

Introduction

Section 01

History of Electricity



- Ancient Egyptian 2750 BC
 - shocks from electric fish
- Romans 1500 BC
 - shocks can travel in metals
- Thales 600 BC
 - rubbing amber makes magnet
- Arabs 1400
 - Identity of lightening
- William Gilbert 1600
 - wrong: it was Static Electricity

History of Electricity



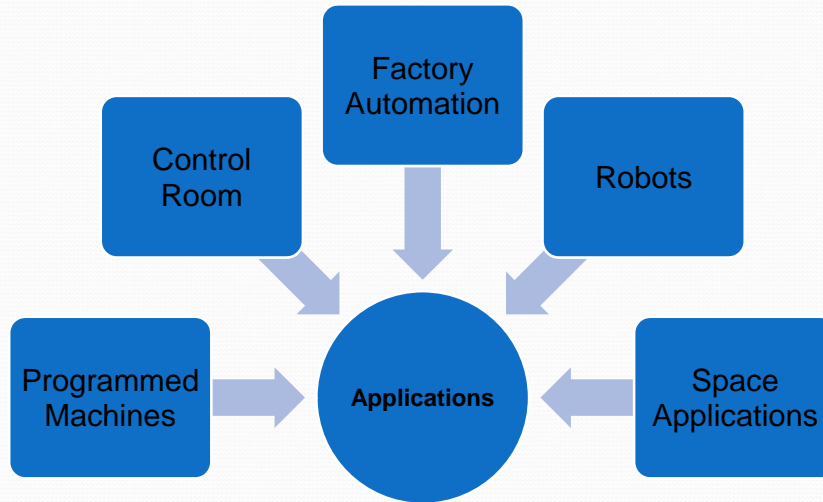
- Otto von Guericke 1700's
 - more work
- Benjamin Franklin 1752
 - lightening key experiment
- Luigi Galvani 1791
 - nerve cells passed signals to the muscles
- Alexander Volta 1800
 - Zinc and Copper Battery
- André-Marie Ampère 1820
 - electromagnetism

History of Electricity



- Michael Faraday 1821
 - electric motor in 1821
- George Ohm 1827
 - ohm's law
- Tesla, Edison, Westinghouse, Siemens, 1900's
- Graham Bell and Kelvin
 - Second Industrial Revolution

Applications



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CNC Machines Control



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Machines Monitoring



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Fully Programmed Machines



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Engraving

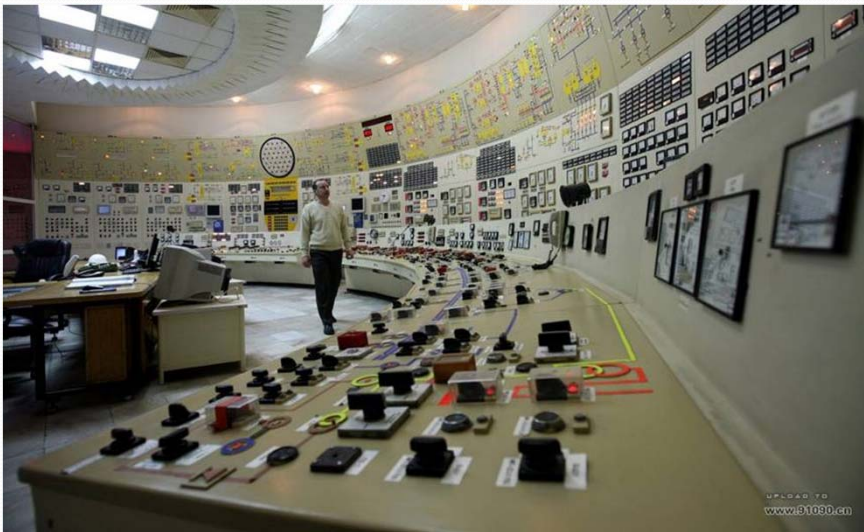


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Control Rooms

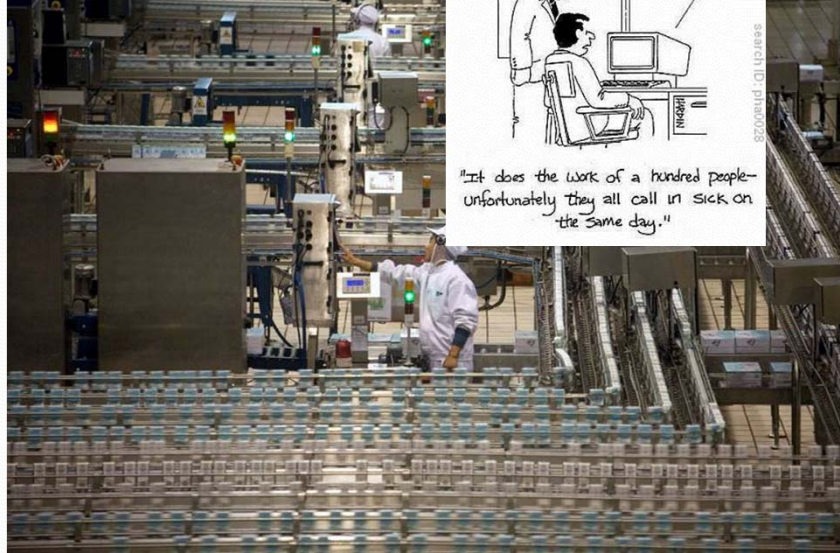


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Automation



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Robots



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Accuracy



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ExoMars Mission



Life in other planets!



17.7.2003
23.34 - 23.37 UTC
Petteri Kankaro, Turku, Finland

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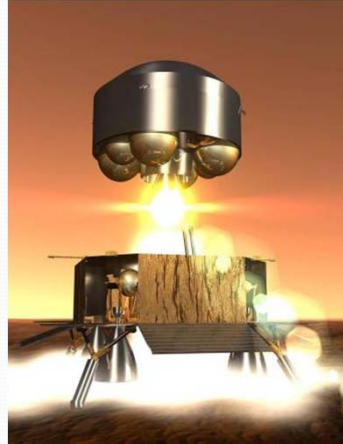
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ExoMars Mission



- landing of a large payload on Mars
- navigation and operation of a mobile scientific platform
- a novel drill to obtain subsurface samples
- sample processing and distribution system
- protection and cleanliness levels

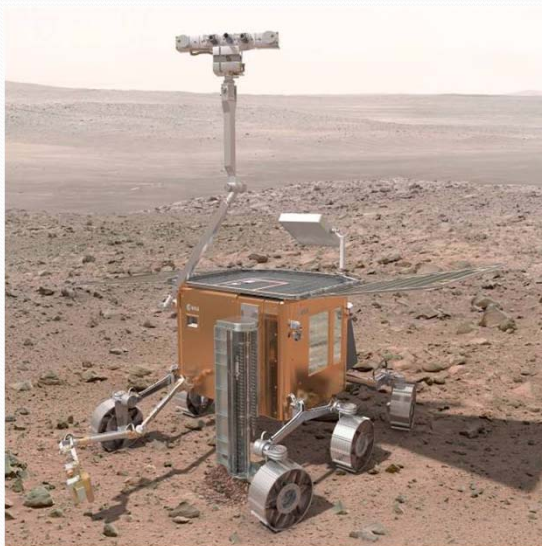


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ExoMars Mission

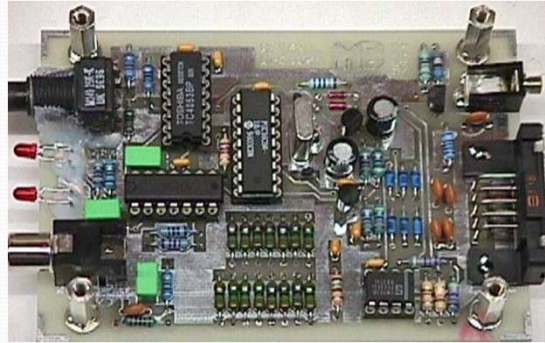


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Printed Circuit Board (PCB)



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Process Check



- Ask yourself..
 - What do I need to know about EE?

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