A glass melting Furnace is constantly subjected to different types of erosions and other problems during its campaign, which often lead to major Furnace damages. Cold repairs, apart from being costly, are also associated with large non-production periods. Hot Repair solutions are preferred to extend the Furnace life without interrupting the production.

Beginning of 2008, Hotwork International established a Hot Repair Department for the Glass Industry providing also Ceramic Welding solutions. Ceramic Welding can be used for preventive maintenance or in case of emergency refractory repairs.

**Principle of Ceramic Welding:**

- A mixture of ceramic and metallic particles are driven by oxygen flow and projected onto the hot Refractory Surface which requires the Repair.

- The exothermic Reaction at the point of impact melts the projected powder and the Refractory Surface, creating a bond very similar to the effect of metallic welding.

- It results in a fusion, bound to the Refractory.

- Gaps and holes are filled up with the Ceramic Welding powder until the original state.

- The Ceramic Welding is operated from the furnace outside with long welding lances.

- These welding lances are custom made in our workshops to fit any requirement.

- The nozzle of the lance can be angled in order to reach any position and to weld in to any direction.
- During the operation of Ceramic Welding our crew can look inside the furnace directly or if required via Camera Lance or through endoscopes.
- All equipment, material, lances, machines are maintained in our workshops and pre tested to any operation by our high quality standards.

**Hot Repairs and Ceramic Welding are available for:**
- all types Glass melting Furnaces
- all types of Refractory e.g.:
  - AZS
  - Silica
  - Mulite
  - Alumina

**Inspection of the Furnace condition prior to Hot Repair:**

Furnace Inspection with water cooled Camera Lances allows the Hot Repair engineers to indentify damages on the inner furnace as well as potential Damage. The Camera Lances are used with different lenses and angles enabling a wider range of observation and therefore obtaining more precise information.

After Inspection has been made and damages have been identified, the Furnace operator will receive a detailed report and evaluation including repair solutions and recommendations.

**Hydraulic Chainsaw:**

The Team is equipped with a wide range of tools to work free and easily at any Furnace. In order to install the welding equipment and to enter the Furnace with the welding lance, a special Hydraulic Chainsaw can be used. With its diamond cutting chain, the crew is able to set up an opening at any position on the furnace in a very short time. This opening can be closed easily because of the precise cut.

Furthermore the Chainsaw can be used to cut any refractory in hot and cold condition for any repair, replacement or installation.

**Furnace Drilling:**

**Bubbler / Electrode / Thermocouple installation**

Hydraulic or Pneumatic drills are used with special diamond compounded core drill bits to drill in hot condition.