



Co-funded by the
Erasmus+ Programme
of the European Union



Erasmus+

MODULE A

Introduction to the problems of welding

A brief look into the history of welding



A brief look into the history of welding

- ▶ People in ancient times tried to combine their well-known metals, welding because history dates back to ancient times when jewelry and small objects made of gold and precious metals produced through pressure to the lap joint edges.
- ▶ With the advent of the Iron Age people in North Africa and the Eastern Mediterranean have learned to weld iron, using forge welding.
- ▶ Findings thus produced iron tools come from around 1 000 BC. The inventor welding usually given the Greek Glaukos Who lived around 688 BC. - 600 BC.
- ▶ In the Middle Ages developed significantly blacksmithing as it was discovered by forge welding.
- ▶ This is characterized in that the two jointed iron objects are heated to a temperature of about 1200 ° C to white heat, and removing the scale by means of pressure shocks hammers are combined together.
- ▶ Welding in its present form it was discovered in the 18th century.



A brief look into the history of welding

- ▶ At this time in 1836 Englishman Edmund Davy discovered acetylene and thus began the use of acetylene for joining metals.
- ▶ Creating an electric arc between two carbon electrodes A resource is attributed to Sir Humphry Davy in the 1800's.
- ▶ For arc welding was necessary to invent an electric generator.
- ▶ IN 1881 Auguste De Meritens France, used the heat of electric arc welding lead plates for batteries.
- ▶ Russian Nikolai Nikolayevich Benardos and Stanislav Olsewský acquired in the late 19th century British and American patent for welding carbon electrodes.
- ▶ First US patent for electric arc welding using a metal electrode won the CL roce 1890 Coffin from Detroit.
- ▶ Managed His transfer molten metal from the electrode through the arc into the weld metal to form a weld.



A brief look into the history of welding

- Oscar Kjellberg Sweden has made a breakthrough discovery, covered electrode with a stable arcing, this discovery he managed the early 20th century in 1907 -, 1914.
- Metal wires were dipped in a mixture of oxides and silicates that is dried to form a container and which has influenced the composition of the weld metal.
- At the same time, it was also discovered Thompson 1885 - 1910 resistance welding and in 1903 invented German Goldschmidt thermite welding.
- Thermite welding began to be used for welding of rails on a railroad. Before World War II, in 1937, it was invented by submerged arc welding.
- IN 1944, was invented by TIG welding (Tungsten inert Gas Welding), First for aluminum welding alternating current. This method is called first helium arc.



A brief look into the history of welding

- ▶ After the Second World War in Kiev in 1950 was the Institute of Welding EO Paton Ukraine, USSR developed electroslag welding in 1953 Ljubavskij and Novošilov They invented and used steel wire electrode arc melting of gaseous CO₂ in the atmosphere.
- ▶ This welding method spread very quickly. In 1957 RFGage He invented the plasma welding with a higher degree of ionization and the higher the temperature of the arc.
- ▶ I Stohrin France in 1950 he invented the electron beam welding in a vacuum. In 1960, American physicist T. Maiman using the first ruby laser and the laser beam began to use in a variety of industries including welding.
- ▶ IN 1971 British Institute of Welding nozzle connected to the oxidizing gas around the laser beam and this method began to be used also for laser cutting.

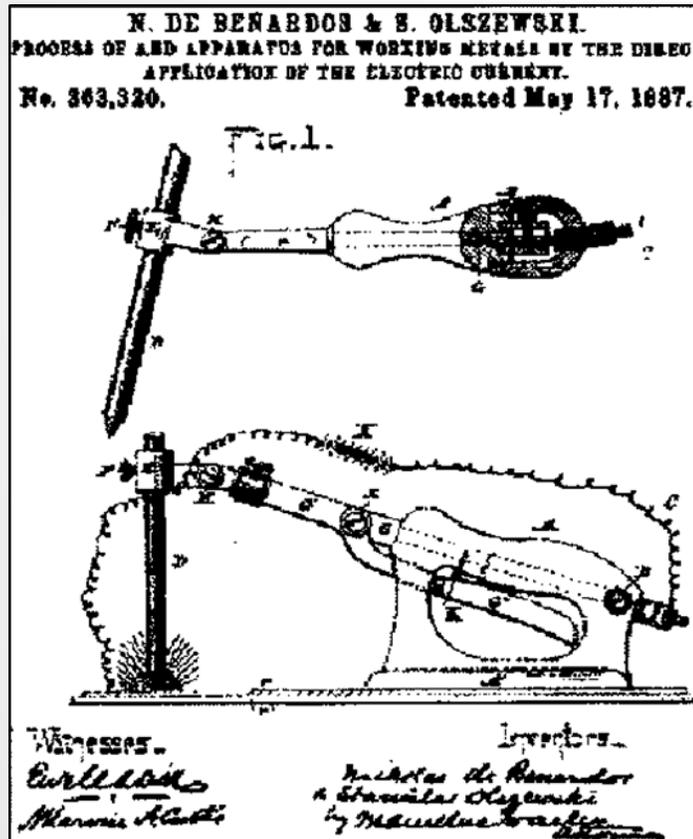


A brief look into the history of welding

- ▶ Friction welding rotating tool is the latest technology was invented in the UK in 1991.
- ▶ IN In 2000, Israel invented a method of magnetic-pulse welding, which uses capacitive forces capacitors generating a magnetic field as a solid state welding process.



Benard's and Olsewski's Patent arc welding



KUBÍČEK, J. DANĚK, L. KANDUS, B. Technologie svařování a zařízení. Učební texty pro kurzy svařovacích inženýrů a technologů. Plzeň: ŠKODA WELDING, s. r. o., 2011. s. 5.