

Ball Aerospace Completes Spectrometer Testing and Verification on NASA's TEMPO Program

BOULDER, Colo., Sept. 21, 2017 /PRNewswire/ -- The Tropospheric Emissions: Monitoring of Pollution (TEMPO) instrument, designed and built by Ball Aerospace for NASA, has completed spectrometer testing and verification.

TEMPO was selected by NASA as the first Earth Venture-Instrument to provide hourly measurements of air quality across North America. This instrument will make precise measurements of the key constituents of air pollution, including nitrogen dioxide, ozone, sulfur dioxide and atmospheric aerosols that have the greatest impact on human health and agriculture productivity.

"The completion of characterization and calibration of the TEMPO spectrometer is a critical milestone in the development of our fundamental atmospheric pollution mission, which is a result of collaboration among Ball Aerospace, NASA's Langley Research Center, and the Smithsonian Astrophysical Observatory" said Kelly Chance, TEMPO Principal Investigator, Smithsonian Astrophysical Observatory. "Together, we are all looking forward to the next steps on the way to providing hourly atmospheric pollution measurements for greater North America."



Data from TEMPO will provide chemical weather maps of air pollutants that can be overlaid onto a map of the continental United States. TEMPO is expected to improve air quality prediction accuracy by 50 percent and improve daylight measurements of atmospheric pollutants across the nation. This instrument will enable high-confidence forecasts of poor air quality events so vulnerable citizens such as asthma sufferers, the elderly and young children can take proper precautions, and aid farmers in making decisions to maximize crop yields.

"Ball is leveraging our over 40-year heritage in Earth-observing instruments to partner with NASA and the Smithsonian Astrophysical Observatory on TEMPO," said Jim Oschmann, Vice President and General Manager for Civil Space, Ball Aerospace. "This instrument provides significant advances in our ability to measure and understand major air pollutants, and it demonstrates an innovative and low cost approach to space-based, science-driven missions that broaden our understanding of the Earth system."

TEMPO will leverage the Air Force's Hosted Payloads Solutions (HoPS) contract, a service the Air Force uses to match payloads with commercial hosts, such as communications satellites that will fly in geostationary orbits. NASA Langley, located in Hampton, Virginia, manages the TEMPO Mission and will procure the spacecraft host. The launch date is yet to be determined.

TEMPO continues NASA's tradition of developing missions that expand our knowledge of Earth system science and providing societal benefits to the Earth's citizens. TEMPO will significantly enhance the study of air quality and better measure its impact on humans and agricultural production.

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This release contains "forward-looking" statements concerning future events and financial performance. Words such as "expects," "anticipates," "estimates," "believes," "targets," "likely" and similar expressions typically identify forward-looking statements, which are generally any statements other than statements of historical fact. Such statements are based on current expectations or views of the future and are subject to risks and uncertainties, which could cause actual results or events to differ materially from those expressed or implied. You should therefore not place undue reliance upon any forward-looking statements and any of such statements should be read in conjunction with, and, qualified in their entirety by, the cautionary statements referenced

below. The company undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. Key factors, risks and uncertainties that could cause actual outcomes and results to be different are summarized in filings with the Securities and Exchange Commission, including Exhibit 99 in our Form 10-K, which are available on our website and at www.sec.gov. Additional factors that might affect: a) our packaging segments include product demand fluctuations; availability/cost of raw materials; competitive packaging, pricing and substitution; changes in climate and weather; competitive activity; failure to achieve synergies, productivity improvements or cost reductions; mandatory deposit or other restrictive packaging laws; customer and supplier consolidation, power and supply chain influence; changes in major customer or supplier contracts or a loss of a major customer or supplier; political instability and sanctions; currency controls; and changes in foreign exchange or tax rates; b) our aerospace segment include funding, authorization, availability and returns of government and commercial contracts; and delays, extensions and technical uncertainties affecting segment contracts; c) the company as a whole include those listed plus: changes in senior management; regulatory action or issues including tax, environmental, health and workplace safety, including U.S. FDA and other actions or public concerns affecting products filled in our containers, or chemicals or substances used in raw materials or in the manufacturing process; technological developments and innovations; litigation; strikes; labor cost changes; rates of return on assets of the company's defined benefit retirement plans; pension changes; uncertainties surrounding geopolitical events and governmental policies both in the U.S. and in other countries, including the U.S. government elections, budget, sequestration and debt limit; reduced cash flow; ability to achieve cost-out initiatives and synergies; interest rates affecting our debt; and successful or unsuccessful acquisitions and divestitures, including with respect to the Rexam PLC acquisition and its integration, or the associated divestiture; the effect of the acquisition or the divestiture on our business relationships, operating results and business generally.

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For further information: Jackie Berger, (703) 284-5412, jberger@ball.com or Ball Investor Relations: Ann Scott, (303) 460-3537, ascott@ball.com

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