Transforming Waste Into Opportunity: Advanced Recycling Solution for Flexible PU Foam

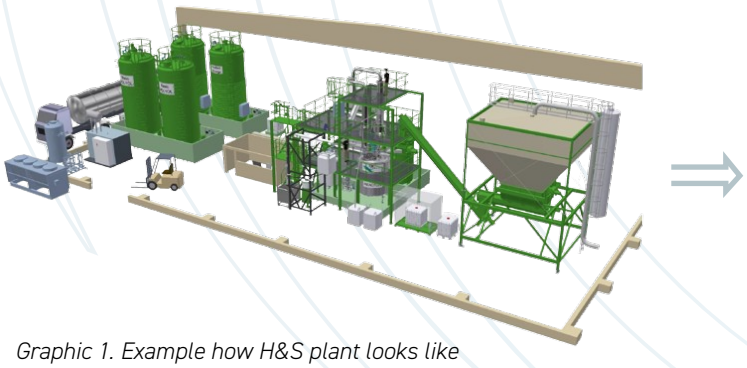
PROJECT DESCRIPTION

H&S has successfully implemented its chemical recycling technology for flexible PU foam waste (both post-industrial and post-consumer) on an industrial scale since 2013.

This was first introduced at Ikano Industry in Poland in 2013, followed by Dow's recycling program RENUVA™ in France in 2021, and later at Retour Matras in 2023, where H&S contributed as an equipment and know-how provider. The projects in Poland and France marked the world's first of their kind.

Currently, H&S is focused on enhancing the existing technology in several key areas:

- Increasing the proportion of PU in the recycling recipe;
- Increasing the proportion of recovered polyol in PU foam formulations;
- Expanding the maximum annual capacity of recycling plants;
- Adapting the technology for end-of-life (EoL) vehicles, specifically post-consumer automotive seats;
- Extending the reach of the technology beyond Europe to regions such as the USA, South America and Asia.



Graphic 1. Example how H&S plant looks like

PROJECT IMPACT

Each H&S recycling plant:

- **Facilitates the conversion of 1000 tons of foam waste annually into valuable raw materials, equivalent to repurposing 200,000 mattresses;**
- **Prevents 1000 tons of foam from being disposed of in landfills or incinerated annually;**
- Contributes to creation of the new ecosystem along the polyurethanes value chain that produce a solid business model;
- Plays a significant role in addressing a critical global environmental challenge.

Table 1. Comparison of PU foam performance - density 40 kg/m3

	Master sample (foam without re-polyol)	Foam with 30% recovered polyol
Resilience, %	47,2	48,7
Hardness, N	167,30	165,46
Support factor	2,3	2,2
Compression set, 50%	1,88	1,91
Tensile strength, kPa	158	157
Elongation at break, %	214%	214%

Image 1. H&S reactor plant at RetourMatras, Source: H&S Anlagentechnik

ABOUT H&S ANLAGENTECHNIK

H&S Anlagentechnik is a leading engineering company and manufacturer of:

- Reactors for chemical conversion of the PU waste (chemical recycling) into polyol;
- Reactors for generating polyester polyols based on PET, PA, natural oils and adipic acid;
- Tank farms for polyol, isocyanate and blowing agents;
- Blending stations for mixing polyols with additives, blowing agents and solids.

CONTACT

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