



External Coating Plant

Excellence in pipe handling,
blasting and coating equipment.

Who is Bauhuis?

Bauhuis is specialised in the design, fabrication and installation of turnkey plants for blasting and coating of steel pipes. With decades of experience, Bauhuis has built an impressive track record in supplying high quality equipment all over the world.

Turnkey solutions by Bauhuis are modular designed and configured from standardized equipment, with proven functionality. This unique process enables highest flexibility to configure an optimal solution that meets the specific coating requirements of the client. Over the years, Bauhuis has supplied turnkey solutions for any of the following coating requirements:

- Internal coating plant
- External coating plant
- Concrete weight coating plant
- Double joints and spool base plant
- PU foam insulation plant
- Asphalt & Enamel plant
- Field joint and offshore coating equipment

Besides above-mentioned turnkey solutions, Bauhuis supplies specific pipehandling and transportation equipment, as well as process equipment.

All engineering expertise (mechanical, electrical, and hydraulic) required to design and fabricate a solution for any pipe coating challenge is available in house. Fabrication and installation of the equipment is done by experienced Bauhuis technicians.

Bauhuis is your reliable partner for high quality blasting and coating equipment. Many of the world's largest pipelines in operation today have been successfully coated in coating plants equipped by Bauhuis.

SINCE
1974



Quality

All technical know-how available within the Bauhuis organization. This combination enables Bauhuis to supply a wide variety of projects in blasting and coating of steel pipes. Projects with superior quality equipment, resulting in proven durability and reliable plants.

Durability and reliability leads to less outage and less downtime. Downtime resulting from outage or maintenance is extremely expensive. Production loss as a result of downtime costs much more than the investment in durable and reliable equipment. That is why all equipment supplied by Bauhuis meets the 'Bauhuis quality standard'. If required, Bauhuis can include specific customer quality procedures. In case maintenance is required, Bauhuis engineering includes that service of the equipment can be done as easy and quickly as possible.

We are able to maintain these 'Bauhuis quality standards', because we can perform the essential activities in house. Besides high level engineering, Bauhuis also has a dedicated hydraulic department and a machining workshop in house. The machining workshop meets the ISO quality assurance requirements. Installation of the equipment and training of your staff is performed by the same Bauhuis technicians that assemble and test the equipment in the Bauhuis factory.

Service

We consider producing equipment only half of the obligation to our customers. Providing you with adequate technical support and know-how is considered just as important to ensure an optimal solution.

- Bauhuis can offer engineering service to transform your coating problem into a workable coating solution.
- Highly skilled and experienced production services enable the actual production of the equipment and testing of the functionality. If necessary, the equipment can be adjusted according to your needs and specifications.
- Depending upon individual client requirements, installation service is available for installation support and training support.
- To ensure day-to-day equipment performance, Bauhuis offers dedicated after sales support. Besides a central information point for your operation manuals, spare parts, questions and problems, Bauhuis after sales can assist you with mechanical, electrical and PLC programming personnel for technical assistance, repair, upgrades and warranty issues.

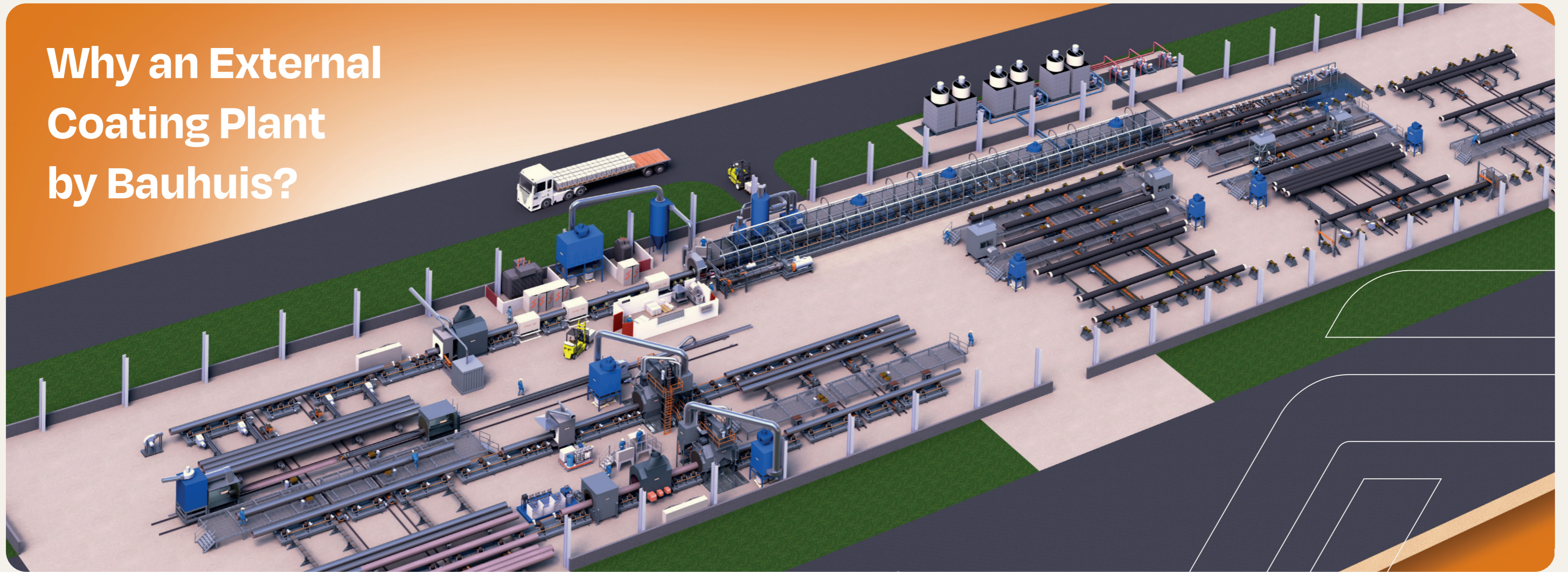


Safety

Special attention in the equipment design is given to safe operation of the plant and machinery. Your operators will not only be educated on how they can operate the equipment the most effective, but also on how they can maintain the highest level of safety. Bauhuis can offer a safety plan, advising our business partners on how to work as safely as possible.

Bauhuis equipment is CE-approved, indicating that the products comply with the essential requirements of the applicable European laws or directives with respect to safety, health, environment and workers' protection. If, however, local regulations in the country of installation demands for other requirements, Bauhuis will apply these requirements if they are not lower than the 'Bauhuis standards'.

Why an External Coating Plant by Bauhuis?



Experience

With decades of experience, Bauhuis has developed exceptional specialised knowledge and skills in the field of pipe handling, blasting, and coating. Our technological know-how and experience has grown in close co-operation with the major pipe coating companies all over the world, always supplying them with state-of-the-art equipment and support.

Innovation

Working together with the major pipe coating companies in all parts of the world, Bauhuis has developed many new techniques for the blasting and coating industry. Some of the most important examples are concrete coating using rubber rolls and shot blasting using a hydraulically driven blast head. Bauhuis is permanently working on further improvements. To mention a few: improved and standardized equipment design for higher reliability, shorter delivery times and less wear, development of more sophisticated pipe handling equipment for safer and easy-to-use operation, minimizing spare parts and minimizing downtime.



External Coating Plant

Made in Holland

Bauhuis makes its experience available to the pipe coating companies through a complete package of in-house capabilities. We design, machine, construct and install equipment exactly as required within our own company. Unique for Bauhuis is the in-house machining company, enabling us to produce critical parts by ourselves. Furthermore, Bauhuis also has an in-house hydraulics department. Hydraulics is a crucial part of your plant, as this part gives the power to the equipment. We calculate and produce hydraulics ourselves, thus minimizing downtime and outage.

The big advantage of this collection of specialized departments within Bauhuis is that we are very flexible in meeting customer demands, and realizing short delivery times while keeping costs as low as possible. This is what makes Bauhuis unique in the world of blasting and coating machinery.

Future

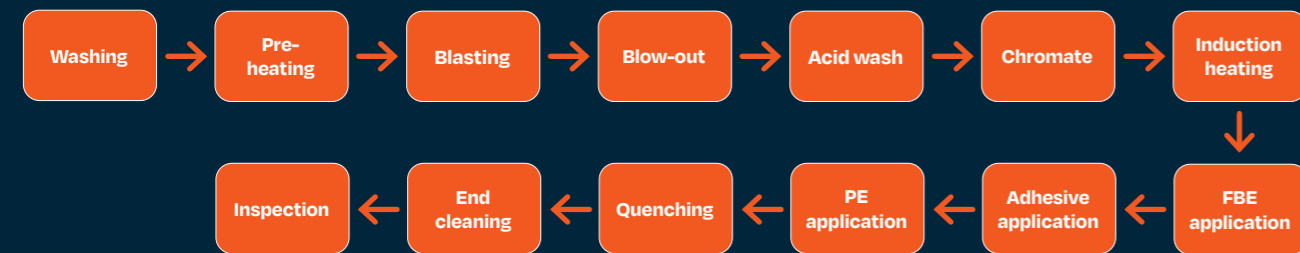
Besides onshore pipe blasting and coating projects, Bauhuis is emphasizing on the development of field jointing and offshore equipment. This has already resulted in a number of pipe handling installations on pipe lay-barges, pipe handling installations for spool base facilities, as well as double pipe / quad pipe welding purposes.

Summarizing we can say that Bauhuis can deliver complete turnkey installations, starting from foundation engineering up to a running plant.

External Coating Process

External Coating is intended to extend the service life of the pipe line. In the first place, the external coating ensures that the outside of the steel pipes is protected against corrosion. Secondly, external coating is necessary to ensure thermal insulation. Thermal insulation improves the flow efficiency of oil. Due to

this, the compressors needed to pump the oil through the pipeline can be reduced in quantity and size. Thirdly, external coating is necessary to ensure mechanical protection. External coating offers protection during storage, installation and transportation of pipes. This all ensures that the outside of the pipe will not be damaged.



In external coatings plants, the coating is applied to the outer surface of the bare steel pipe. There are different types of external coating plants for different coating types to be applied. The type of coating depends on pipeline location and the service temperature. The main types of external pipe coating plants are: 3-layer coating, stand alone FBE coating, dual layer FBE coating, and multi layer coating. Most of the pipelines in use are coated externally with 3 layers.

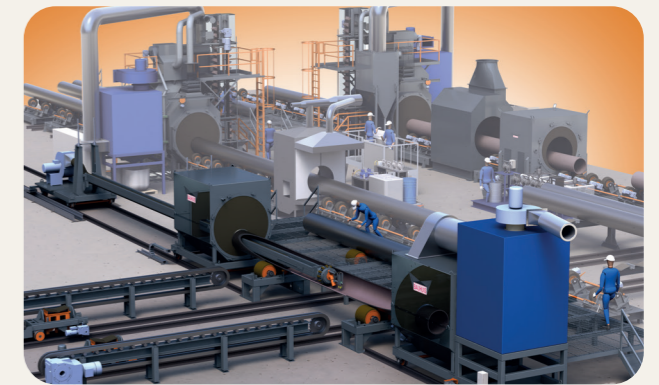


Blasting

The blasting sequence removes all scale and corrosion present upon the pipe surface. During the blasting process, the pipe passes through the blast cleaning cabin by a helical conveyor. The blasting cabin has a number of turbine wheels. To achieve the desired cleanliness, a mixture of shot and grit is supplied to the blast head turbine wheel. The mixture is propelled to the pipe external surface with high centrifugal force and velocity of some 80 to 90 meters per second.

Blow-out

The blow out station is to remove any residual blast media or dust in the pipe prior to coating application. The pipe is rotated as the blow out lance is advanced and retracted through the internal pipe bore. Air is supplied in high volume with a blow out lance, cleaning the blast cleaned profiled surface. The back cabin carriage has a dust collector attached, extracting the air and dust from the inside of pipe being blown clean.

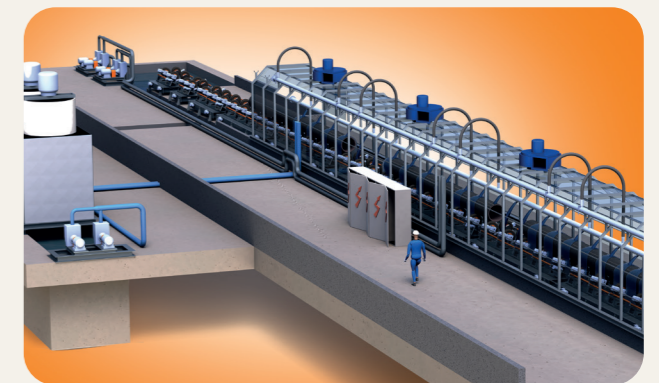


External coating by extrusion

Extruders are used to heat and extrude polymer pellets for application to the outer pipe surface in a sheet form. After the pipes exit the FBE cabin, an adhesive layer is applied to the hot, freshly coated pipe surface, and a third layer (usually PE or PP) is compressed against the pipe with a pressure roller. Pressure is required to achieve a good adhesion between the individual layers.

Quench tunnel

To cool down the hot pipe for further process steps, the freshly coated pipe is quenched in water. The pipes travel along the quench tunnel conveyor sections, where water spray bars flood cooled water over the externally coated surface. As the pipes are separated by the quench break away conveyor, water is directed into the pipe bore, assisting with cooling the steel pipe and coating.



End cleaning

Prior to final acceptance, each pipe end must have a section free of coating known as the 'girth weld area'. This area is to allow welding of pipe ends without heat transfer damaging the factory applied coating. The pipe is rotated as both end cleaning machines are advanced to the pipe ends. The high speed wire brushes are held against the pipe ends, allowing them to clean the required area, as well as to chamfer the end of the coating.



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