



Dana Collaborates with Manitou on MLT960 Eco-Booster Telehandler Concept Featuring Spicer® PowerBoost® Hydraulic-Hybrid Powertrain Technology

November 10, 2015

HANOVER, Germany, Nov. 10, 2015 /PRNewswire/ -- Dana Holding Corporation (NYSE: DAN) and Manitou Group today revealed the results of tests in the companies' development of the Manitou MLT960 Eco-Booster 6-tonne telehandler machine equipped with Dana's Spicer® PowerBoost® hydraulic-hybrid powertrain technology.

Extensive performance analyses of Spicer PowerBoost technology on the MLT960 Eco-Booster hybrid telehandler indicate a reduced fuel consumption averaging 15 percent across a range of duty cycles when compared with the standard MTL960 configuration.

The MLT960 Eco-Booster hybrid is the first Manitou telehandler for agricultural applications designed with innovations that support a seamless integration of power from hydraulic-hybrid and internal-combustion engine systems. Manitou and Dana have collaborated for the past year to optimize the performance of the machine with the goals of minimizing total cost of ownership while also reducing the overall environmental impact.

"In 2014, Manitou launched the REDUCE program to support engineering initiatives that promote sustainability and deliver clear and transparent fuel consumption data on our machines," said Aude Brezac, sustainable development manager for Manitou Group. "The MLT960 Eco-Booster is another significant milestone for this initiative, combining improved productivity with a reduced environmental footprint."

"The success of the REDUCE program relies on our ability to account for environmental criteria from the earliest conception of our machines," added Antoine Riot, Manitou Group's innovation manager. "We knew that we could count on Dana's expertise and innovation abilities to help us develop this solution for the increasingly competitive agricultural telehandler market."

Ideally suited for hydrostatically-driven drivetrains, Spicer PowerBoost technology uses an advanced energy-management system to evaluate the levels of power needed in the entire vehicle. It features a modular design that offers flexibility in hybrid-control performance, including:

- Dynamic Eco Mode – Enabling the vehicle to achieve maximum fuel efficiency in normal operating cycles.
- Power Mode – Providing enhanced vehicle acceleration and working performance in operations requiring maximum power.
- Regenerative Braking Mode – Captures and stores energy otherwise wasted during vehicle braking;
- Zero Emission Mode – Operates the vehicle exclusively from stored energy captured by the Spicer PowerBoost system; and
- Stop/Start Mode – Shuts down the engine during prolonged idle conditions and then restarts instantly at the operator's command.

"Dana invests heavily in off-highway technologies that help forward-looking equipment manufacturers and buyers improve fuel economy, increase productivity, and reduce the overall total cost of ownership," said Aziz Aghili, president of Dana Off-Highway Driveline Technologies. "Spicer PowerBoost is an ideal solution for Manitou, a producer of cutting-edge material-handling equipment that shares our culture for innovation."

Deployed through series or parallel hybrid configurations that fit into existing vehicle designs with minimal adaptation, the Spicer PowerBoost system supplements all types of transmission architectures.

Spicer PowerBoost technology can reduce total ownership and operating costs by increasing productivity, reducing maintenance, and allowing for the use of a downsized engine. It can also enhance vehicle resale value by using stop/start mode to reduce the overall operating hours of the engine over the life of the vehicle.

Spicer PowerBoost solutions are ideal for applications with frequent, intense bursts of acceleration, deceleration, lifting, and lowering during cyclic maneuvering that support the recuperation of working and braking energy. Construction and agricultural equipment, material-handling machines, and on-highway vocational vehicles are the optimal targets for the Spicer PowerBoost system, generating fuel savings of up to 40 percent, depending on the application and duty cycle.

Dana has supported the development of the Spicer PowerBoost system over the past five years at the company's advanced technology centers in Belgium, Italy, and the United States. Dana has applied for 20 patents stemming from development activities for Spicer PowerBoost technology.

Manitou will exhibit the MLT960 Eco-Booster telehandler in hall 6, stand D13 at Agritechnica 2015, while Dana will present its agricultural applications of Spicer PowerBoost technology in hall 17, stand C22. To learn more, visit www.dana.com/offhighway.

About Manitou Group

Manitou Group, world leader in all-terrain material handling, designs, manufactures, distributes and services equipment for construction, agriculture and the industries. The group's product ranges encompass: telehandlers, all-terrain, semi-industrial and industrial masted forklifts, skidsteers, track loaders, articulated loaders, access platforms, truck-mounted forklifts, warehousing equipment and attachments.

Through its core brands, Manitou, Gehl, and Mustang, together with its international network of 1,400 independent dealers, the group provides the best solutions delivering highest value for its customers.

Headquartered in France, the group registered in 2014 a revenue of €1.25 billion in 140 countries, and employs 3,300 people all committed to satisfying customers.

About Dana Holding Corporation

Dana is a global leader in the supply of highly engineered driveline, sealing, and thermal-management technologies that improve the efficiency and performance of vehicles with both conventional and alternative-energy powertrains. Serving three primary markets – passenger vehicle, commercial truck, and off-highway equipment – Dana provides the world's original-equipment manufacturers and the aftermarket with local product and service support through a network of nearly 100 engineering, manufacturing, and distribution facilities. Founded in 1904 and based in Maumee, Ohio, the company employs approximately 23,000 people in 25 countries on six continents. In 2014, Dana generated sales of \$6.6 billion. For more information, please visit dana.com.

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