

Welcome to a Smart, Innovative, Living Oasis or as we call it, SILO. Students from the Missouri S&T Solar House Design Team have created SILO which is more than just a self-sustaining, net-zero home. Architectural features create a relaxing atmosphere for a couple who are looking for a green way of living. SILO's inviting spaces provide privacy and warmth along with the latest technologies to transform a small home into a place that has everything a couple could need.

Marketing in the 21st century no longer fits the one-size-fits-all mentality. Now, unique and specialized products thrive with individuality. SILO appeals to those who want the practical and well-engineered features of farmhouse architecture by bringing these techniques into the modern age. SILO is designed for a couple in their late 40's and early 50's whose kids have left to forge their own futures. This empty space and financial freedom has given the couple a transitioning phase to move to a smaller, more efficient luxurious home.

SILO incorporates farmhouse designs such as an open floor plan and plenty of natural light to create spaces that are focused on meals and entertainment. SILO uses these ideas and brings them into the modern age with amenities such as full-size, energy efficient appliances. SILO also incorporates innovative technology that goes beyond what is sold in stores.

The home's automation system features an interactive Amazon Echo as an intuitive operating system that has been further enhanced by students to control the lights, fans, and clerestory windows. A student-designed Arduino system tracks temperature, humidity, carbon dioxide levels, and tracks energy consumption and generation in real-time. With this in mind, SILO can even give recommendations to the homeowner on how to optimize energy levels within the house.

SILO's 24 solar panels, equipped with micro-inverters, produce 8.5kW which provides plenty of energy during the day for the home to be net-zero. A set of six innovative batteries with a 7.2 kWh capacity have a 96% round-trip efficiency and a minimum ten year life expectancy. They are the first residential energy storage system to receive the UL 9540 certification for safety. The energy storage system can be monitored and can adapt to changing grid requirements through automatic updates to the system.

Another student-designed system combines various off-the-shelf products to filter greywater for reuse. SILO's greywater system reclaims water from the bathroom sink, shower, and washer to irrigate plants around the house. Yet another student-designed element is a water wall which aerates the greywater system to prevent stagnation and combat anaerobic bacteria growth. Continual movement of the water extends the time that the water can be used, which is typically a problem in many greywater systems.

Driven by technology, farmhouse architecture, and modern style, SILO is the perfect place to make the change to sustainability. Thank you and don't forget to visit us at the U.S. Department of Energy's Solar Decathlon in October!