Case Study

Why Glue Does Work with KRÜSS

How KRÜSS Helped GluDown Create a Firm Foundation with Surface Science

The future of construction is *Glue Down*

If you have worked in the construction space in the last decade then you have heard of, seen, or performed a *Glue Down* project (also called a No Hole project). For many contractors, *Glue Down* jobs have become their preferred forming process because it enables them to leave behind time-consuming and costly methods such as drilling, nailing, or cinder block building.

However, even the best contractor has had a *Glue Down* project where it left them saying "Glue Doesn't Work."

An ineffective *Glue Down* project can be caused by a variety of factors, including, but not limited to:

- Improperly preparing the slab to receive adhesive
- Forming before the slab's moisture content dropped below 15%
- Prematurely moving the slab while curing

Validating that the slab is adequately prepared to receive the adhesive is critical to executing a successful *Glue Down* project. That's why GluDown, Inc. partnered with KRÜSS to measure the surface-free energy (SFE) and calculate the the short- and long-term bond strength of slab concrete at various stages in the forming processes.

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Challenge accepted

In 2020, GluDown observed that growing industry practices were decreasing the SFE of concrete slabs being used for *Glue Down* projects – causing mission-critical adhesives to prematurely fail. Over past decades, the industry norm shifted from concrete curing blankets to chemical curing agents such as densifiers, curing compounds, and bond breakers. While an exciting innovation for enhancing *Glue Down* projects, each chemical curing agent used adds a layer to the concrete's surface that directly impacts its SFE and therefore its ability to properly bond with the adhesive.

This observation led GluDown to embark on a journey to better understand how to predict concrete's compatibility with the adhesive and increase the success rate of *Glue Down* projects in the construction industry.

Throughout an 18-month engagement, GluDown partnered with KRÜSS to measure the SFE of tilt-up slab concrete surfaces. Using KRÜSS's Mobile Surface Analyzer (MSA), GluDown cataloged how chemical cures impacted concrete's SFE and its chemical compatibility with the adhesives commonly used in the forming process.

The right tool for the job

When GluDown was approached by a tilt-up company to develop an adhesive that not only forms a strong but temporary bond that can still be released when needed, they knew they would need reliable data to get the job done.

However, gathering data on tilt-up construction projects has one big challenge - it can't be picked up and brought into a lab.

To properly execute the adhesion analysis necessary to complete the ask, GluDown needed a solution that could not only determine the SFE of the slab and help them determine compatibility with the adhesive, but also travel with them to job sites.

Enter the Mobile Surface Analyzer. Because it is mobile, the MSA enabled GluDown to bring the lab to the construction site. Chad Bruce, President of GluDown, explained "We needed to understand the history of the slab. In a way, glue is dumb. It doesn't know how to behave, so if you use an adhesive on this, it will fail. The mobile lab was critical to help determine compatibility."

Challenge complete

Using the MSA, GluDown was able to study tilt-up jobs using adhesives from around the country, with varying levels of success, and use the data to create a specification for compatibility between cured concrete tilt-up slabs and the adhesive they were asked to develop. However, the project wasn't without its challenges.

Bruce explained, "We tried a lot of solutions that failed before searching for KRÜSS. We even looked at other products at a high level, but eventually, I was sold after talking to Mark, the Technical Sales Representative from KRÜSS."

The relationship between KRÜSS and GluDown extended beyond just purchasing a product. It was a true partnership that included technical support and collaboration, ultimately bringing GluDown across the finish line to determine the ideal conditions for cured concrete to properly bond with the necessary adhesives.

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