WELDING PROCEDURE

STEP 5

- Bring the flame close to the part to remelt Technopowder MB40. When the powder melts, a glassy puddle will appear. Bring the rope near and angle the flame towards the rope in order to melt the matrix.
- The molten rope flows onto the part. Point the flame at the part again, giving it a continuous rotational movement to spread the heat uniformly. Adjust the angle of the flame according to the mass of the part being hardened so that the part can be heated at the same time as the rope. Always start by welding the edges of the area to be protected, if it has any.
- In order to protect a surface, proceed in stages: mark out the area to be protected with rope. Next, space each rope about 20 mm (1 in) from the previous one. Fill in the space by welding, then repeat.
- The rope must “wet” correctly and not form any “drops.” In this case, there would only be a cold lap.
- If the temperature is not adequate, if the part is oxidized, or if the part is inadequately prepared, the rope will “roll” in the form of drops on the surface of the part.
- Do not attempt to hardface the entire part in a single operation. Organize your work in several stages (fig. 5 et 6). Apply the first rope to the edges and then to the surface being hard-faced (see photos opposite) (fig. 2).
- For a thin edge, use a 4-mm rope. For a large surface with a substantial thickness, use an 8-mm rope (fig. 4).
- If you need to grind the hardfacing: grind hot before cooling.
- Turn off the torch: first turn off the acetylene and only then the oxygen.
- Large-diameter rope: 6 and 8 mm allow for thicker deposits.

END

**General rules**

- This deposition is always done in a flat position.
  - On a new part, the powder must melt before the rope is deposited (fig. 5, 6, 7 et 8).
  - On a part already coated with Technodur or Technosphère, the matrix of the previous deposit must melt. The base metal temperature is 350°C/400°C (662°F/752°F) (fig. 5, 6, 7 et 8).

**Equipment**

Technokit 2000 torch with rope applicator to be chosen according to the dimensions of the part and the thickness of the deposit to be applied (fig. 5).

- For a part that is greater than 10 mm thick, use rope applicator No. 5.
- For a part that is less than 10 mm thick, use rope applicator No. 4.

**STEP 4**

- First turn on the acetylene and only after that the oxygen.
- Neutral flame.

**Recommended pressures (Technokit 2000) :**
- C₂H₂ (acetylene): 0.8 to 1 bar (11 PSIG)
- O₂ (oxygen): 4 to 5 bars (50 PSIG)

**Local temperature of the part: 400°C (752°F).**

**The matrix of the rope melts at about 1050°C (1922°F).**
1) Equipment

Technokit case: TECHNO 2000

- TECHNOGENIA Torch Kit in complete set
- Takes only the tiniest amount of time, so that its superior wear properties are not compromised.
- The torch consists of a torch with several size tips and a powder attachment to deposit the pre-welding powder to prevent base metal oxidation. All Techno-génia tips and powder can be welded using this torch. In addition, the torch is well-balanced for ease of use and easy maintenance.

Protective Gear

- **Welding gloves:** relatively thick protective gloves made of leather or cotton are recommended.
- **Leaves:** a shade made especially for oxy-acetylene, shade 5.6 works well. For grilling, a clear shield is recommended.
- **Face mask:** Unlike many traditional welding procedures, the application of Technosphere and Technodur produces no smoke or harmful fumes. It is recommended that hearing protection be used especially while grilling.

**Acetylene and oxygen tanks**

- Because of the rapid draw of acetylene a manifold of at least 2 tanks is preferred. The manifold allows the acetylene to be drawn from the tanks without the risk of freezing occurring along with the gas, which causes the flame temperature to decrease and welding to become difficult. It also helps in drawing all the acetylene from the tank. A single bottle of oxygen works well.

Positioner and/or clamps

- These make it possible to secure and manipulate the part. The welding operations are done with the part in a flat position. A positioner is indispensable for hard-facing work on the blades of a brick plant, for example.

Grinder

- Clean area to be surfaced to bright metal.

2) Preparation of the part

**Caution:** this step is very important and must not be skipped under any circumstances.

Cleaning the area to be welded to a bright metal condition and maintaining it in that condition while welding is most important.

**STEP 1**

Securely attach the part to an adequate support (fig. 1).

**STEP 2**

Grinding or sand-blasting of the part to remove any traces of oxidation on the area to be hard-faced (fig. 2 at 3).

**STEP 3**

“Break” any edges, if necessary, to avoid any corner effect and oxidation beneath the deposit, if protection of the edges is called for (fig. 4).

**Tips and tricks**

- **Break** any edges, if necessary, to avoid any corner effect and oxidation beneath the deposit, if protection of the edges is called for (fig. 4).
- **Lenses:** No lenses are necessary.
- **Neutral or slightly reducing flame.**
- **Tips:** Long yellow sparks:
- **Short red sparks:**
- **Working distance:** about 10 cm (4 in) between the end of the spray gun and the part (fig. 3).
- **Recommended pressures (Technokit 2000) (fig. 4):**
  - H (acetylene) 2 bar/28 Psig
  - O (oxygen) 5 to 6 bars/50 Psig
- **Tips and tricks**
  - Powdering is not necessary when Technodur or Technosphere is still present on the part. Good sand-blasting or grinding is sufficient. The part must be “clean”.

3) Powdering of the part

The first time hard-facing application of a new part, powdering is indispensable.

- Powdering is done in a flat position on the surface to be hard-faced after preheating the area to 150°C (302°F).
- **Tips and tricks**
  - As the base metal starts to turn straw-colored, the powdering can begin. Otherwise check the temperature with an appropriate thermometer (fig. 2).
- **Equipment**
  - The Technokit 2000 torch with powder spray gun to be chosen according to the dimensions of the part (fig. 5).

Technogénia MB 40 powder.

- Fusing temperature: 150°C (302°F).
- A light dusting of powder covering the entire area to be protected is sufficient. The powder must not blacken (fig. 2).
- While grinding, a dust mask is recommended (fig. 3).
- **Neutral or slightly reducing flame.**
- **Recommended pressures (Technokit 2000) (fig. 4):**
  - H (acetylene) 1 bar/11 Psig
  - O (oxygen) 5 to 8 bars/50 Psig
- **Tips and tricks**
  - Powdering is not necessary when Technodur or Technosphere is still present on the part. Good sand-blasting or grinding is sufficient. The part must be “clean”.

**WELDING PROCEDURE**