



TechTalk # 1

A Brief History of the Standards Movement



- 2000 BC Babylonians use a balance and a standard set of stones for weighing objects
- 150BC to 400 AD Roman soldiers keep track of distance traveled by counting paces. The conquering Roman Army spreads the knowledge of measuring throughout known world. The Romans provide the number 12 as a base for their measurement system. (ie. twelve inches in a foot)
- 1215 English nobility seeking the Magna Carta demand a standard set of weights and measures
- 1264 King Edward I of England orders a permanent iron measuring stick (called the "iron ulna") to serve as a master standard yardstick for the entire kingdom.
- 1400s Weight driven mechanical clocks first appear in the towers of several large Italian cities. The ability to measure time precisely is a key to further scientific standard setting.
- 1510 Peter Henlein, a German locksmith, invents the spring powered clock.
- 1670 Christian Huygens, a Dutch scientist makes the first pendulum clock. It has an error of less than 1 minute/day.
- 1761 John Harrison, a carpenter and self taught clock maker, builds a marine chronometer with a spring and balance wheel escapement. He wins the British govt prize first offered in 1714 for a means of determining longitude within one-half degree. His clock kept time (on a rolling ship) to about fifth of a second/day.
- 1820 The United States Pharmacopeia Convention becomes first U.S. standards organization, setting standards for drugs.
- 1847 Greenwich Mean Time is adopted by the Rail Clearing House in Great Britain as the standard for time independent of location. In 1880 GMT was legally adopted throughout Britain.
- 1863 The International Statistical Conference held in Berlin declares uniformity of weights and measures are crucial for international commerce. The movement toward a common set of international standards is slowly starting.
- 1894 Underwriters Laboratories is formed in the US to set standards and test products

- 1895 The U.S. National Fire Protection Association organizes after fire insurers and sprinkler installers realize there was no installation, pipe size or spacing standard. Today, the group publishes the U.S. National Fire Code.
- 1898 U.S. Railway safety concerns spur the formation of the American Society for Testing and Materials (ASTM).
- 1901 The U.S. Congress establishes the National Bureau of Standards.
- 1904 Delegates to the International Electrical Congress in St Louis Mo. recommend the standardization of terms and ratings for electrical machinery.
Downtown Baltimore erupts in flames. Firefighters arriving from neighboring cities can't assist because their hoses don't hook to local hydrants.
- 1906 As a result of the St Louis meeting the International Electrotechnical Commission (IEC) is formed in London, England.
- 1914 American Society of Mechanical Engineers write a boiler code to help prevent explosions. It starts as a private, voluntary code but eventually parts of it are adopted by as mandatory international standards.
- 1917 Responding to a British request, Sir John Kennedy forms a volunteer committee to create Canadian standards similar to work done in Great Britain and the US.
- 1918 American Engineering Standards Committee (AESC) forms to offer the first umbrella group for the growing number of private, voluntary associations writing standards. The original members were IEE (Institute of Electrical Engineers), ASME (American Society of Mech Engineers), ASCE (American Society of Chem Engineers), AIMME (American Institute of Mining and Metallurgical Engineers), and ASTM (American Society for Testing Material)
- 1919 Sir Kennedy's committee receives a federal charter to form the Canadian Engineering Standards Association. Initial work concentrated on bridges and building construction, electrical installations, and wire rope.
- 1920 CESA introduces standard for steel railway bridges and distribution transformers.
AESC introduces its first standard for pipe threads
- 1924 Hourly time signals are first broadcast from the Greenwich Observatory.
- 1927 CESA publishes the first Canadian Electrical Code.
- 1928 AESC is reorganized into the American Standards Association (ASA).

- 1930 IEC establishes the following electrical units: Herz, Oersted, Gauss, Maxwell, Gilbert, VAR, Weber. These were extended and later became the "Systeme International" or SI system.
- 1940 CESA assumes responsibility for testing and certification of products in Canada. CESA later changes its name to the Canadian Standards Association (CSA)
- 1945 Richard Rimbach of the Instruments Publishing Company, with 18 local instrument societies, organizes the Instrument Society of America (ISA) in Pittsburg Pennsylvania. U.S.
- 1946 The International Organization for Standardization (ISO) is founded. It was initially recognized by the national standards bodies in twenty five countries.
- 1949 ISA publishes it's first standard - RP 5.1- Instrumented Flow Plan Symbols
IEC moves its head office from London England to Geneva Switerland.
- 1969 ASA adopts the name American National Standards Institute (ANSI).
- 1972 Atomic time keeping (Coordinated Universal Time - UTC) replaces Greenwich Mean Time (GMT) as the international time standard
- 1983 The General Conference on Weights and Measures redefines the meter as the length of the path traveled by light in a vacuum during a time interval of $1/299,729,458$ of a second. The speed of light is given as $299,792,458$ m/s. The second was determined to an uncertainty of 1 part in 10 to the 14^{th} power by a Cesium clock. The iodine stabilized He-Ne laser was made a recommended radiation. It's wavelength is given as 632.99139822 nanometers.
- 1988 The U.S. National Bureau of Standards gets a new name, the National Institute of Standards and Technology (NIST).
- 1996 CSA is selected by ISO to administer the Technical Committee on Environmental Management. In 1996 this committee produces the ISO 14000 series of environment management standards.
- 2000 With members in 110 countries, the ISA changes its name to The Instrumentation, Systems, and Automation Society.