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Donaldson's New Dual-Stage Jet Battery Vent Takes Degassing Rates to Unmatched Levels While Reducing Cost and Complexity for OEMs

The unique medium-pressure design ejects the poppet and cap to provide a larger opening for gas to escape during an emergency situation, boosting safety and reducing the risk of damage to other battery packs. It's so efficient, it can reduce the number of vents required on a battery pack by up to 90%.

MINNEAPOLIS (June 20, 2024) — Donaldson Company, Inc. (NYSE: DCI), a leading worldwide provider of innovative filtration products and solutions, has extended its range of battery venting systems with the Dual-Stage Jet, a brand-new design that takes electric vehicle (EV) safety to a whole new level by offering the industry's fastest degassing capabilities, while streamlining the installation process for OEMs. Launched at The Battery Show in Stuttgart, Germany, Dual-Stage Jet has been purposely designed to meet the increased demands of today's more complex and powerful batteries – from providing enhanced pressure equalization and ingress protection under normal operating conditions to allowing gases to escape at rates of approximately 100 lit/sec @ 100 mbar in an emergency situation.

"Customers were telling us that they needed even higher degassing rates than what was available on the market, so the Donaldson Vehicle Electrification Development engineering team came up with a unique, creative design where the poppet and cap can be jettisoned to instantly produce a much larger opening for gas to escape and help mitigate thermal runaway," explains Shane Campbell, Product Manager for Vehicle Electrification at Donaldson. "The pressure then rapidly decreases inside the pack, greatly reducing the risk of damage to additional cells and giving occupants extra time to escape from the vehicle."

Tailored to OEM Needs

Dual-Stage Jet is available in two distinct configurations – screw-in/bolt-on or quarter-turn bayonet fittings. Agricultural and other heavy-duty vehicle manufacturers are likely to favor the former, which can offer more flexibility for use in bulkier battery packs, while the lighter bayonet fittings will be of greater appeal to the automotive sector and provide clear haptic feedback of proper installation.

The new vent is now available for vehicle manufacturers with the possibility for them to work on further customizing the design to their precise needs in partnership with Donaldson's own application engineers. "Our customers often have different thicknesses of aluminum

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for their battery pack housing, but it's easy for us to make an almost identical part that has a small change in the leg length when required," says Matt Goode, Engineering Manager - Vehicle Electrification Development, Donaldson.

"The option of multiple attachment methods is important to our customers who want something that integrates really easily with their existing pack, and with application engineers all over the globe, we're located near the OEM wherever they may be," continues Goode. "I think our customers find it refreshing that we take the time to understand their true needs and then find the best solution for them, rather than an 'off-the-shelf take it or leave it' type of approach.

Another major benefit is that these high-performance vents can reduce the number required on a battery pack by 50-90%. As well as reducing product cost, this also leads to significant time and money savings in the assembly, ordering and stock-keeping processes."

Effective Ventilation Means Efficient Performance

At 58mm in diameter, and containing approximately 20% recycled plastic, the vent also delivers a simple solution to the occasionally tricky problem of performing a leak test on a product expressly designed to provide effective ventilation. Temporarily sealing the vent using the supplied leak-check cap is all that is required for manufacturers to carry out tests themselves.

Using Donaldson's proprietary Tetratex® expanded polytetrafluoroethylene (ePTFE) membranes for enhanced protection from contaminants, the Dual-Stage Jet enables consistent pressure equalization with a minimum airflow of 97 lit/hr @ 10 mbar during normal operation. Manufactured in-house, the hydrophobic membrane is comprised of small, randomly connected fibrils that create a permeable water barrier, providing continuous pressure equalization, while offering IP67, IP68 and IP69K ingress protection against water, dirt and other contaminants. The membrane's unique oleophobic treatment also helps the filter media repel oils, providing additional protection.

By ensuring that damp air, which could otherwise accumulate inside the battery housing, is expelled, the effective ventilation provided by the new vent thereby helps to prevent potential internal condensation issues reducing the lifespan of enclosures and batteries alike.

"Quality and reliability are top of our customers' agenda, and our new vent really fits the bill," concludes Campbell. "Dual-Stage Jet is a fantastic addition to our portfolio; one that enables us to serve more of the global EV market by providing another best-in-class product while offering our customers even greater choice to match their specific applications. Our Dual-Stage Burst design is still available, with a high opening pressure [25 lit/sec @ 300 mbar] while Dual-Stage Jet occupies the medium-pressure section of our portfolio – facilitating industry-leading degassing airflow through a design that's never been seen until now."

More information

To find out more, visit: https://www.donaldson.com/venting or contact grpemeasalesivs@donaldson.com.

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About Donaldson Company, Inc.
Founded in 1915, Donaldson (NYSE: DCI) is a global leader in technology-led filtration products and solutions, serving a broad range of industries and advanced markets. Diverse, skilled employees at over 140 locations on six continents partner with customers – from small business owners to R&D organizations and the world's biggest OEM brands. Donaldson solves complex filtration challenges through three primary segments: Mobile Solutions, Industrial Solutions and Life Sciences. Additional information is available at Donaldson.com**.**

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