

# Rogers BISCO® Cellular Silicone Foam Solves Solar Combiner Box Water Ingress Issue

## Customer Problem

One of the key elements of a solar power farm is the combiner box, the first link in the technological chain for harvesting solar energy from photovoltaic panels. Its purpose is to collect the solar energy generated from each of the farm's multiple solar panel segments and then deliver it into the energy grid or a battery energy storage system (BESS). Onsite combiner boxes are subject to conditions which can include environmental concerns such as extreme temperature fluctuations, wind, and precipitation, as well as the physical force exerted by a technician closing the combiner box door to lock it, which requires a good amount of pressure to compress the gasket lining the door, giving it a watertight seal before the box is locked.

Protection of the sensitive electrical components within the box is paramount. One prominent manufacturer of these combiner boxes was faced with the problem of how best to prevent rain from entering the interior of their boxes. The previous material that had been used to construct a gasket for the box's door was taking a compression set, which is a permanent loss of thickness of the material from repeated compressive force over time. This led to gaps in the seal that allowed rainwater into the box and created the risk of an electrical fire – an occurrence which could potentially damage the interior components in the combiner box, disrupt the functionality of the processors and lead to a massive power failure in the energy line. To avoid this, the gasket was repeatedly replaced to maintain safety standards.

## The Rogers Solution

Rogers' BISCO® HT- 800 silicone material proved to be an excellent solution to the manufacturer's dilemma. The material's benefits are twofold; its impressive compression set properties enables the gasket to maintain a highly efficient seal around the box's door for a much longer time, and the material meets stringent flammability requirements. With a flame rating of UL94 V-0, the material does not burn, which eliminates the possibility of it perpetuating a flame which could lead to extensive damage and power failure.

## Result

The incorporation of Rogers' BISCO HT-800 silicone into the combiner boxes led to substantial benefits for the manufacturer from both a functional and cost-savings perspective. The robust compression set properties of BISCO silicone maintain the thickness of the foam longer, so the seal is better maintained, which allows it to resist repetitive weather conditions and the additional force needed to close and seal the door properly after maintenance. The manufacturer no longer has the additional material and labor costs associated with repeatedly replacing door gaskets, and the solar farm can operate efficiently, sustain lower maintenance costs, and significantly reduce the possibility of combiner box failures.