



FROM BLAST OFF TO LANDING

Martin Durcik, Sander Hofstee and Frits Doddema, MONTI-Werkzeuge GmbH, Germany, detail the pipe surface preparation of a field joint coating project in Europe, with the team involved throughout the process.

When it comes to reducing total operation times, increasing safety, taking care of the environment, and ensuring optimal quality of applications, contractors can face huge challenges. This is certainly the case for the application of corrosion prevention systems in the field.

Because active corrosion protection is vital to the integrity and longevity of assets, the application of coatings is considered a standard practice to protect assets such as pipelines from the damaging effects of corrosion. However, before a coating can be applied, the pipe surface needs to be prepared to ensure proper adhesion and optimal coating performance. The correlation between surface preparation and coating performance is often underestimated, yet according to NACE, incorrect surface preparation is responsible for upwards of 60% of coating failures.

Contracting companies are obliged to consider corrosion prevention technologies not only from an economical point of view, but increasingly from an ecological point of view. When it comes to surface preparation, traditional grit blasting is the norm for reaching a cleanliness of Sa 2.5 (according to the ISO 8501 standard), but it comes with many challenges including noise,

vibration, dust, logistics, safety precautions, clean-up and/or disposal of used media. Used grit usually goes to landfill, and often this has to be treated as hazardous waste because the removed coating contains toxic materials.

Projects requiring ecological solutions call for new innovations with partners having an out-of-the-box way of thinking. Suppliers and manufacturers that can bring such innovations through new technologies that go beyond simple cost or time savings can make a real difference to a contractor's ability to complete a project. Indeed, the market is changing rapidly from where a contractor simply executes a job. Today, the contractor is an engineering partner and is expected to contribute to the design of safer, healthier, quicker, and environmentally friendly solutions.

Contractors who understand the technology of bristle blasting are well placed to bring such solutions to their projects. Employing bristle blasting technology can not only save time and money during surface preparation, it can contribute to a safer and cleaner environment by avoiding many of the downsides of traditional grit blasting. There is less equipment, less noise, no real waste to clean up and transport away, and no hazardous permitting required.



COVER STORY





Figure 1. Martin Durcik undertakes an on-site inspection of the coated joint.



Figure 2. Asset operator, contractor and coating supplier evaluation after coating the field joint.



Figure 3. 59 km SICIM pipeline cross-border project in Slovakia/Poland.

Project facts

- Specification: High-pressure, bi-directional operated gas pipeline.
- Material: Steel.
- Diameter: DN 1000.
- Total length: 59 km in Poland, 103 km in Slovakia.
- Time schedule: Project started in September 2018, commissioning in 2021.
- Field joint coatings: STOPAQ®/Protegol®/heavy duty coating for HDD parts. 

Moreover, bristles can be resharpener for longer belt life span and recycled for disposal.

Field joint coating surface preparation

MONTI Bristle Blaster® technology was recently used for field joint coating surface preparation on the Slovakia to Poland Interconnector pipeline. This project concerns an important cross-border pipeline which is part of the North South Gas Interconnections in Central Eastern and South-Eastern Europe (NSI East Gas) and was funded in part by the EU under its Connecting Europe Facility (CEF). The pipeline will contribute to the enhancement of regional energy security and the development of a competitive gas market in the entire region.

Technology on the project

Before construction started, the local MONTI partner carried out several demonstration sessions to educate contractors on the advantages of the Bristle Blaster technology. With the technology achieving cleanliness levels similar to Sa 2.5 abrasive blasting with a roughness profile up to 120 µm, combined with a straightforward operational set-up, the technology was considered to be a good alternative to traditional grit blasting. This was particularly true in order to overcome the challenges of difficult access areas, such as steep hills and swamps, where it is difficult to transport the heavy grit blasting equipment.

The small footprint and simple operational set-up was also a welcome advantage and helped to achieve a quick start to the project, with all equipment needed to carry out the field joint coating application prepared and mobilised in record time. There was no need for extra tractors or bullies, no protective tents, no extra blast equipment and hoses, etc. to carry along the pipeline sections that were spread over a large area of construction – ultimately saving the contracting companies time and money.

While using the bristle blaster surface preparation technology can take more time than conventional grit blasting for preparing large areas, its use saved a lot of time in scaling up operations and maintaining a steady work rate over a long and inhospitable construction area. The availability of bristle blaster units and spare parts with the local MONTI partner also made an important difference in being able to maintain a rapid pace for the project.

MONTI's successful involvement in the larger projects has not come overnight. The company has been actively promoting its Bristle Blaster technology to the oil and gas industry since 1987; however, it has really been over the last year that the company has seen a notable increase in the use of its technology in the field. This increased use relates not only to MONTI's technology, but also to the company's R&D focus on engineering new solutions to expand its technology. This new engineering approach is now being adopted by MONTI's partners and introduced to clients everywhere that are seeking cleaner, greener, and less expensive alternatives to abrasive blasting.

Alternative preparation tools

Today, MONTI single belt tools continue to be mainly used for smaller coating jobs and repairs, but the new MONTI Bristle Blaster 'W' is supporting contractors' needs over larger surfaces, where speed of operation and environmental issues are important. According to SICIM, a contractor working on the Slovakia to Poland

Interconnector, “the Bristle Blaster offered us great savings over the whole coating process. We were able to do it safer, keep the crew motivated, keep the project organisation simple, but most of all, we got rid of the unpaid ‘clean-up’ work! With the absence of loose media in MONTI’s Bristle Blaster technology we can create a more efficient way of surface preparation, with no high bursts of energy needed.”

It should come as no surprise that the absence of loose media offers many advantages. Not only does it aid in operations, more specifically with the intensive support activities required for traditional blasting operations such as power and air supply, transport, storage, and the discharge of used (contaminated) blast media, but it can also offer advantages in the design of project specific solutions.

To ensure optimal design and performance for surface preparation and coating, in line with the contractors’ needs and coating manufacturer’s requirements, MONTI’s engineering team now becomes involved in projects from an early stage. Working closely with contractors ensures the company can advise on correct brush units – handheld or fully automated – for maximum comfort and safety, for the specific job, as well as the correct brush type. For optimal performance, MONTI offers different types of brushes to suit each specific surface preparation need. MONTI provides surface preparation solutions across a wide range of uses, from soft and more flexible brushes for roughening existing coatings such as FBE/PE/PP without damaging the coating in field joint coating processes, to hard and tough brushes for the complete removal of (thick layer) PE or PP coatings. MONTI also offers stainless steel brushes for non-ferrous metals. Depending on the material to be treated, a surface roughness up to 120 $\mu\text{m Rz}$ (4.7 mils) can be achieved while working with the Bristle Blaster.



Figure 4. Training on the job before coating. MONTI's toolbox is ready for use.

For harder steel types, roughness values between approximately 65 $\mu\text{m Rz}$ and 90 $\mu\text{m Rz}$ can be achieved. 