



senior
Flexonics

ELECTRIC / HYBRID VEHICLE

Thermal Management and Fluid Conveyance Solutions
for Battery Packs and Electronics.



www.seniorflexonicsUSA.com



Senior Flexonics designs, engineers, validates, and manufactures thermal management components and systems for electric and hybrid vehicles, power and energy markets.

Senior Flexonics offers unparalleled product design, development, testing and manufacturing capabilities. Bartlett is the primary North American design and development center for thermal management, fluid conveyance, heat exchangers and flexible connectors. Housed in a dedicated sales, research, development and prototyping site Senior Flexonics' program of continuous improvement and innovation has enabled the delivery of cost effective, high performance products for the rapidly developing marketplace.

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MARKET SECTORS

Electric

Combined with clean, renewable energy sources, electric vehicles could soon make emission-free mobility a reality. We implement creative solutions, enabling our customers to maximize battery life and performance.

Hybrid

Demand for mild, full or plug-in technology is on the rise globally, driving a requirement for multiple drive systems. Our expertise gives our customers the flexibility to develop efficient, market leading propulsion technologies to meet this growing demand.

Combustion

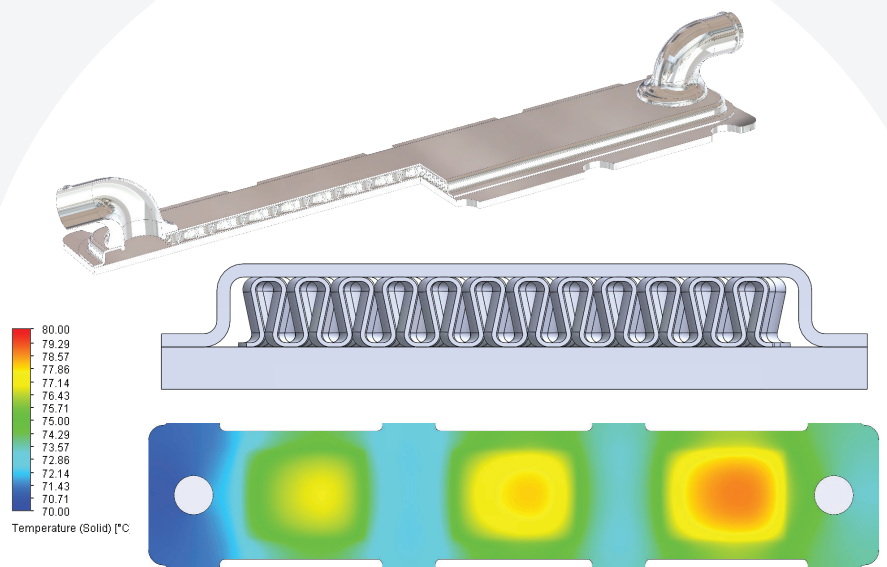
Our key focus for combustion engines is to improve fuel efficiency and reduce harmful emissions. Increasingly strict legislation requires innovative engineering. We combine decades of manufacturing expertise with the latest technologies to ensure our customers are always one step ahead.

Energy

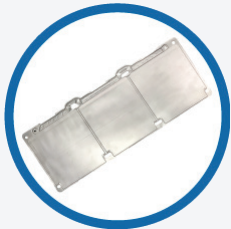
With an ever-growing global demand for energy, the need for clean and efficient sources is greater than ever before. We are working with some of the world's leading companies to develop clean, local sources of energy generation dramatically improving efficiency and energy security.

Hydrogen

With a proven history of designing high performance heat exchangers, tubing, and flexible connectors, Senior has developed products suited for hydrogen production and fuel cell applications. With leading performance and durability, we help our customers deliver their innovative technologies to the marketplace.

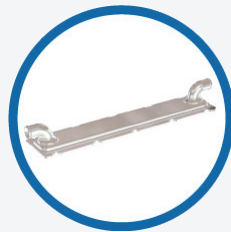


Whether it's combustion, hybrid or electric drive-trains, battery cooling or fuel cell applications, we use our knowledge and expertise to meet our customers requirements.



Battery Thermal Management

Manufactured in a range of materials including stainless steel, aluminum, copper, and plastics, our systems are designed to maximize power density, while minimizing package space, weight, coolant pressure drop, and cost.



Electronics Cooling Plates

The main component inside the inverter is the IGBT (Insulated Gate Bipolar Transistor), and it generates heat. An effective method of cooling the IGBT is through a liquid cooled heat sink.



EGR Cooler

Senior Flexonics provides a wide range of EGR Heat Exchangers, including Shell & Tube, Plate & Fin and our patented Co-axial Cooler. Our heat exchangers are used in HEV engine systems and have up to 95% efficiency, are highly resistant to fouling and are scalable to match performance requirements.



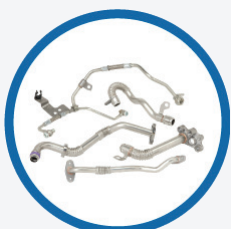
Flexible Connectors

We are an industry leading supplier of flexible connectors. We design, engineer and manufacture both long/soft and shorter self-supporting flex design options to meet customers unique platform requirements.



Hydrogen Thermal Management

Senior has developed high-efficiency condensers, recuperators, and cathode air pre-heaters capable of operating at extreme temperatures for prolonged periods of time.



Fluid Conveyance

Senior Flexonics has a long history of manufacturing tubing for a variety of fluid transfer applications. Used in isolation such as for an oil drain or fuel lines, or combined with our heat exchange plates, we offer expertly balanced and optimized systems to ensure customer needs are met.



KEY BENEFITS

- » Full service supplier.
- » Full collaboration with customers to provide products.
- » A fully engineered solution, from design concept through to high volume manufacture.
- » Global production facilities, 30 operations in 13 countries.
- » Extensive range of thermal management solutions.
- » Programs managed using APQP framework.
- » Comprehensive fleet of FEA and CFD software.
- » Fully equipped test lab for validation testing.
- » Performance and durability test equipment.
- » ISO 9001 / 14001 and IATF 16949 certification.

LOCATIONS

- » **Bartlett USA:** Sales, Engineering & Manufacturing
- » **Cape Town SA:** Manufacturing
- » **Crumlin UK:** Sales, Engineering & Manufacturing
- » **Kassel GERMANY:** Sales, Engineering & Manufacturing
- » **New Delhi INDIA:** Sales, Engineering & Manufacturing
- » **Olomouc CZE:** Sales & Manufacturing
- » **Saltillo MEXICO:** Manufacturing
- » **Tokyo JAPAN:** Sales
- » **Wuhan & Tianjin CHINA:** Sales & Manufacturing



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