



**Miller**

**ARC WELDING EQUIPMENT**



## *2009 Arc Exposure*

*“Passing of the Torch for the Future”*

### **Training Outline**

#### **Day 1**

- |                        |  |
|------------------------|--|
| <b>8:00 – 8:30am</b>   | <b>Introduction &amp; Safety</b>   |
| <b>8:30 – 9:30am</b>   | <b>SMAW (Stick) equipment set up</b> <ul style="list-style-type: none"><li>• Polarity, Constant amperage (CC); AC/DC</li><li>• Inverter vs. Transformer</li><li>• Duty cycle</li><li>• Electrodes Classification</li><li>• Safety equipment</li><li>• Joint designs and welding position terminology on plate</li><li>• Common welding problems: Slag, settings, connections, arc blow (Dig control)</li><li>• Welding calculators</li></ul> |
| <b>9:30 – 11:45am</b>  | <b>Lab Time</b> <ul style="list-style-type: none"><li>• Equipment overview</li><li>• Welding techniques</li><li>• Electrodes</li><li>• Welding on various joint designs and in various positions</li><li>• Clean up</li></ul>  |
| <b>11:50 – 12:00pm</b> | <b>Stick Welding Review</b>  |
| <b>12:00 – 1:00pm</b>  | <b>Lunch</b>   |
| <b>1:00 – 2:00pm</b>   | <b>GMAW (MIG) Welding Introduction</b> <ul style="list-style-type: none"><li>• Process fundamentals &amp; setup (pg.3)</li></ul>   |



# Miller®

## ARC WELDING EQUIPMENT



- Advantages of MIG welding
- Modes of transfer
- Wire speed, voltage and inductance adjustments
- Gases & gas flow
- Pre/Post weld cleaning
- Common welding problems: Wire-feed, gun liners, contact tips, gas shielding, spatter (Refer to Miller handout)
- Welding calculators
- Metal Core
- Joint designs and welding position terminology on plate

**2:00 – 3:50pm**

### **Lab Time**

- Equipment overview
- Welding Techniques
- Filler Metals
- Clean up

**3:55 – 4:10pm**

### **Review**

**4:10 – 5:00pm**

### **Questions and Answers**

## **Day 2**

**8:00 pm - 9:00am**

### **Flux Core Lecture**

- Process fundamentals
- Advantages of flux core
- Wire classifications (Hobart)
- Gas shield vs. self shield
- Certifications
- Joint designs and welding position terminology on plate

**9:00 – 11:00am**

### **Lab Time: Fluxcore Welding**

- Equipment overview
- Welding Technique
- Welding on various joint designs and in various positions
- Clean up

**11:00 – 11:20am**

### **Review: Questions and Answers**

**11:20 – 12:00pm**

### **Introduction to Tig Welding (Video)**



# Miller®

---

## ARC WELDING EQUIPMENT



**12:00 – 1:00pm**

**Lunch**

**1:00 – 2:00pm**

**GTAW (TIG) Welding Introduction**

- TIG power source, Constant Current (CC)
- Polarity
- High Frequency
- Balance: Square wave vs. Sine wave
- AC Frequency
- Controls: Foot control, Hand control
- Pulse TIG welding
- Torches: Air cooled, Water cooled
- Tungsten electrodes
- Gases
- Joint designs and welding position terminology on plate
- Common welding problems: Skill Level, process variables, material pre/post cleaning

**2:00 – 4:15 pm**

**Lab Time: Tig Welding**

- Equipment overview
- Welding Techniques
- Welding on various joint designs and in various positions
- Clean up

**4:15 - 4:30pm**

**Tig Review**

**4:30 -5:00 pm**

**Certificates of Completion / Conclude**



# Miller.

## ARC WELDING EQUIPMENT



### January 14, 2009 - Industry Tours:

	Group # 1	Group # 2
<b>Registration Time:</b>	N/A	7:00 AM
<b>Departure Time:</b>	6:45 AM	8:30 AM

Tour Schedules:	Group # 1		
	Start Times:	End Times:	Locations:
	8:30 AM	9:20 AM	Lyles Mechanical
	10:50 AM	11:40 AM	Metal Works
	12:10 PM	1:00 PM	PG&E at Butte College Welding Shop
	1:05 PM	2:00 PM	Lunch - Welding Facility
	Group # 2		
	Start Times:	End Times:	Locations:
	8:30 AM	9:20 AM	Metal Works
	10:50 AM	11:40 AM	Lyles Mechanical
	1:00 PM	1:55 PM	Lunch - Welding Facility
	2:00 PM	3:00 PM	PG&E at Butte College Welding Shop

	Group # 1	Group # 2
<b>Questions &amp; Answers:</b>	2:15 PM	3:15 PM
<b>Departure Time:</b>	3:30 PM	4:30 PM

### Sponsored By:

