

## Can Science Bear a New Technological Revolution in Electrical Insulation?

A truly innovative technology cannot be borne without a discovery of a new principle or theory in natural science. First, let me look back briefly on the history of science. It seems to me that there have been four revolutionary periods in which science made remarkable advances.

The first revolution was born in the period of Four Great Civilizations. However, even though Democritus (ca. 460 B. C. - 370 B. C.) proposed 'Atomic Theory', it cannot be regarded as natural science since it was developed without doing experiments and without showing scientific evidence. What followed this period in the history of natural science was the Great Black Era lasting for over 1700 years.

The door of the second revolution was opened by G. Galilei (1564 - 1642), who established 'proof by experiments' and 'analysis and simplification by mathematics' and is sometimes called the Father of Natural Science. I. Newton (1643 - 1727) is another giant in this revolution. Lots of new principles in physics which were clarified in this revolution became the cradle of the Industrial Revolution.

The third revolution was started by C. A. Coulomb (1736 - 1806) and A. Volta (1745 - 1827) and completed by J. C. Maxwell (1831 - 1879). New principles and theories born in this revolution let the first half of the 20th century become the Era of Electricity.

The fourth revolution was dramatically opened in the last moment of the 19th century. In 1900, M. Planck (1858 - 1947) proposed the discontinuity of energy, which was the first concept of the quantum theory. Another significant theory of this revolution is the theory of relativity by A. Einstein (1879 - 1955). We are now enjoying the Era of Electronics (or Photonics) thanks to the success of this revolution.

Then, will the fifth revolution come? At the end of the 19th century, physics was in the badly chaotic situation. This chaos is considered to be the mother of revolution. It is said such a chaos is not seen in today's physics. While it is true that we are living in the era of electronics, is the electrical insulation technology truly utilizing the achievements of the latest revolution? It seems the answer is not fully affirmative. Therefore, we must make every effort to take as many achievements as possible in the electrical insulation technology. Exchange of information should surely give good assistance. I hope this small booklet can be a big step of our such endeavor to promote information exchange.



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