BASIC ELECTRIC ARC WELDING TRAINING COURSE

MANUAL METAL ARC WELDING

A. INTRODUCTION

The Training Course is primarily intended for Engineer Officers who will be involved in electric welding works for the repair and maintenance on the vessel.

It has a limited duration of 3 days, combining theory and hands-on training, with a focus on materials and welding works, commonly done on a ship.

The delivery of this Training Course marks the cooperation of the ATHINA MLDC with the Technology and Quality Control Center (TQCC), in the area of electric arc welding training.

B. LEARNING OBJECTIVES

On completion of the seminar, the participating Engineer Officers, will be able to:

- Make fillet and groove welds in a variety of positions.
- Safely and correctly use the MMA Welding Machines.
- Recognize weld faults and identify the methods required to rectify.
- Decide of the type of electrodes to be used, adjust the arc and prepare the wedges to be welded.

C. TIME TABLE

DAY 1

Time	Topics
08:45 - 10:00	**Introduction to Arc Welding** • Arc Welding processes in metal fabrication, ship repair and maintenance • Basic Principles of Manual Metal Arc Welding • Setting of welding parameters
10:00 - 11:00	**Welding Equipment, Accessories and Tools** • MMA Machines, Constant Current, Duty Cycles
11:00 - 11:15	*Coffee Break*
11:15 - 13:00	**Welding Discontinuities and Acceptance Criteria** • Examination of cut surfaces and prepared base metal parts • Examination of intermediate layers and completed welds
13:00 - 13:45	*Lunch Break*
13:45 - 14:30	**Steel Properties and Standardization** • Ship building steel and steel applications in machinery
14:30 - 15:15	**Selection of Electrodes** • Function of flux coating and types of coatings • Classification of electrodes, storage, re-drying, deterioration
15:15 - 16:30	**Safety during Welding** • Types of Hazards • Welding fumes control, radiation, electric shock, burns. • Personal Protective Equipment

DAY 2 & DAY 3

Time	Practical Exercises
08:45 - 16:30	• Demonstration and Practice of Welding • Welding of Specimens in ATHINA MLDC Booths

D. TRAINING FACILITIES

The training course will take place at the ATHINA MLDC Training Facilities/Electromechanical Laboratory.

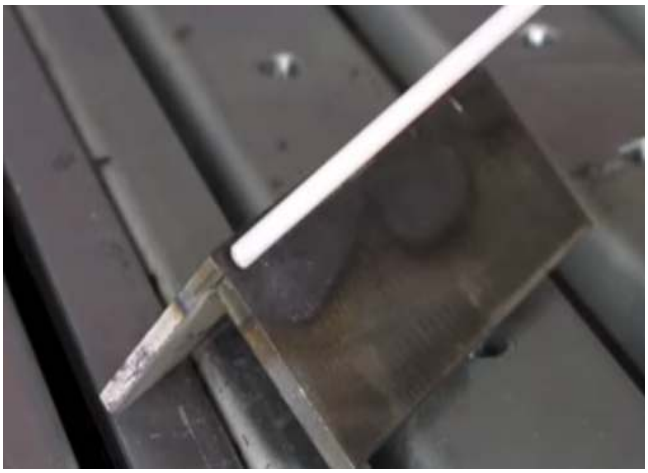
There are (4) fully-equipped, side-to-side, arc welding booths with metal benches, on which, the work pieces can be cut/grinded and welded. Each booth has its own extraction hood to draw away the fumes from the welder, an arc welding machine (inverter based welding rectifier, 200 A), hand tools, including portable angle grinders, etc. A classroom, near to the working booths, is available for hosting the theoretical part of the course.

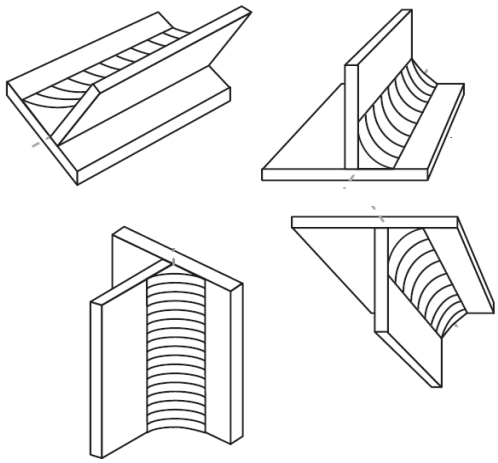
Facility	Equipment	Open Circuit Voltage	Number of Trainees
Electrical Welding (MMAW)	(4) Fully equipped MMAW Booths with exhaust fan	200 A	Max (2) per booth

E. THE TRAINERS

The Technology and Quality Control Center (TQCC) is based in Greece, and its main activities include certified training and consultancy services on Welders' Training and Supervising, Non-Destructive Testing and Welding Processes Specifications.

Two TQCC Trainers, a Welding Engineer Level 3, and a Certified Welder with a long experience in new buildings and ship repairs will carry out the training course.





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