

Thesis Title Optimization of Gas Metal Arc Welding Parameters
for Steel ST 37 Using Response Surface Method

Author Mr. Pikit Duangmala

Degree Master of Engineering (Industrial Engineering)

Thesis Advisor LECT. Dr. Uttapol Smutkubt

ABSTRACT

The purpose of this research was to determine the optimal factors of Gas Metal Arc Welding (GMAW) process. Firstly, a full factorial (2^4) experimental design which consisted of 2 levels was used. All four factors, which were current, volt, speed and gas shielded, were searched to find the important parameters, which exhibited the significant tensile of weldment. After that, the Central Composite Design (CCD) experimental design was used to analyze data and find our the optimization of important parameters.

The experiment used Hobart welding machine model FABSTAR-2620, electrode type Yawata YM-28 and 11 liters per minute of gas shielded. The research methodology was to prepare the welding specimens for testing mechanical quality by using tensile.

The result of the experiment at the level of the statistical significance with α level of 0.05, the optimal conditions was 125.00 amp. of current, 27.00 volt. of volt and 14.20 inch per minute of speed. The optimal of tensile test was 599.379 N/mm^2 .