EXPLOSIVE WORKING OF METALS

PROCESSING OF METALLIC AND NON-METALLIC MATERIALS USING EXPLOSIVES

Explosive processing of materials belongs to the realm of real experts in energetic materials. The energy of explosives is successfully utilized in explosive processing of metallic and non-metallic materials. Dynamic pressures induced by detonations are applied at volume forming, press forming, welding, hardening, stamping or cutting of metallic or even non-metallic materials.

OZM Research is capable of developing and manufacturing explosion-welded bimetallic and multilayer metallic materials. Components are usually produced in close cooperation with the customer. We offer cooperation in development of methodologies, explosives and explosive devices intended for processing of metallic and non-metallic materials.

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VER.1.0

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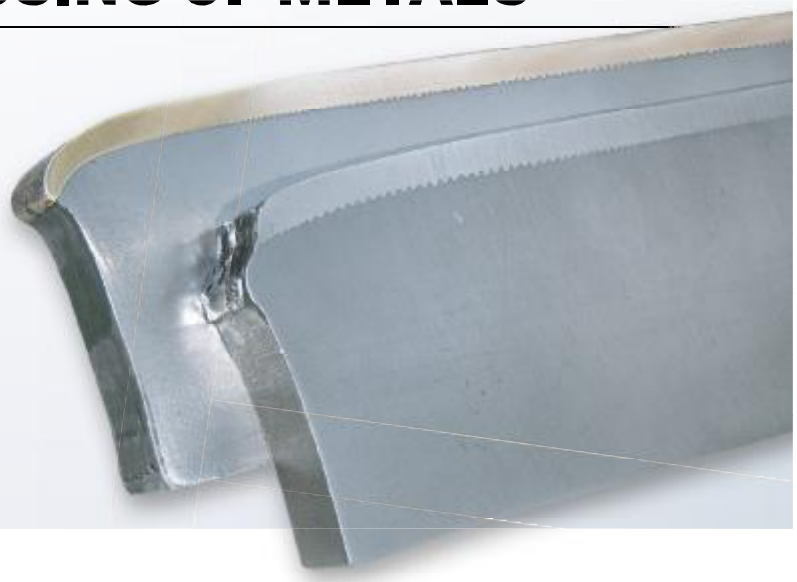
In explosive welding, such a tremendous amount of force is applied that metals (and in some cases even nonmetals), which are typically difficult or even impossible to weld by conventional means, are completely joined.



PROVIDED SERVICES

- The **explosive welding** (explosive cladding) technology allows to form a firm weld between the same metals, as well as between metals of very different physical-chemical properties. It is possible to create spot or seam welds, but this technology is especially beneficial for creating homogeneous full-area welds between metallic sheets or plates.
The technology of **explosive welding** of metals amplifies traditional metallurgical procedures for preparation of multilayer metals. in some cases, this is the only method allowing to obtain metallurgical welds of specific metal combinations, which cannot be achieved using other methods of welding or melting processes.

- **Explosive hardening** of metallic materials is another widely used technology. The power of the explosive's shockwave is used to improve mechanical properties of metal structures such as railroad crossing frogs, grinding and crushing parts of machines or other parts which are made of manganese (Hadfield) steel.

Tantalum - Copper explosive welded interface


Application of the sheet explosive during railway frogs explosive hardening

APPLICATIONS

- Explosive hardening of manganese-steel construction elements
- Semi-products for manufacturing the tube plates for heat exchangers
- Bimetallic or multilayer sheets
- Wear resistant materials
- Workpieces to be rolled down
- Structural transition joints
- Semi-products for glass moulds
- Tube to tube-plate explosive welding and fixing

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