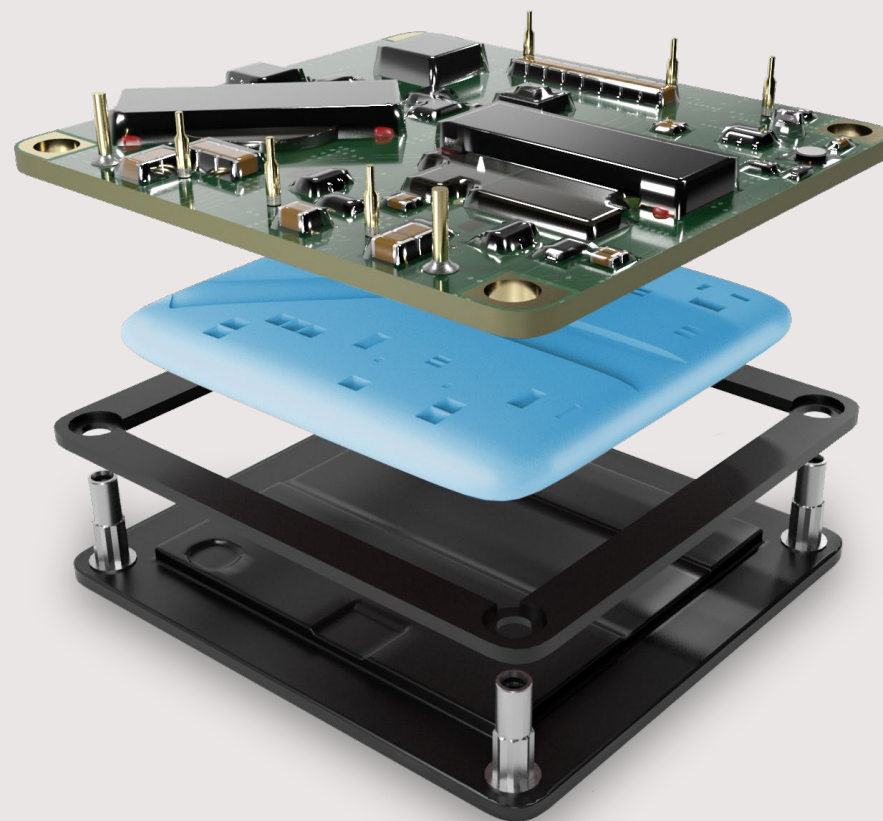




CASE STUDY

**Automation-Friendly Liquid Gap Filler
Delivers on Thermal Control, High
Throughput Requirements for DC-DC
Power Converter**





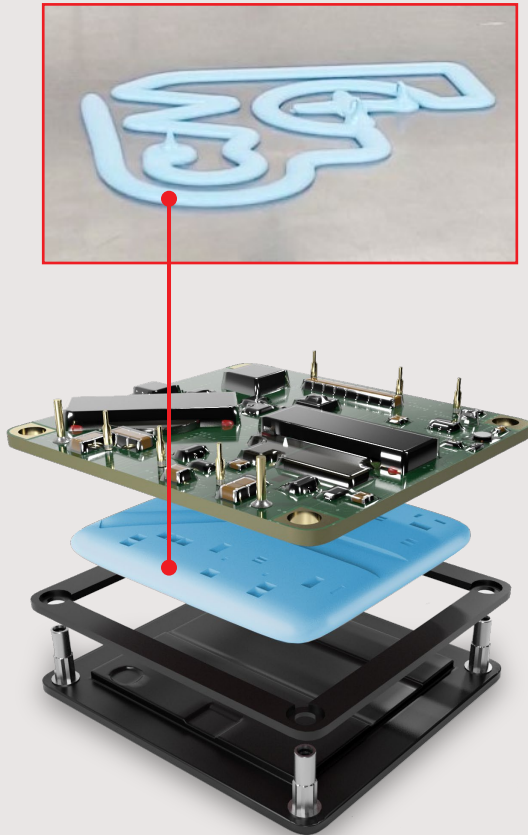
Customer Challenges

- The customer's new design for a DC-DC power converter required a more efficient, high-volume solution for the application of thermal management materials.
- For previous-generation designs, silicone pads were applied in several locations between the DC-DC converter's printed circuit board and metal housing. Use of the pads presented several inventory and production-related issues, including:
 - Operator handling difficulty of the thin sheets.
 - Manual and time-consuming application process.
 - Sourcing of silicone pads in many different sizes and thicknesses.
- Any new material solution had to provide similar or better thermal performance as that achieved with the silicone pads.



Customer Requirements

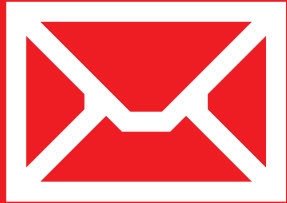
- In order meet anticipated volume increases and improve efficiency, the customer wanted a high-throughput solution with automatically-dispensed liquid thermal interface materials (TIMs).
- The heat produced by the converter required that thermal performance of the liquid TIM has a thermal conductivity of between 2.5 and 3.0 W/m-K, similar to that achieved by the previous approach.
- In addition to increasing module production volume by 15%, the customer aimed to reduce overall manufacturing costs and improve efficiency.
- Finally, as the power converters are manufactured in different countries and facilities, global supply continuity and inventory simplicity were prerequisites.



Henkel Solution

- To achieve all of the customer's ambitious goals, Henkel proposed the use of a two-part, high thermal conductivity (3.5 W/m-K) liquid thermal interface material, **BERGQUIST Gap Filler TGF 3500LVO**.
- Leveraging its strong partnerships with global dispensing equipment suppliers and deep expertise with liquid thermal management solutions for automotive applications, Henkel helped the customer establish an automated TIM application process, eliminating all of the challenges with the formerly-used silicone pads.
- With the Henkel Gap Filler solution, the customer is successfully producing the DC-DC power converter in high volume and has:
 - Reduced overall production costs by 20 to 30%
 - Achieved 15% volume increase objective
 - Secured global supply continuity and technical support in all manufacturing regions
 - Reduced inventory complexity with single part sourcing; Gap Filler can be applied in infinite patterns and thicknesses
 - Eliminated operator-induced errors and defects

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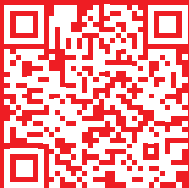
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