



# A 6-MONTH WELDER SKILL TRAINING & CERTIFICATION COURSE TO SMAW 6G & GTAW 6G POSITIONS

## **INTRODUCTION**

Welding is an important process in all major Industries. ISO 9000 – 2008 QMS classifies welding as a process and as such all personnel involved in a welding process must undergo **mandatory** training, qualification and certification. The students/trainees/participants are given 3 months intensive training on practical and theory on welding technology. After passing the welding skill assessment I, each welder trainee will be given the opportunity to have another 3-month internship exposure to actual welding practices and environment. With this training, they will be finally undergoing the 2<sup>nd</sup> certification assessment to be a certified welder.

This course is carefully designed to offer necessary theoretical and practical exposure welding process. The lessons are planned to enable the participants to easily graduate to be a confidently certified 6G **SMAW** welder. A Certificate of Completion on Welder Skill Training will be awarded by the training centre to the welder after having successfully passed the evaluation/assessment of welder qualification test (WQT) coupon prepared as per the requirements of AWS D1.1, ASME IX, BSEN 287, ISO 9606-1 together with a Certificate of Competency that is officially issued by **Bureaus Veritas (BV)**, an authorized third party inspection authority, that is recognized internationally and will enable the certified welder to find the skill job in the relevant industry domestically and internationally.

## **TARGET GROUP :**

- (1) All trained welders who require certification and/or re-certification;
- (2) Retrenched workers who are keen to work as trained & certified skill welders;
- (3) All fresh school-leavers who have reached 17 years old and are interested in taking up welding technology as their future career development.

## **SEMINAR MATERIALS :**

- (i) Hard cover file with notes and exercises
- (ii) Case study & practical materials

## **DURATION / TIME**

A Total of 6-month welder skill training and certification as detail below.

- (a) Three (3) months: intensive training on theory on welding technology and practical training on welding techniques.
- (b) A further 3-month internship exposure to actual welding practices and environment.

## **CERTIFICATE:**

- (a) A Certificate of Completion on Welder Skill Training will be awarded by the training centre upon successful completion of welder skill training course.
  - (b) a Certificate of Competency that is officially issued by **Bureaus Veritas (BV)** after having successfully passed the evaluation/assessment of welder qualification test (WQT) coupon prepared as per the requirements of AWS D1.1, ASME IX, BSEN 287, ISO 9606-1.
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## **Advance Metallurgy & Welding Technology Sdn Bhd**

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### **Module – 1**

#### **ENGLISH LANGUAGE TRAINING**

- 1) Technical English
- 2) Conversational English
- 3) English Language Assessment

### **Module – 2**

#### **SAFETY and HEALTH in WORKING ENVOIRMENT**

- 1) Unsafe act and unsafe condition
- 2) Fall protection
- 3) Safety precautions in welding
- 4) Health hazard due to toxic fumes and gases
- 5) Working in confine space
- 6) Industrial Fires
- 7) Safe workshop practice
- 8) Case studies & workshop practice.

### **Module – 3**

#### **SHIELDED METAL ARC WELDING ( SMAW )**

- 1) Introduction and Principle of SMAW
- 2) Process Characteristics
- 3) Mode of Operation.

### **Module – 4**

#### **POWER SOURCE**

- 1) A.C. Arc
- 2) D.C. Arc
- 3) Straight Polarity ( DCSP )
- 4) Reverse Polarity ( DCRP )
- 5) Rectifier Base.
- 6) Thyristor Base.
- 7) Inverter Base.
- 8) Multi Operator Type
- 9) Duty cycle.
- 10) Open Circuit voltage ( OCV )
- 11) Welding Accessories.
- 12) Maintenance of Welding Equipment



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### **Module – 5**

#### **ELECTRODES**

- 1) MMAW ELECTRODES
- 2) Function Of Flux Coating
- 3) Types Of Electrode Coating
- 4) Cellulosic Type
- 5) Rutile Type
- 6) Acid Type
- 7) Acid Rutile Type
- 8) Oxidizing Type
- 9) Basic Type
- 10) Classification and Coding Of Electrodes
- 11) Handling and Storage Of Electrodes

### **Module – 6**

#### **WELD DEFECTS IDENTIFICATION & REMEDIES**

- 1) Porosity
- 2) Lack Of Fusion
- 3) Lack Of Penetration
- 4) Undercut
- 5) Cracks
- 6) Slag Inclusion
- 7) Overlap

### **Module – 7**

#### **WELDING PROCEDURES AND TECHNIQUE**

- 1) Typical Procedure Sheet for MMA Welding
- 2) Types of Joints
- 3) Welding Positions
- 4) Welding Technique

### **Module – 8**

#### **INSPECTION AND TESTING**

- 1) Before welding
- 2) During welding
- 3) After Welding
- 4) Visual Inspection
- 5) DT & NDT



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### **Module – 9**

#### **STANDARDS AND PROCEDURES**

- 1) American and British Standards
- 2) BSP Procedures
- 3) Company Procedures
- 4) WPS
- 5) PQR
- 6) WPQT

### **Module – 10**

#### **CODES AND STANDARDS**

AWS D 1-1: Structural Welding Code – Steel

AWS D 1-2: Structural Welding Code – Aluminum

AWS D 9.1: Sheet Metal Welding Code

ASME B 31.1: Code for Pressure Piping, Section on Power Piping

ASME B 31.3: Chemical Plant & Petroleum Refinery Piping

ASME IX: Boiler and Pressure Vessel Code (BPVC),

Section IX: Welding, Brazing, and Fusing Qualifications: Qualification Standard for Welding, Brazing, and Fusing Procedures;

Welders; Braziers; and Welding, Brazing and Fusing Operators

API 1104: Welding of Pipelines and Related Facilities

ISO 9606-1: Qualification testing of welders. Fusion welding Steels



## PRACTICAL EXERCISE

### TOPICS:

- a) Pretest Theory & Practical to evaluate the participants level
- b) Basic Shop Floor Safety Briefing.
- c) Welding Techniques & Material Selection
- d) Preparation Of Weld Joints
- e) Practice In Welding for 1G, 3G & 6G Plates
- f) Evaluation of Welders Performance
- g) Final Qualification In 6G Welding Position
- h) Final test to gauge welders knowledge and issue of certificate

**HIGHEST QUALIFICATION IN GMAW:** 6G Welding Position.

**FINAL TEST:** To gauge welders' knowledge and issue of certificate.

### DURATION OF COURSE FOR GMAW:

#### (a) 1-3 Months:

- Up to 6G Welding Position in 3 months (classroom for welding theory + workshop for practical training).
- First Assessment: WQT before undergoing internship.

#### (b) 4-6 Months:

- If successfully passed the required initial WQT, assessed welders are allowed to undergo further 3-month internship training with a local fabricator.
- Final Assessment & Certification: All welding interns are required to take their respective final assessment for certification prior to the BV endorsement as certified welders.

**TIME:** 9.00 am – 5.00 pm

**THEORY:** 30 %

**PRACTICAL:** 70%

**BASIC QUALIFICATION REQUIREMENT:** SPM or above

**CAPABILITY:** ABLE TO SPEAK & READ BAHASA MALAYSIA.

### QUALIFICATIONS FOR WELDING CODES:

ASME Section IX, AWS D1.1, API 1104 & ISO 9606-1

**COURSE FEES:** RM 18,500.00



## REGISTRATION FORM

### A 6-month welder skill Training & Certification Course to SMAW 6G & GTAW 6G POSITIONS

Venue: Lot 908 Jalan Desa Senadin 1A, Off Jalan MaiGold, Senadin Industrial Estate, 98100 Miri, Sarawak.

#### Participants Details

<u>Title</u>	<u>Name &amp; I/C No.</u>	<u>Designation</u>	<u>Mobile Number</u>
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____
Mr/Ms	_____	_____	_____

#### Organization Details

Name of Organization: \_\_\_\_\_

Contact Person & Designation: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

\*Telephone No: \_\_\_\_\_ Fax No: \_\_\_\_\_

Email Address: \_\_\_\_\_

*\*Required information so we can contact you regarding your registration.*



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### Payment Made To

All Payments shall be made payable to “**Advanced Metallurgy and Welding Technology Sdn Bhd**” by Telegraphic Transfer (TT) / bank into our **Current Account No. : 161-101348-5 at OCBC Al-Amin Bank Berhad, Miri Branch, Sarawak Malaysia.**

Cheque payable to “**Advanced Metallurgy and Welding Technology Sdn Bhd**”

Cheque No : \_\_\_\_\_ Total Amount : \_\_\_\_\_

### Confirmation of Registration

The registration of participants must be accompanied with **FULL PAYMENT.**

Kindly complete and send in your registration form to notify us your confirmation of registration via:

Fax : +60(0)85 438196/668179

Email : [assb@akal.com.my](mailto:assb@akal.com.my)

Or you may contact us via:

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