Engineering drawing

Semester I/II

Mechanical Engineering Department
Technical University of Gdańsk

Lecture 9

Thermal Fastening

- Soldering – solder (filler) melts but parts to be joined remain at low temperature.
- Brazing – filler is melted, and parts to be joined are heated but do not melt. Can be used to join dissimilar metals.
- Welding – parts to be joined and filler (if any) are melted, pressed together and then allowed to cool.

Soldering and brazing use metal alloys that melt at lower temperatures than the parts that they are joining. When welding the filler metal is the same as the parts that are being joined and the filler and portions of the parts to be joined all melt. In these three processes, the temperature and the strength of the bond both increase from soldering to welding.

Welding – permanent fastening

The two principal kinds of welding now generally are used:

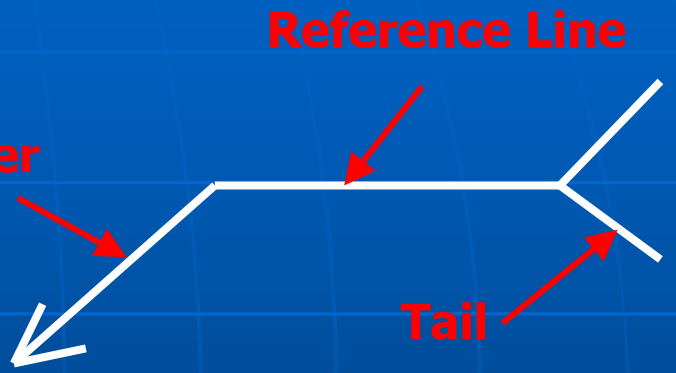
- **forge welding** (method of joining two pieces of metal by heating them to the plastic state and then forcing the parts together either by pressure or by a blow of a hammer)

- **fusion welding** (method of joining two pieces of metal by melting metal into a joint that has been raised to the melting temperature; a process whereby two parts are joined by bringing the metal of each part to a liquide state and adding extra molten metal which forms the joint when cooled)

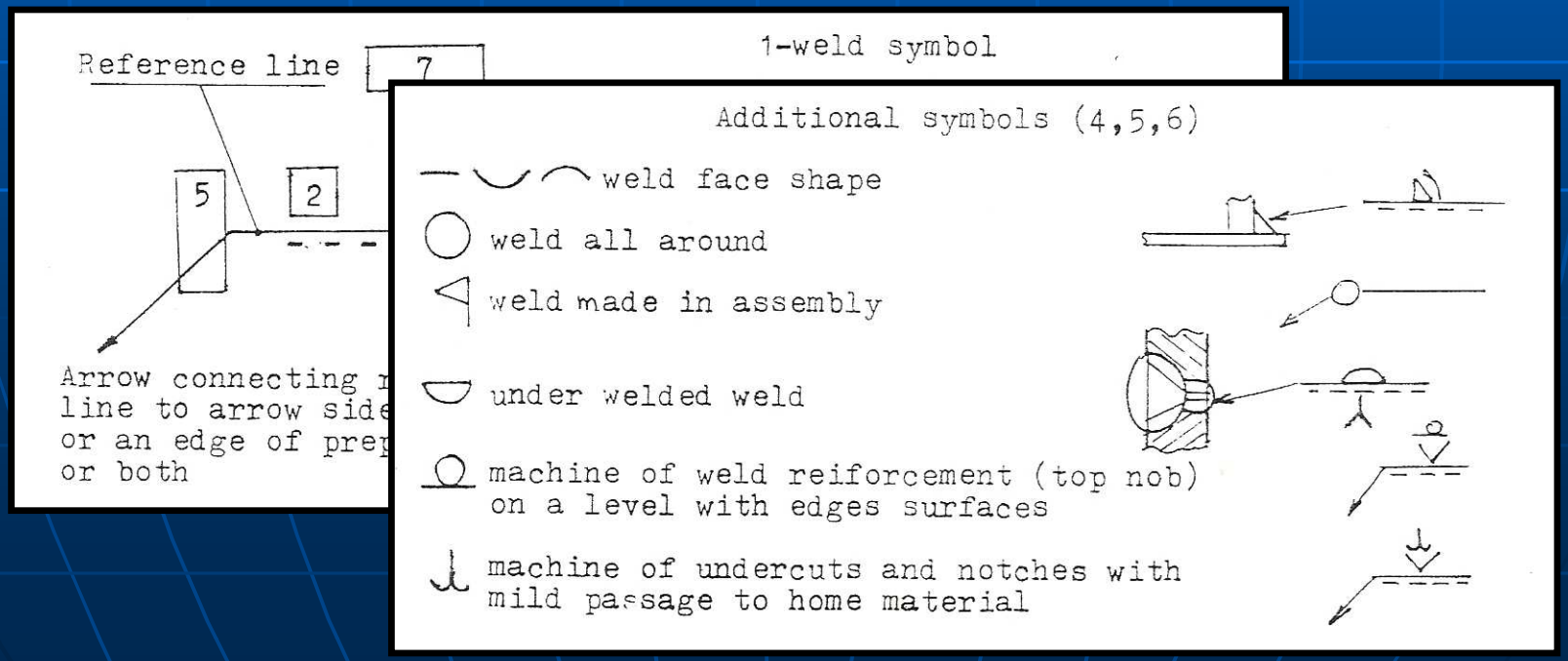
Dimensioning of welded elements

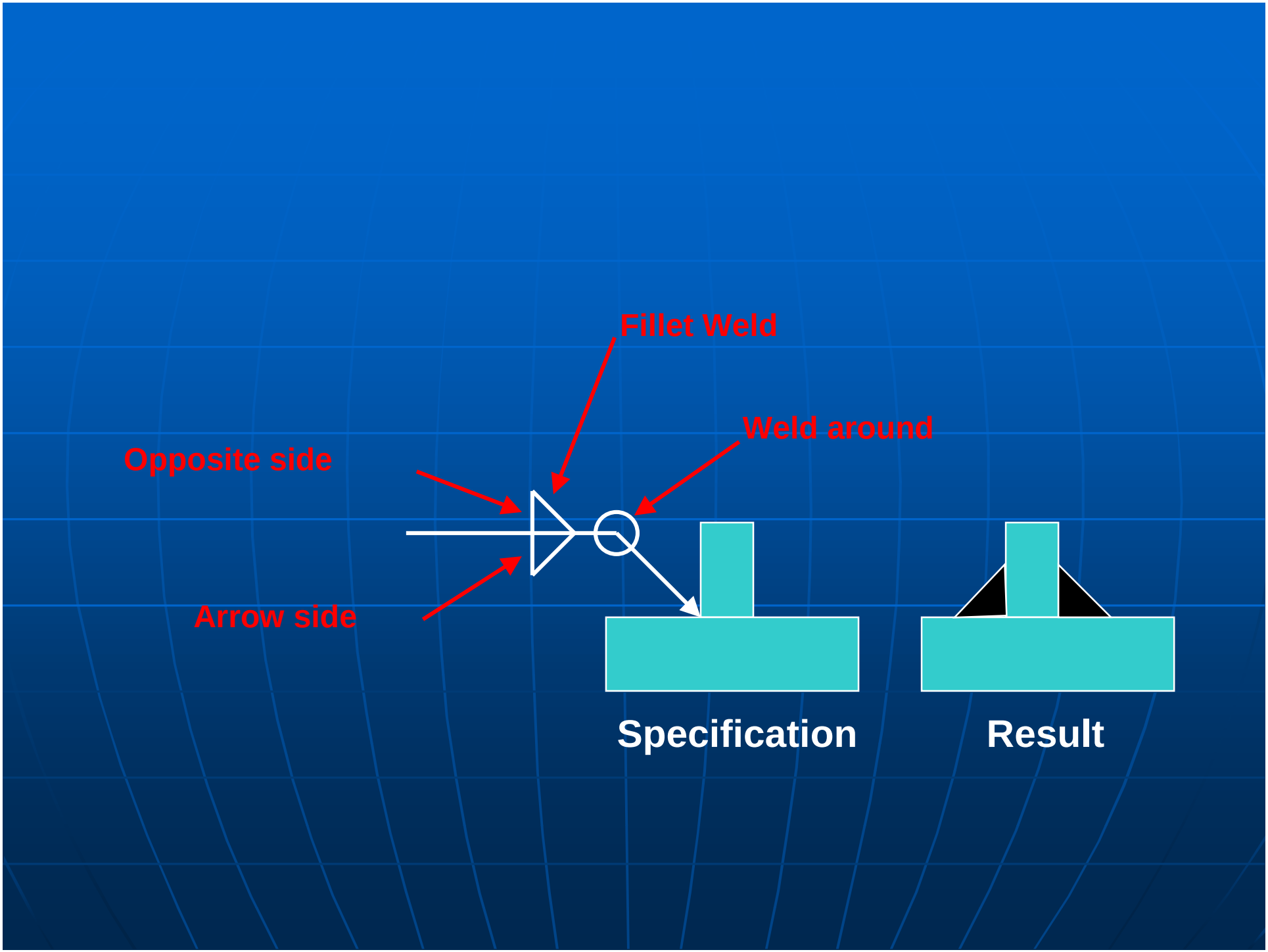
The fusion welds can be divided into two types:

- butt welds
- fillet welds



Symbol of welds:

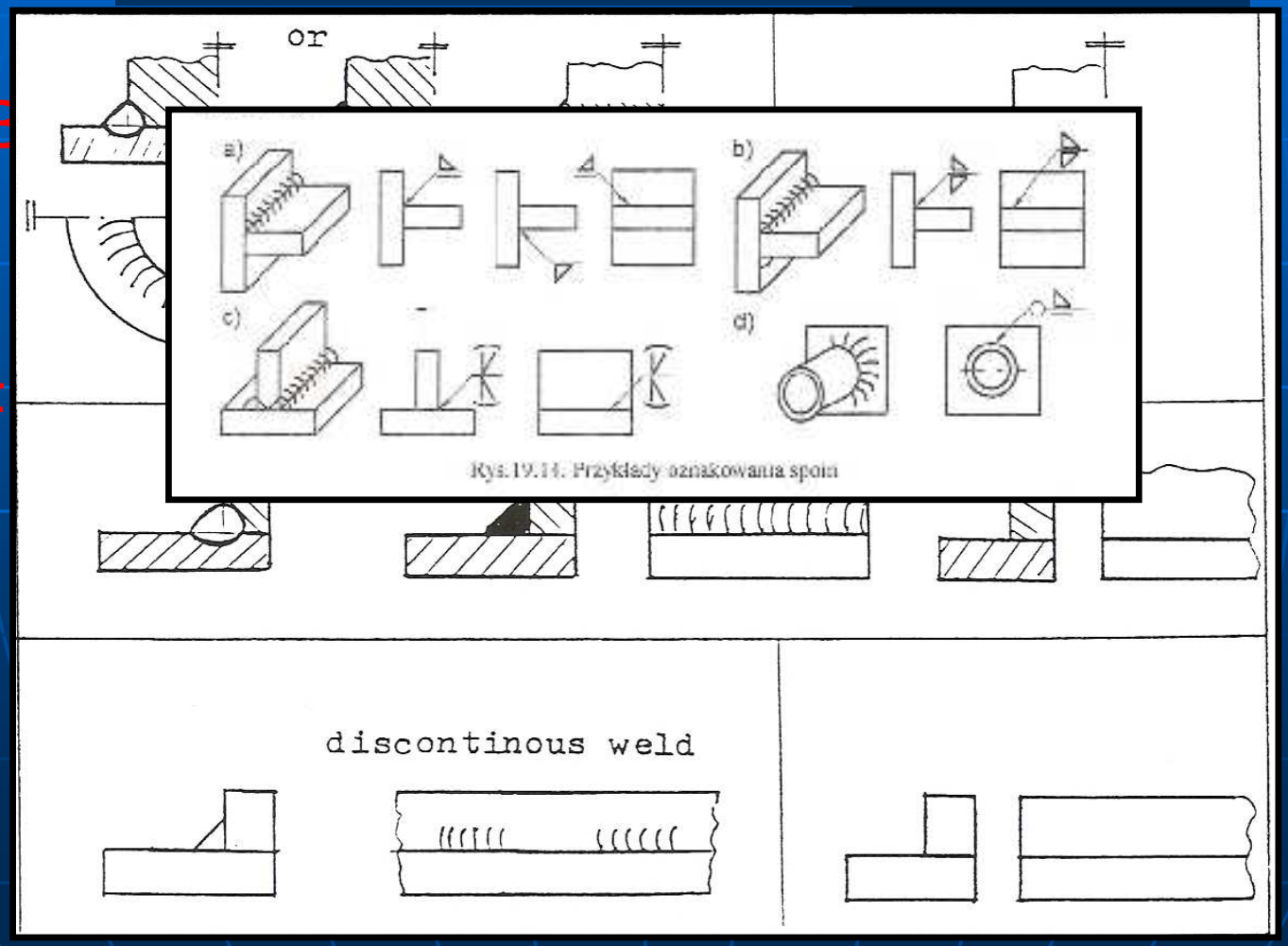



Fillet Weld
Weld around
Opposite side
Arrow side
Specification
Result

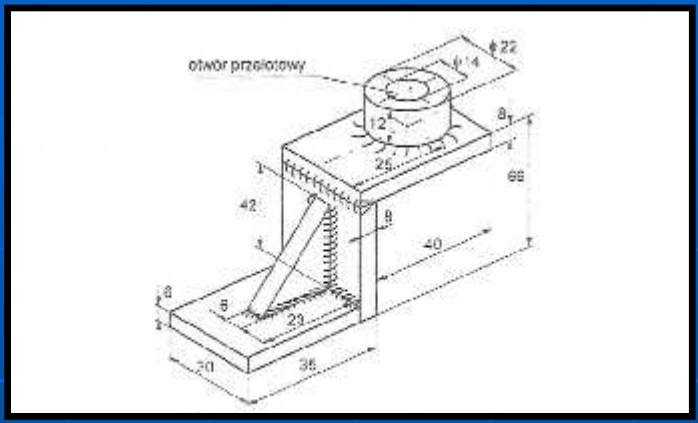
Dimensioning of welded elements

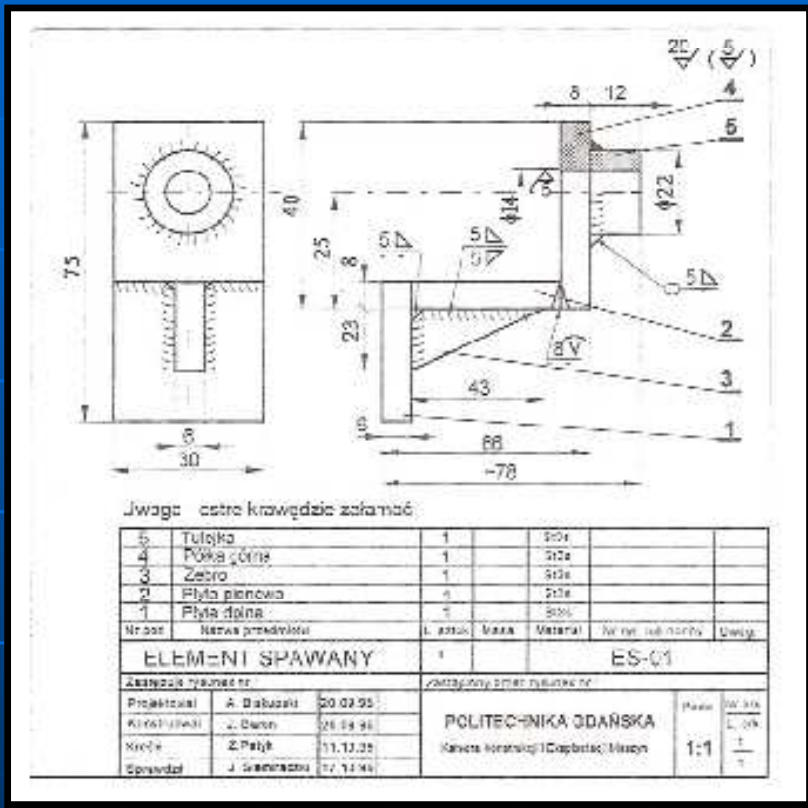
Simplification :ation

Agreed d way



Dimensioning of welded elements





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