

**CONCEPT** Calibrating refers to the process of adjusting and fine-tuning the instruments and equipment used in the production process to ensure they operate at the highest level of accuracy and precision possible.



## BACKGROUND

The history of calibration in advanced manufacturing dates back to the late 18th century when the French Revolution sparked the need for standardization in the measurement of length, mass and time. This led to the development of the metric system, which standardized measurement units and facilitated international trade. The Industrial Revolution saw the emergence of precision manufacturing, and the need for accurate and reliable measuring instruments became crucial. In the early 20th century, the National Institute of Standards and Technology (NIST) was established in the United States to provide traceable measurement standards for use in industry and science. With the advent of computerization in the 1960s, calibration procedures became more automated, and today, calibration is an essential component, ensuring that equipment and instruments operate at the highest levels of accuracy and precision.

## REAL WORLD CONNECTIONS

Calibration of medical equipment plays a vital role at the University of Nebraska Medical Center (UNMC) in Omaha. UNMC has a dedicated Calibration and Metrology Laboratory that provides calibration services for various medical equipment, including x-ray machines, MRI scanners, ultrasound machines and blood gas analyzers. The laboratory follows strict procedures and guidelines to ensure the equipment is calibrated to national standards and operates with maximum accuracy and precision. UNMC's Calibration and Metrology Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA), which ensures the laboratory's calibration services meet international standards. Calibrating medical equipment is critical for patient safety and ensuring the equipment is functioning correctly for accurate diagnosis and treatment.