

History of Welding

History of Welding – Study Notes

1. Early Beginnings (Pre-Industrial Era)

Period	Key Developments	Significance
Ancient Egypt & Rome (? 3000?BC – 400?AD)	• Forge-welding of iron using hammer and anvil. • Use of charcoal fire to heat metal to a plastic state.	First known metal joining technique; limited to small items (tools, weapons).
Middle Ages (5th – 15th?c.)	• Continued forge-welding for swords, armor, and blacksmith work. • Introduction of crucible steel (Birmingham, 1742) which later enabled higher-temperature processes.	Improved steel quality, paving the way for stronger joints.
Early 19th?c.	• Development of brazing and soldering for copper and bronze objects.	Demonstrated that metals could be joined without melting the base material.

2. The Birth of Modern Welding (Mid-19th Century)

Year	Invention / Event	Inventor / Contributor	Impact
1800	First electric arc observed (Volta).	Alessandro Volta	Provided the principle of using an electric arc as a heat source.
1839	Gas welding (oxy-acetylene) concept.	Sir Humphry Davy (early experiments)	Showed that a combustible gas flame could reach welding temperatures.
1856	Arc welding patent (first practical method).	Sir William Fairbairn & C. H. L. (British).	Demonstrated that an electric arc could melt metals directly.
1885	Oxy-acetylene torch invented.	Edmond Fouché & Charles Picard (France).	Became the first widely used portable welding torch.

3. Industrial Expansion (Late 19th – Early 20th Century)

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Technique	Milestones	Applications
Oxy-acetylene (gas) welding	• 1903: First commercial torch produced by Fritz (Germany). • 1910s: Standard in shipbuilding & railway construction.	Heavy-section fabrication, repair work.
Shielded Metal Arc Welding (SMAW)	• 1916: C. L. Coffin patents “manual metal arc welding.” • 1920s: Introduction of consumable electrodes with flux coating.	Construction, pipelines, infrastructure.
Resistance welding	• 1910s: Development of spot welding for automotive bodies (Edison’s “electric furnace”).	Automobile manufacturing, sheet-metal joining.

4. World Wars – Accelerated Innovation

Conflict	Key Advances	Resulting Technologies
WWI (1914-1918)	• Mass production of SMAW electrodes. • Development of portable welding kits for field repairs.	Faster ship and tank repair; rise of welding schools.
WWII (1939-1945)	• Introduction of Gas Metal Arc Welding (GMAW) – “MIG” (1950s prototype). • Development of TIG welding (GTAW) for aerospace (high-purity argon shielding). • Large-scale use of submerged arc welding (SAW) for ship hulls.	