

ALUMINIUM CRUCIBLE FURNACE TO SUPPORT THE CASTING COMPETENCIES AT SMK OF MECHANICAL ENGINEERING DEPARTMENT IN YOGYAKARTA

by Arianto Leman S., Tiwan, Mujiyono

ABSTRACT

Decree of Director General of Secondary Education Ministry of Education and Culture number: 7013 / D / KP / 2013 dated December 4, 2013 on Spectrum's expertise SMK stated that Metal Casting Technique is one of competencies that must be owned by a Mechanical Engineering Program graduate. However, the vocational schools at Yogyakarta province does not have facilities and infrastructure to do casting practice. Because of that, the competence of teachers is inadequate. Furthermore, students only have theoretical competence. This program aims to enhance the competence of teachers in casting process, especially aluminum.

The PPM activities consist of stages, that is: (1) Making the LPG-fueled crucible furnace for melt the aluminium; (2) Making the apparatus for prepare the sand mold; (3) Training of sand mold making; (4) Training of smelting and casting of aluminium. Results of the program were: (1) Two LPG-fueled crucible furnace with the exhaust as economizer. It is made from wasted drum of Ø 600 mm isolated by ceramic blanket, castable and fire bricks. The furnace also equipped by furnace frame, gas burner system and frame; (2) Apparatus of sand mold making were: casting flasks, sand plate, simple metal pattern, sand spoon, sand grader, sand compactor and pattern plucker was made. Casting flasks dimension was (250x250x100) mm made from 1,7 mm thick of steel. Sand plate dimension was (1200x600) mm made from L profile steel of (30x30x2) and steel plate of 1,2 mm thick. Simple metal pattern was made from polished and painted aluminium; (3) The competencies of teachers and technicians in aluminum casting process has been improved. Supporting facilities and infrastructure will be implemented in practice casting learning.

Kata Kunci: Facilities and infrastructure, Casting Competence, SMK, Mechanical Engineering Department