

# **Aluminium Crucible Furnace to Develop Casting Competence at SMK on Mechanical Engineering Program**

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## **ABSTRACT**

*The program is aimed at developing casting practical at SMK Muhammadiyah Prambanan Yogyakarta. The program consists of three activities, that is: (1) developing aluminium crucible furnace with capacity of 15 kg; (2) developing gas fueled aluminium crucible furnace; (3) SMK Muhammadiyah Prambanan teachers capable to operate aluminium crucible furnace.*

*Research and development method was used to develop aluminium crucible furnace with steps as follows: (1) the needs analysis, (2) design, (3) tools and materials preparation, (4) the furnace making, (5) first trial, (6) evaluation; (7) revision; (8) second trial, (9) evaluation; (10) revision; (11) performance test; (12) Implementation at SMK Muhammadiyah Prambanan. Training on crucible furnace operation and aluminium casting for SMK Muhammadiyah teachers was done using demonstration and lecture method.*

*The program result is (Ø600x500) mm crucible furnace with capacity of 15 kg melting aluminium. The furnace need 2,7 kg of LPG gas and 55 minutes to melt 8,6 kg of aluminium. SMK Muhammadiyah Prambanan teachers are trained to operate the furnace. They are also trained to make sand mold so they can trained their students. Daily and special maintenance of the furnace were also well understood. The program was very useful in understanding of casting process and developing of casting competence at SMK Muhammadiyah Prambanan.*

*Kata Kunci: Crucible furnace, Aluminium, Casting competence, SMK, Mechanical Engineering*