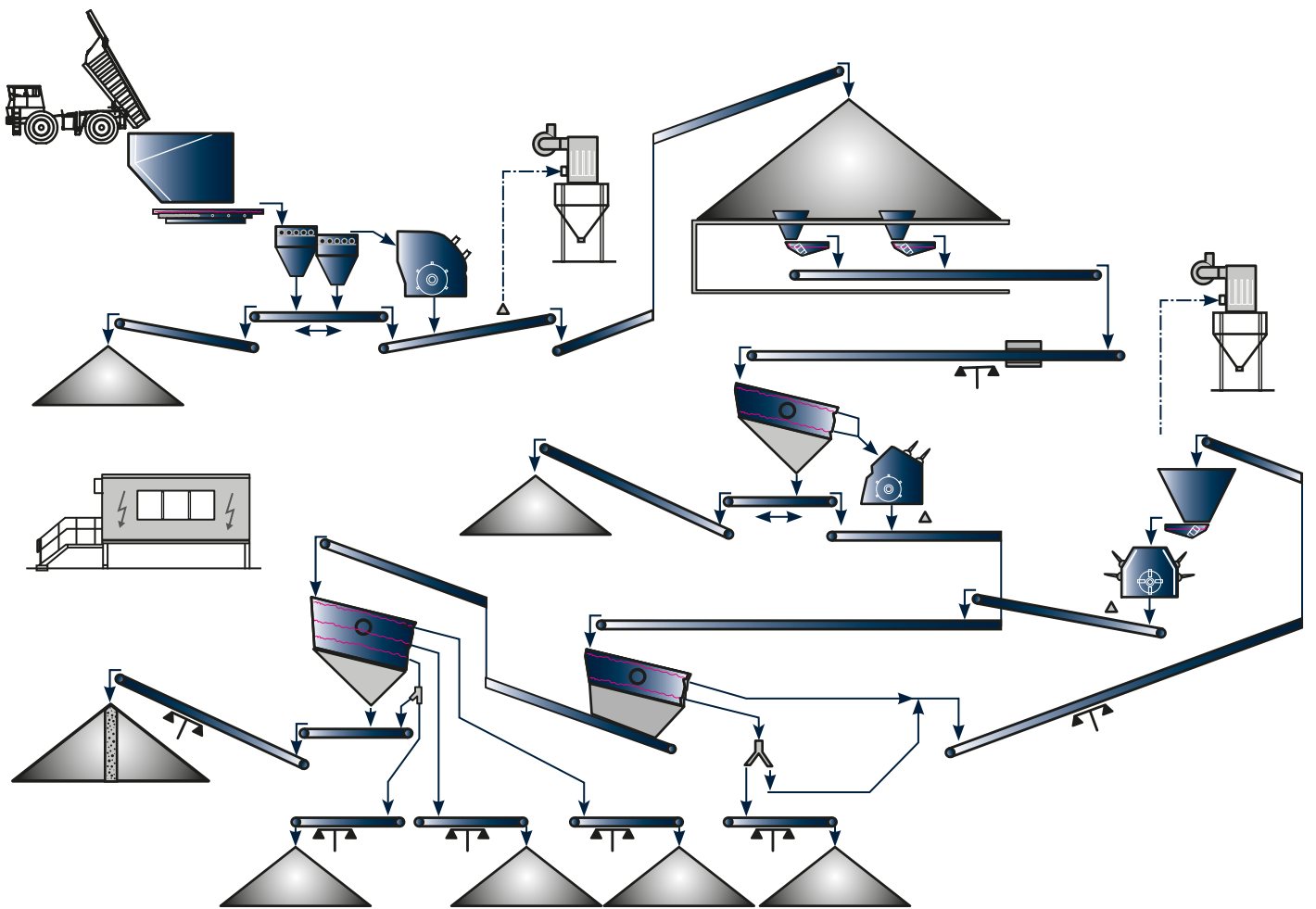
A primary pre-crushing plant normally consists of:

- Feed hopper
- Hopper discharge unit
- Prescreening stage
- Primary crusher
- Crusher discharge unit
- Intermediate material storage

Depending on the characteristics and size of the feed material, these components must be designed so that trouble free operation, reliability and extended service life are ensured. These machines must be engineered in a manner that guarantees their robust or heavy duty design, allowing them to deal with the possible entry of metallic, foreign materials such as loader teeth, etc.

The characteristics of the raw material, moisture, inclusions of clays, compressive strength and chemical makeup highly influence not only the selection of which aggregates are needed, but also and especially the type of primary crusher that will be utilized. The consideration of mobility for the primary crushing plant is mainly influenced by the raw material resources and the associated transport distances.





Example of a processing plant





Hopper Discharge Unit and Prescreening Stage

Hopper Discharge Unit

With regard to the selection of a suitable hopper discharge unit it is primarily essential that the material is conveyed with a variable conveying speed to the downstream unit under varying load conditions. The hopper geometry has to be in line with the hopper discharge unit, the hopper discharge unit in turn has to match the downstream unit.

From HAZEMAG's range of products

	Push Feeder HPF	For the material transport and/or discharge from a feed hopper in horizontal conveying direction; infinitely variable control of the conveying capacity via the adjustment of stroke length and speed.
	Apron Feeder HAF	For the material transport and/or discharge from a feed hopper, mostly inclined, variable drive by means of planetary gearing with frequency-controlled electric motor.
	Chain conveyor HHC	Chain conveyor, heavy or light-weight type; feed or discharge conveyors for feed hoppers, bins and so-called natural feed hoppers. Driven by spur gear and frequency-controlled electric motors.





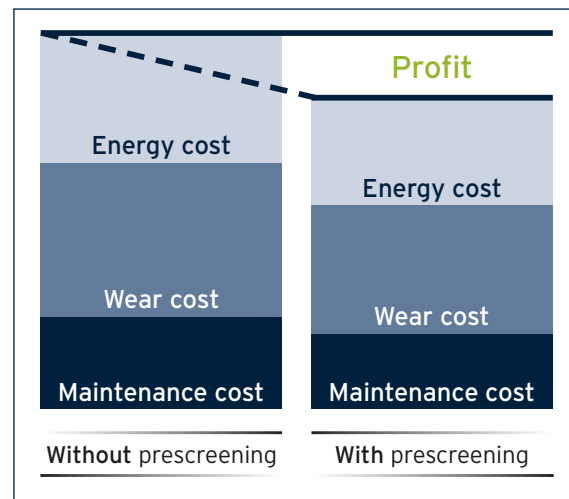
Prescreening Stage

Prescreening is an excellent way to remove lower quality, unwanted contaminations from the raw material stream. In doing so, benefits such as increased end product quality, reduced crusher wear and reduced energy costs are fully realized. Prescreening can also lead to the reduction and cost savings in regard to the size of the primary crusher, as the volume of material that needs crushed is reduced.

The prescreening stage should work load independent, thus enhancing its success and high efficiency in removing the finer materials, while allowing it to successfully deal with adverse conditions, such as sticky components. When considering the prescreened material, in some cases blending it back together with the crushed material may be desired. However, under this condition some level of caution should be taken to ensure that the screening size (opening) is not too large, potentially allowing an excessive amount of oversized slabs to pass.

Under difficult raw material conditions, such as high levels of contamination, the flexibility of the scalping system can be enhanced and easily fulfilled by the

HAZEMAG **VARIOwobbler**® HVW Roller Screen, which offers hydraulic gap setting adjustment. The benefits of the **VARIOwobbler**® are easily realized, especially when the raw material contains a high level of variations. Taking everything into account, prescreening and the utilization of the **VARIOwobbler**® can provide the operating company with a very high level of operating benefits, increased product quality and reduced operating costs.



From HAZEMAG's range of products

	Roller Screen HRS, together with VARIOwobbler® HVW, where appropriate	For screening fines from the material flow; also available with adjustable gaps for different cut sizes (VARIOwobbler ®). Optimum adjustment to different weather conditions, raw material properties and degree of separation required.
	Screen drum HSD	For prescreening difficult to screen material with a good cleaning effect.





Primary- and secondary crusher

Primary crusher

The selection of the primary crusher has a high influence and plays an important role in determining what is needed in the downstream equipment and the additional investment costs that must be made. For example, a compressive crusher offers an advantage in regard to reduced wear and energy consumption, but due to its low reduction ratio it does not start the process of producing the actual products that are needed, thus the needed investment in the downstream processing plant is increased. On the other hand, due to its high reduction ratio, an impact crusher begins the process of producing the needed products, thus the investment in the downstream processing plant is decreased.

Depending on application parameters; feed material and processing requirement, HAZEMAG has developed a range of crushing solutions.

Intermediate storage hopper

The purpose of the intermediate storage hopper is to provide the secondary crushing station with a continuous, uninterrupted flow of feed material. The benefits of this hopper / secondary plant feed system will easily be realized during the times when the primary stage of processing is interrupted due to; lack of feed material, material blockage in the crusher, etc.

From HAZEMAG's range of products

	Primary Impact Crusher HPI	For the crushing of medium-hard rock; high crushing degree, large feed size and high throughput rates. Each crusher can be fitted with the optional hydraulic impact apron control system (HAZtronic).
	Sizer HCS	For the crushing of lower to medium hard rock; reduced fines in the end product and high ability to deal with wet, sticky material.
	Roll Crusher HRC or HFB	For the crushing of lower to medium hard rock; reduced fines in the end product and high ability to deal with wet, sticky material.
	Impact Roll Crusher HHI	For the crushing of medium-hard rock; excellent solution for high flexibility and simplified set-up (no foundations are needed), large feed size, suitable for sticky materials, true horizontal crushing with at-grade feed point and delivery of the material to the crushing stage by an integrated chain conveyor.





The Secondary Crushing Plant

A secondary crushing plant normally consists of:

- Feed system
- Pre-scalping / Screening
- Secondary crusher
- Finished screening
- Conveyors
- Product storage areas

In a typical aggregate plant, the majority of the desired products are produced at the secondary stage of processing. This, combined with the typical raw material variations that can occur in the quarry demand that the secondary processing plant be designed with a very high level of operational flexibility.

Secondary crusher

The selection of the secondary crusher takes on a different level of importance and criteria, specifically considering what products are needed, the needed equipment flexibility in order to adapt to varying product demands and the reduction of undesired material sizes. The secondary stage of processing and the secondary crusher play a vital role, increasing the quality of the stone and producing the products you need and sell the most.

From HAZEMAG's range of products

	Secondary Impact Crusher HSI	For the crushing of medium-hard rock with a higher degree of wear intensive materials; each crusher can be fitted with the optional hydraulic impact apron control system (HAZtronic).
	Roll Crusher HRC or HFB	For the crushing of lower to medium-hard strength materials; excellent manner of reducing the fines in the final product; well suited for sticky and wet materials.
	Sizer HCS or HSS	For the crushing of lower to medium-hard materials; excellent manner of reducing fines in the final product; well suited for sticky and wet materials.





The Tertiary Crushing Plant

The Tertiary Crushing Plant

With the availability of natural sands becoming limited, combined with the high costs associated with transporting materials from one location to another, it becomes clear that a tertiary stage of processing can be a very profitable one. For example, every aggregate plant produces a limited amount

of material sizes that are often considered “lower demand products”. A tertiary plant often offers the ability to turn this material into a “higher demand, saleable product”, thus increasing the plant overall profitability. Like the secondary stage of processing, equipment flexibility and system adaptations in order to meet varying product demands are very important.

From HAZEMAG’s range of products

	Tertiary Impact Crusher HTI	High speed impact crushers for the production of chippings; coarse and fine along with the ability to produce manufactured sand. Reduced filler fraction, reversible rotor, hydraulic apron and grinding path adjustment; expanded operational flexibility in one machine.
	Roll mills HRM	Less intense crushing with a small share of fines in the final product. Suitable for soft to medium-hard raw materials including materials that possess a wet and sticky characteristics.
	Hammer mills HUM or HNM	For the crushing/grinding of lower to medium-hard materials; optional ability for a combination of drying and grinding simultaneously in one work step.





Service/Parts Support

Service/Parts Support

The availability of machines and plants has a significant influence on the profitability of a company. Achieving this is the result of knowledge, preventative service programs and the application of high quality, HAZEMAG original spare parts, always in stock and backed by an experience team that is always available to help. In our modern, DP-controlled spare parts inventory in Dülmen, current HAZEMAG machines and customers are supported by an extensive inventory, well over 20,000 different spare and wear parts. In this regard, HAZEMAG's delivery service guarantees a short-term availability of all spare parts. If a service technician is required for the professional installation of the spare parts or if a qualified consultation is desired, you are at the right place at HAZEMAG.

Inspection Contracts

The continued operation and reliable success of any HAZEMAG component or system is directly related to trained, knowledgeable plant personnel. In this regard HAZEMAG offers customized inspection contracts, ensuring that our customers have the very latest input and assistance from a factory point of view. Depending on the need of the customer, these contracts can vary, but are normally structured to provide a periodic inspection of your HAZEMAG equipment. Preventative and condition based maintenance inspections are performed by qualified HAZEMAG technicians, contributing to reduced downtime and the avoidance of major repairs. This partnership ensures that the HAZEMAG machine is providing the maximum yield and that our customers have the advantage over the competition.

Repairs – Modifications – Assemblies

When needed, repairs and machine modifications can be carried out by HAZEMAG professional service technicians, if necessary in shift work around the clock. These highly-trained and motivated service technicians are at your disposal 24 hours every day.

Don't take a risk, always insist on genuine HAZEMAG support: spare parts, service, on-site inspection contracts and around the clock assistance.



HAZEMAG



HAZEMAG – because quality matters.

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