Whitepaper

HOTMELT FOAM FOR INSULATION PANELS

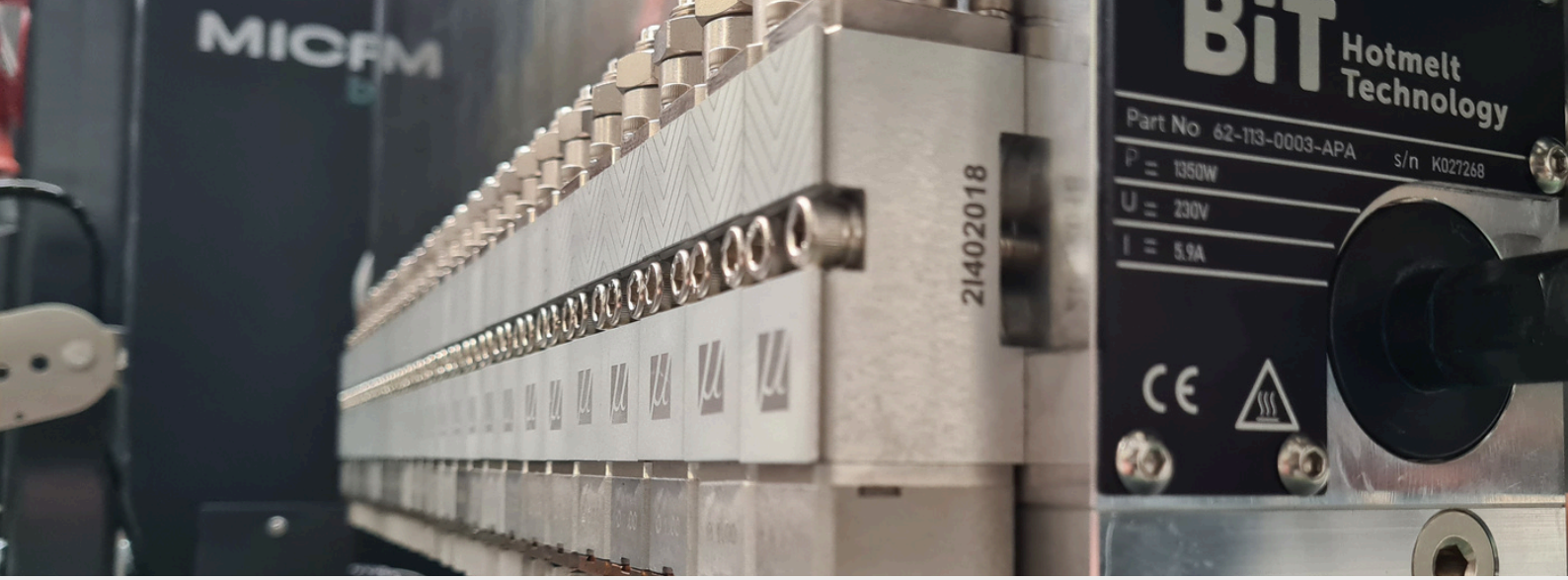
Cut Costs. Boost Margins. Improve Quality.

Introduction

The use of foam bonding instead of traditional PU adhesives presents a clear opportunity for cost reduction, process optimization, and quality improvement in the panel processing industry.

By applying proven technology more intelligently — such as foam adhesive systems with air-assisted application — adhesive consumption can be significantly reduced without compromising product quality, safety, or sustainability.

This whitepaper is intended for manufacturing companies across Europe seeking structural cost savings and consistent quality performance in the face of growing market pressure.



1 | Achieve up to 60% savings on adhesive costs per m²

In the current market, the average consumption of traditional PU adhesive is approximately 140 grams per square meter. With an average cost of EUR 8 per kilogram, this results in a direct adhesive cost of EUR 1.12 per m².

By switching to foam bonding, where the adhesive is aerated with air or gas, consumption can be reduced to an average of 80 grams per m² at a lower unit price of EUR 6 per kilogram. This translates into a direct material cost saving of EUR 0.64 per m² — a reduction of over 60%.

On an annual basis, with a production volume of 200,000 m², this results in a direct saving of EUR 128,000.

This benefit is further enhanced by secondary savings in maintenance, energy consumption, and waste reduction.

2 | Foam bonding offers a low-maintenance solution.

While traditional PU adhesives typically require 1.5 to 2 hours of daily maintenance—such as cleaning hoses, spray heads, and filters—foam applications remain significantly cleaner. Thanks to the lower viscosity and controlled curing process, residue buildup is minimal.

This results in less scheduled downtime, fewer unplanned disruptions, reduced labor costs, and greater reliability in production planning.

One of the most impactful benefits is the increased uptime. Production lines can operate for significantly longer periods without interruption for cleaning or repairs. Downtime is greatly reduced, leading to higher output per shift and more efficient use of labor and equipment.

In high-volume manufacturing environments, every minute of downtime counts. Foam bonding contributes directly to the optimization of Overall Equipment Effectiveness (OEE).

3 | Energy efficiency and reduced operational costs

By operating at lower temperature and pressure settings, energy consumption across the entire production process is significantly reduced. This bonding method places less demand on heating and pumping systems, resulting in more stable loads on equipment and infrastructure.

The reduced power consumption lowers the factory's overall energy demand and helps avoid peak load scenarios. This not only improves energy efficiency, but also minimizes voltage fluctuations within the system.

Depending on the scale of implementation, these energy savings alone can result in a return on investment (ROI) within 2 to 3 years.

4 | Enhanced adhesion performance

Contrary to common belief, foam bonding does not compromise bonding quality. On the contrary, the foam structure distributes more evenly across the substrate, resulting in more stable adhesion, even under mechanical or thermal stress.

The risk of channel formation or air entrapment is significantly reduced. Additionally, foam bonding is resistant to high temperatures up to 70–80°C, making it well-suited for roof panels, façade systems, and other applications exposed to temperature fluctuations or vapor pressure.

5 | A cleaner, safer production environment

The absence of adhesive drips or open channels results in a cleaner workspace and a safer working environment.

This aligns with increasingly strict occupational health and safety regulations within the construction supply chain.

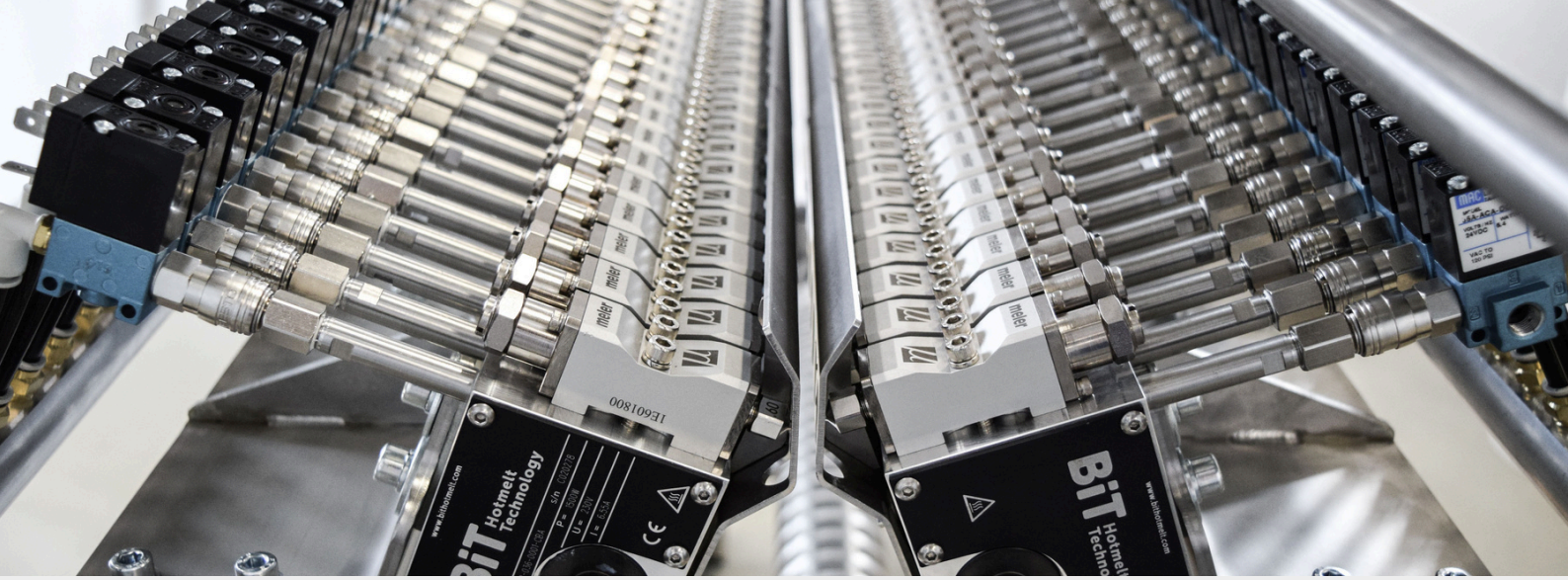
By adopting foam bonding, companies actively contribute to a safer and more sustainable production environment.

6 | Sustainability and efficient use of resources

Reduced adhesive usage also means a lower CO_2 footprint and a decrease in the environmental impact associated with raw material consumption.

Because foam bonding makes more efficient use of chemical components such as isocyanates and polyols, the total material usage per square meter of product is reduced. This contributes to the reduction of industrial emissions and helps lower the environmental impact of the production process.

Moreover, this technology is better aligned with increasing regulations concerning nitrogen emissions, emission reduction, and circular manufacturing. Foam bonding actively supports companies in their efforts to achieve cleaner, more sustainable processes—without compromising on performance or quality.



7 | Commercial advantages: quality as a selling point

Sales teams face constant pressure on pricing and margins. Foam bonding provides immediate arguments to counter this pressure. Fewer rejects, fewer complaints, and fewer compensation claims lead to lower costs.

Consistent product quality enhances the manufacturer's reputation, helps prevent lost orders due to technical non-conformities, and supports a differentiated market position compared to competitors.

8 | Proven technology, compatible with existing production lines.

Foam bonding technology is highly versatile and suitable for both retrofit and new installations.

The technique can be implemented on existing PU adhesive lines with relatively minor modifications, making it a low-threshold innovation with high returns.

Today, production sites in the Netherlands, Belgium, and Germany are successfully operating with foam adhesive applications.

Annual savings overview (based on 200,000 m^2 of production)

Category	Savings
adhesive usage	**€128,000**
maintenance	**€22,500**
Energy consumption	**€5,000 - €10,000**
Less reject and downtime	**€10,000 - €50,000**
Total savings	**€ 173,500 - €222,500**

CONCLUSION.

Foam bonding is not an experiment—it is a proven process optimization. With up to 60% cost savings per square meter, significant reductions in maintenance and energy expenses, and proven bonding performance, it is a logical choice for any manufacturer aiming to protect margins without compromising on quality or safety.

The business case is clear, implementation is manageable, and the payback period is short, making it a strategic choice for any modern production line.

Want to learn more? Contact BIT Hotmelt Technology.
Curious about what foam bonding could mean for your factory? We're happy to think along with you.

Request a free demo, savings analysis, or whitepaper presentation today, no obligation.

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