How Palm Trees Inspire, The Resistance Desired: An Improved Exterior Wall Siding That Defends Against Tornados

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On average, about $685,000,000 of property damage was caused by tornadoes in the United States, 2022. Millions of people lose their homes in natural disasters, so the goal was to find a better alternative. The prototype consists of three layers: fiberwood composite, cement composite, and liquid rubber. Compared to what is currently used in construction today (vinyl, plywood, and concrete composite), it's a stronger set-up and will save people money. The hypothesis investigated was: a wind and impact resistant prototype could be created to be more durable and cost-effective than what is used in construction today. The problem was approached by observing palm trees. Palm trees are local to states that commonly experience natural disasters, so observing their structure, a prototype could be created. The experiment was designed to reflect the type of materials used, the wind speeds possible, and the debris that could affect the sidings. It was found that the hypothesis was supported. The prototype withstood the tests better than the other materials. Example: the 3rd test for impact found that the prototype only had a dent of 0.762 mm. Compared to the cement composite, with a dent of 1.45 mm. To conclude, the prototype contributes to the construction industry and improves the durability of exterior sidings. The design met the criteria of being impact and wind resistant, as well as being designed around the structure of palm trees.

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