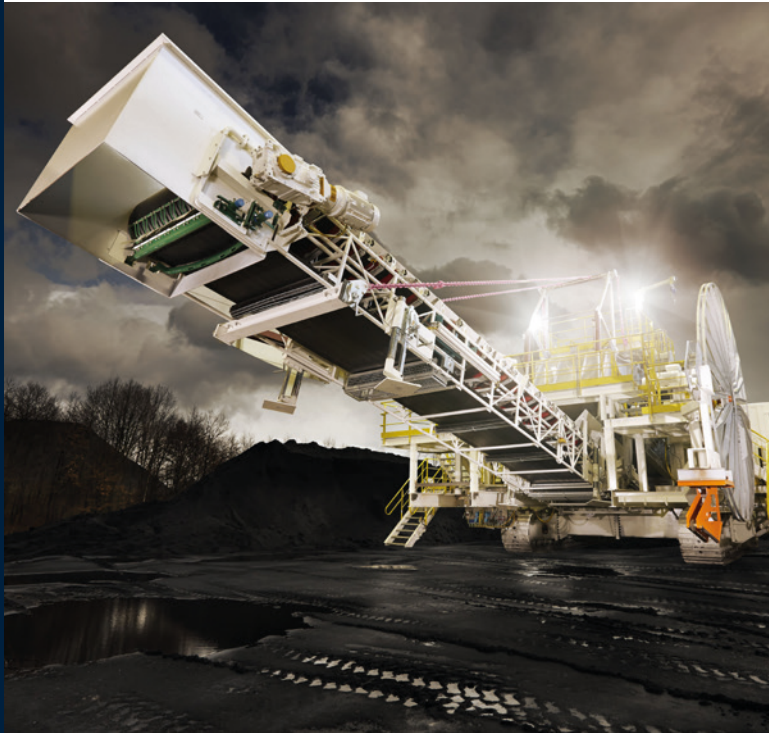


HAZEMAG



HAZEMAG Mobile and Semi-Mobile Plants





Partnership

Mobile and Semi-Mobile Plants – Solutions by HAZEMAG

The development of any quarry or open pit mine often produces the concern of excessive delivery distances to the fixed primary crushing station. Experience has shown that customers around the world are looking for a better solution; one that permits the movement of this fixed crushing station to better align itself with the progression of the quarry face. As a solution provided, backed by an extensive history of field proven experience and extensive customer consultation, HAZEMAG has developed a range of plant concepts that can readily permit the relocation of the crushing system; achieved by fully mobile or semi-mobile plant designs.

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 puts 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 continue 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.





Mobile and Semi-Mobile Plant Designs: Application

It is clear that a range of plant concepts / mobility are utilized in almost every material processing industry; aggregate, cement, lime and recycling. In each case the processing task and the projected pace in which the quarry will develop must be analyzed in order to best determine degree of mobility that is required.

The Mobility Concept: Justification

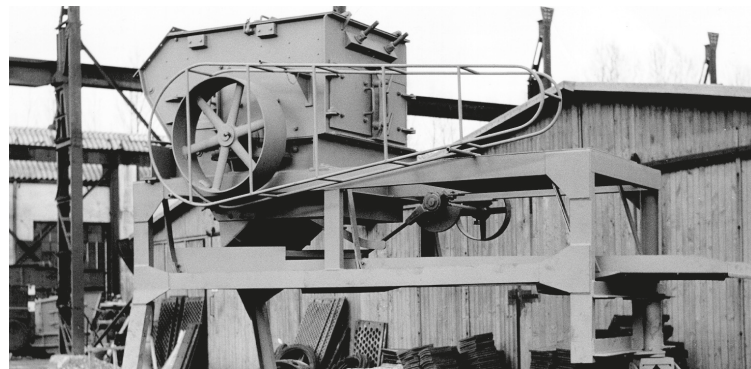
- Relocation of the plant in order to progress with the advancement of the quarry face or feed stream.
- Reduction in the raw material transport distance.
- Reduction in the number of material transport trucks.
- Simplification of the mining plan / quarry roads.

The Mobility Concept: Advantages

- Protection of the machines during times of blasting.
- Immediate processing of the raw material at the working position.
- Enhanced / safer working conditions.
- Elimination of expensive foundations.
- Reduction in regulatory demands.

The HAZEMAG Solution: Tailored Made To Your Specific Needs!

We started with a focus on you; ensuring that any HAZEMAG design offered the highest level of function, reliability and performance. We started with concepts, ideas and then prototypes; a journey that delivered field tested, customer proven plant designs. In summary, together we succeeded in developing a product that delivers true benefits to your bottom line; efficient, reduced cost of operation and fully functional.





The Plant Construction

Concepts for Mobility and Functionality

Skids or Pontoons

Skids or pontoons are an excellent solution in order to support the semi-mobile plant without the need for expensive foundations. The main supporting areas are designed and engineered in a manner that ensures low ground pressure. This plant design can be moved or relocated by the force of pushing or pulling and also by the utilization of special heavy equipment transporters. Concepts with skids or pontoons are highly flexible, very cost-efficient and suited for plants of any size.

Temporary Foundations

Semi-mobile plants may be designed and engineered in such way that they can be mounted on temporary foundations, providing the same level of function associated with the fixed, stationary plant. This concept is suited for plants of all sizes and is normally associated with plants that would rarely need to travel long distances. For example, relocation once every 2 - 3 years.

Passive Tracked Chassis

Semi-mobile or mobile plants can also be designed and engineered with a passive track chassis; mobility without an integrated drive. For their transport or relocation, these plants can be lifted by another means, component of suitable capability and repositioned as needed. By omitting the integrated drive and related controls, the passive track concept offers a very economical solution for mobility.





Active Tracked Chassis

If your goal is fully mobile with an integrated drive system, plants fitted with the active tracked chassis fully meet the challenge. These plants are often designed with diesel / electro-hydraulically-driven crawler tracks; which can be completely operated from the control station mounted on the machine. Plants with active tracked chassis are normally designed in such a way that they may be operated completely autonomously; fully independent from other equipment. These highly mobile plants are self-propelled; thus easily transported in short or long distances.

Energy Supply and Automation

With energy demands and associated costs in mind, HAZEMAG mobile and semi-mobile plants can be designed with different energy supply / power delivering systems. In each project case, HAZEMAG considers the application and transportation needs; thus ensuring that the customer's requirements are fully achieved by the drive power delivery system; generators or diesel-hydraulic system are often the solution. In summary, HAZEMAG systems offer true automation; ensuring the highest level of flexibility for your application.

Transport Possibilities:

Large Plants and Public Roads

Most semi-mobile plants are utilized within a specified quarry. When the need arises, such plants can also be transported along public roads with the utilization of special transporters; fully accepted by local governing laws.





Mobility in practice

Example: Semi-Mobile Impact Roll Crusher

The impact roll crusher offers an excellent solution for a highly mobile or semi-mobile plant design. It is compact and can be fitted with an integrated roller screen for the removal of finer materials, thus improving the performance and efficiency of the primary roll crusher. The result is high capacity, excellent feed size capabilities and a high quality product (0 - 250 mm) with a minimal fines content.

The raw material is delivered to the primary plant loading point / hopper (15 m³ capacity) by means of a front end loader. Thanks to the unique horizontal material flow design of the impact roll crushing plant, feeding the raw material is simplified by its exclusive "direct load" design; fully eliminating the need for a wall or ramps typically associated with classic crushing plants. The simplicity and compact design of this plant offers the benefit of mobility; truly quick relocation with the assistance of the wheel loader, often achieved within 30 minutes.

Technical data

System Components

- Feed Hopper – 15 m³
- HAZEMAG Chain Scraper
- HAZEMAG Roller Screen
- HAZEMAG Impact Roll Crusher
- Belt Conveyor

The plant is mounted on a passive tracked chassis.

Throughput rate	up to 800 t/h
Feed size	max. 1,200 mm
Product size	<250 mm
Weight	approx. 133t





Example:

Semi-Mobile Plant for the Cement Industry

In North America, a region that is highly dependent on the production of high quality cement; HAZEMAG plays an important role and has supplied a semi-mobile plant for the primary processing of limestone. The plant has been engineered and divided into 3 main component sections; thus reducing the need for expensive concrete support structures to a minimum. By design, this plant can be relocated within the quarry on demand; ensuring that the development of the quarry and the location of the primary crushing station remain in full alignment to each other.

The design of the plant is based on efficiency and function; a large material receiving hopper (150 m³) receives the ROM limestone ranging up to 1,500 mm in size. A HAZEMAG apron feeder extracts the limestone from the hopper and delivers it to a heavy duty scalping screen. This pre-screening system plays an important role in removing lower quality materials such as clays and decomposed granites. The screen oversize material, now higher quality limestone, is delivered to the HAZEMAG primary impact crusher where it is processed down to a high quality product; 0 - 150 mm in size. The plants controls; electrical, automation, hydraulic systems are integrated within the plant design. As an environment control measure, a large de-dusting system ensures that the plant operates in a highly efficient manner; fully with the guidelines of local laws and codes.

This type of primary crushing plant represents a common application; highly demonstrating mobile plant engineering. In some cases and where needed, such plants can be complimented with a secondary stage of processing. For an additional reduction of the limestone directly at the primary stage of pro-

cessing, the HAZEMAG primary compound crusher or the HAZEMAG primary hammer crusher can also be considered. The version with primary HAZEMAG compound crushers or HAZEMAG hammer crushers is also possible.

Technical data	
System Components	
<ul style="list-style-type: none"> ■ Feed Hopper – 150 m³ ■ HAZEMAG Apron Feeder ■ Pre-Screening Unit ■ HAZEMAG Primary Impact Crusher ■ Belt Conveyor ■ Dedusting Plant 	
Modular design comprised of 3 main skidded components; movement independently.	
Throughput rate	up to 1,100t/h
Feed size	max. 1,500mm
Product size	< 100mm
Weight	approx. 550t





Mobility in practice

Example: Mobile Crushing Plant for Crushed Sand

Based on decades of experience in crushing hard rock, HAZEMAG has designed a completely mobile crushing plant for the chipping and crushed stone industries commonly found in Ireland. The heart of this plant can be found in the HAZEMAG impact crusher; model HTI 1010.

The plant is fully mobile; permitting its rapid movement from site to site ensuring it is always available at the raw material source. This unit employs the tracked chassis system; fitted with an integrated diesel-hydraulic drive system. All necessary control devices are also fully integrated. The electrical equipment is powered by the 24 V, direct current, on-board electrical system of the diesel generator set. This design results in a fully independent plant that requires no external power supply lines.

To deal with varying raw material conditions, the HAZEMAG crusher is fitted with the automated hydraulic adjustment system; ensuring that the crusher is capable of producing a variety of products; such as 0 - 32 mm, 0 - 20 mm and 0 - 4 mm. In order to ensure the economical operation of the plant and optimum wear results for the crusher, the plant is designed and equipped with a feed load monitoring system; which ensures that the delivery of the raw feed material is precisely matched with the plants available power system. This ensures that the plant is operating at the highest efficiency level at all times and under any potential for varying raw material conditions.

Technical data

System Components

- Feed Hopper – 6 m³
- Extraction Belt Conveyor
- HAZEMAG Tertiary Crusher
- Discharge Belt Conveyor

A stand-alone, mobile plant on which all units as well as the track chassis are diesel-hydraulically operated.

Throughput rate	up to 100 t/h
Feed size	max. 150 mm
Product size	<32 mm or <20 mm or <4 mm
Weight	approx. 34 t





Example: Mobile Crushing Plant for Aggregates

HAZEMAG's mobile plants offer an excellent solution for the processing of aggregates; proven success around the world. The plants are designed in a manner that permits, with minimal work, their transport on public roads and highways. These plants are fully autonomous and mobile; all electric drives are supplied by an integrated diesel power system, therefore eliminating the need for external utility services.

Technical data	
System Components	
<ul style="list-style-type: none"> ■ Feed Hopper ■ Vibrating Chute ■ Feed Belt Conveyor ■ HAZEMAG Secondary Crusher ■ Discharge Belt Conveyor 	
Mobile crawler chassis with integrated diesel-electric drive system.	
Throughput rate	up to 300t/h
Feed size	max. 200mm
Product size	85% <22mm
Weight	approx. 66t

Example: Crawler Mounted Plant for Recycling

The very foundation of HAZEMAG started with the recycling industry. The processing of building rubble, concrete, asphalts and other recycled materials offer unique challenges, difficult conditions and many raw material variations. For HAZEMAG, this challenge is met with an extensive history of experience, application trials and the highest level of engineering expertise. One unique application can be found in Germany, where HAZEMAG was challenged to develop a special plant for the processing of recycled materials. This plant is fully autonomous, highly mobile and very well equipped for the production of a high graded, very high quality product. The plant includes feed hopper, pre-screening, impact crusher, product screening and Fe-metal precipitation. Depending on the operating mode the plant may generate a product of <56mm or <32mm.

Technical data	
System Components	
<ul style="list-style-type: none"> ■ Feed Hopper ■ Vibrating Chute ■ Pre-Scalping ■ HAZEMAG Impact Crusher ■ Product Screening ■ Iron and Metal Separation Device 	
Mobile plant with diesel-electrical drive concept.	
Throughput rate	up to 250t/h
Feed size	max. 600mm
Product size	<56mm or <32mm
Weight	approx. 66t





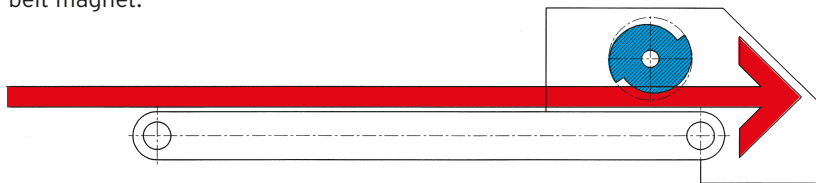
Pointing The Way: Mobile Solutions From HAZEMAG

Challenges to Solutions: HAZEMAG's "Pointing The Way" Concept

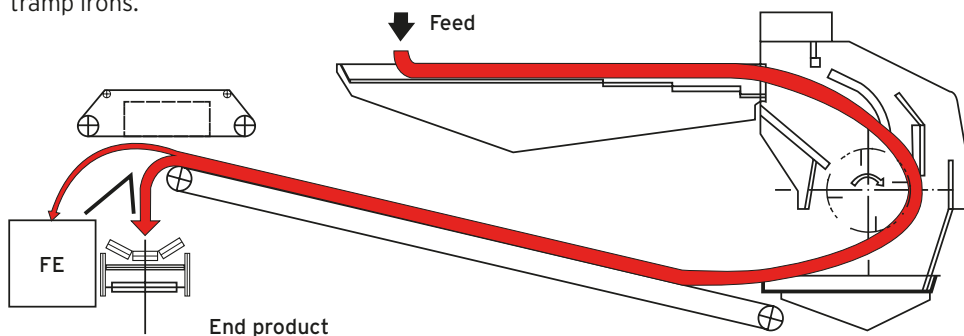
Building rubble in itself presents a difficult task. Add the presence of basic tramp iron to the mix and it becomes very clear that the crusher must be designed and constructed in a manner that can take a high level of punishment. Add rebar; metal that can vary in length from short to excessively long, now the design of the plant must take into consideration the absolute need to maintain a uniform, unrestricted flow for

the material otherwise production stoppages and potential equipment damages are certain to occur. The key or target is to ensure that the design of the plant is robust and very well engineered in regard to accepting the raw material variation; ensuring a consistent, uninterrupted product flow and trouble free operation. In this regard, years of experience, trial and error and a solid learning curve have produced concepts; system designs that have been proven time and time again.

1) Horizontal Crushing: The HAZEMAG impact roll crusher, model HHI, provides an uninterrupted material flow from the raw feed to the crushed product, including the removal of tramp irons facilitated by the use of an inline belt magnet.



2) Pointing The Way: The HAZEMAG primary impact crusher, model HPI, provides an excellent solution for processing rubble. "Pointing The Way" ensures that the material flow through the crusher is not interrupted by its discharge system; thus the discharge vibrating pan is positioned in a manner that continues this uniform flow process. This common sense approach continues throughout the complete processing system; resulting in its trouble free operation, reduced downtime and a consistent product flow; crushed product and the removal of tramp irons.





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 – Technology That Moves.

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