

Date Wed, 26 Jan 2000 145426 -0600
From John Hjortshoj hjort@ameslab.gov
Subject: Ames Blue Alert- Arc Melting Concerns

To: Supervisors and users of Arc Melting Equipment
From: John Hjortshoj
Chair, Electrical Safety Committee

Title: Ames Blue Alert- Arc Melting Concerns

Recently a student received a small burn on her hand while being trained to use an arc melter. The Electronics shop evaluated the welder power supply, the arc melter chamber and associated parts and found nothing defective. Although resistance tests showed good continuity between the movable parts of the electrode holder, we have bonded the parts together with a braided flexible strap to eliminate arcing between parts.

The exact cause of the burn is unknown. One possibility is arcing inside the metal bellows caused localized heating of the area she was holding. The power supplies use RF energy to help start the arc and during the short period the RF is on arcing to grounded surfaces can occur.

Therefore, it is recommended that supervisors and users review operating procedures and hazards associated with this equipment. The following is a list for your consideration

1. Wear dry insulating gloves (welders gloves) as recommended by the welder manufacture. Leather protectors worn over electrical insulating gloves provide additional protection and are recommended for trainees learning the process of manipulating the probe. Electrical insulating gloves and protectors are available to check out at the Electronics Shop, 258 Metals Development.
2. Insulate, guard or shield as much of the electrically conductive parts as possible.
3. Do not allow the operator to become electrically grounded.
4. Keep internal parts clean and free of carbon buildup. Make sure the contact to the hearth plate is clean and free of oxidation.
5. Ensure the material being melted is an electrical conductor at room temperature. If not, specialized techniques must be used. (Contact Larry Jones or John Wheelock)
6. Keep the movable electrode as close as possible without touching the hearth at startup and establish the arc quickly to the work piece.
7. Make sure proper eye protection is in place before striking the arc.

If you have any questions concerning arc melting equipment electrical safety please call John Hjortshoj at 4-4823. Questions about arc melting procedures and techniques should be directed to Larry Jones at 4-9809 or John Wheelock at 4-5816.

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