

**DR. MARKUS HAUFE; DANIEL UEDING**  
Sika Technology; CH Zürich / Sika Automotive; DE Hamburg



## **SOLVENT-FREE PSA TECHNOLOGY AS A LEVER TO REDUCE CO2 FOOTPRINT**

The science shows clearly that in order to avert the worst impacts of climate change and preserve a livable planet, global temperature increase needs to be limited to 1.5°C above pre-industrial levels. To keep global warming to no more than 1.5°C - called for in the Paris Agreement - emissions need to be reduced by 45% by 2030 and reach net zero by 2050.[1]

In the case of pressure-sensitive adhesives, the raw materials used and the processing steps for manufacturing self-adhesive articles are the main factors for CO2 emissions. While the choice of raw materials with lower emission factors is still limited, there are various options for reducing CO2 emissions during production. As a significant proportion of emissions result from the physical drying of solvent-based and water-based PSAs during production of self-adhesive materials, adhesives with 100% solid content are advantageous. In this case no energy is required for evaporation of volatile components or water. In particular, hotmelt adhesives and UV-curing PSAs are the materials of choice when it comes to reducing the carbon footprint of PSA technology.

This paper shows that PSA performance does not have to be sacrificed to improve sustainability of self-adhesive articles. Newly developed SBS/SIS hotmelt PSA can fulfil the highest requirements without the needs for excessive energy input during processing. As a new class of PSA, UV-curing acrylate-PU hybrid adhesives offer further opportunities to push the boundaries of PSA technology while reducing energy consumption during production.

[1] United Nations, Climate Action: [www.un.org/en/climatechange/net-zero-coalition](http://www.un.org/en/climatechange/net-zero-coalition)