The Peerian Journal
Open Access | Peer Reviewed
Volume 5, April, 2022.
ISSN (E): 2788-0303
Website: www.peerianjournal.com
Email: editor@peerianjournal.com

Technological Nature and Equipment of Laser Welding

Turdiyev Abdurasul Xalilovich,
Thermal Engineering Institute, assistant.
Abdullayev Jo'ra Xudoyorovich,
Thermal Engineering Institute, assistant.

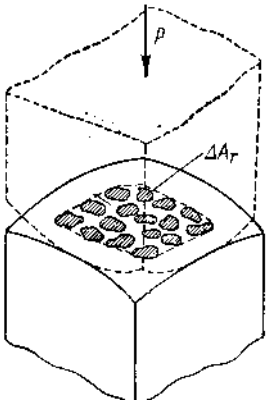
Annotation: This article discusses melting methods, their uniqueness, nature, and technology.

Keywords: welding, melting, atom, power, metal, compression.

Welding is a technological process that creates an integral part of the inter-atomic combination between plastic deformation of metals, alloys, and various materials or heating between the combined parts.

The intermolecular force from all these globe globe! It turned out that the detailed metal has atoms on the surface, free, unsaturated connections, which include various atoms and molecules that are at the distance of inter-atomic force. If we close the two metal details to the distance of the inter-atomic power effect, that is, at what distance they are inside the metal, we will see a whole connection of the surfaces that are attached to it. The process of accumulation occurs without energy and quickly at its own discretionary practical moment.

Some metals are not combined in room temperature not only in a simple circuit but also in a strong compression. The intermolecular force from all these filaments is enough to support more than the gecko's body weight—even when it is skittering upside down ration.

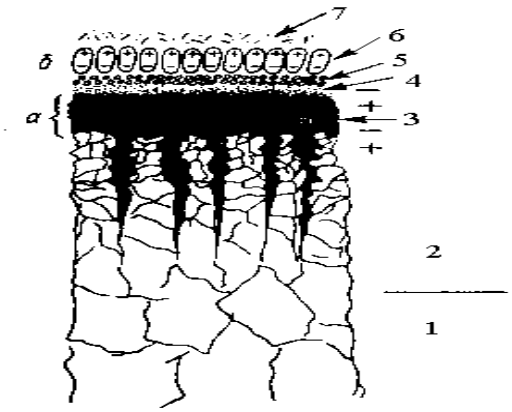


1.1-rasm. Mechanical circuit of metal detail:

ΔA_r - elementary (single) microorganism area.

The communion process is severely affected by the dirt of metal surfaces—oxides, fatty plates, etc., as well as the adsorbed layer of gas molecules, and how long clean storage depends only on the upper vacuum (1-10-8mm symbol).

The Peerian Journal
Open Access | Peer Reviewed
Volume 5, April, 2022.
ISSN (E): 2788-0303
Website: www.peerianjournal.com
Email: editor@peerianjournal.com



1.2 - Picture. Metal surface in the air:

1 – the deep layer of metal, plastic deformation was not affected; 2 - surface layer crystallitis with oxide layers; 3 - oxide layer; 4 – the adsorb layer of oxygen anions and the neutral molecule of the air; 5 - the folding of water molecules; 6 – a layer of fatty molecules; 7 – Ionized dust particles.

Laser welding can be carried out through continuous or impulsive laser beams. The principle of laser welding can be divided into heat conductivity welding and laser deep penetration welding. The power density for welding thermal conductivity is less than 105 W / cm2. At this time, the penetration depth shallow and welding speed is slow; when the power density is above 105 W / cm2, it is inserted into the metal surface"; The holes" have a fast welding speed by heating by forming a deep penetration welding. Feature of larger sides ratio.

Principle of laser welding of thermal conductivity: Laser radiation heats the surface to be processed, and surface heat is propagates through heat conductivity to the interior. By controlling laser parameters such as laser pulse width, energy, mound strength, and repeat frequency, the work part is dissolved to form the melted pool.

The laser welding machine used to weld gears and metallurgical plates mostly includes laser deep penetration welding. Below is a focus on the principle of laser deep penetration welding.

Laser deep penetration welding typically uses continuous laser beams to end the connectivity of materials. The metallurgical physical process is very similar to the charging of electronic light, i.e. the mechanism of energy replacement" through a button hole. Structure. With laser radiation of sufficiently high intensity, the material evaporates and forms small holes. This small hole, filled with steam, resembles a black body, absorbs almost all the event rays. The equilibrium temperature in the cavity reaches about 2500 ° C. To dissolve the metal around the gap, heat is carried out through the outer wall of the high-temperature cavity. The small hole is filled with a high-temperature steam, formed by constant evaporation of the wall material under the irradiation of light. Four walls of a small hole are surrounded by melted metal, and the liquid metal is surrounded by solid materials (and in conventional welding processes and laser conductivity welding, energy is first concentrated on the surface of the work part and then transferred to the place where it is processed). by transferring money). Outside of the pore wall, the flow of liquid and the surface tension of the wall layer are maintained in dynamic balance with the constantly formed vapor pressure in the cavity. Light constantly enters a small hole, and the material outside the small hole flows continuously. As the light moves, a small hole is always in stable condition. That is, a small hole around the hole wall and the melted metal move forward

The Peerian Journal
Open Access | Peer Reviewed
Volume 5, April, 2022.
ISSN (E): 2788-0303
Website: www.peerianjournal.com
Email: editor@peerianjournal.com

after the front light, filling the remaining gap after the small hole is removed, condensed, thereby forming a weld. The above process occurs quickly, which simplifies the welding rate by a few meters per minute.

Adabiyotlar

1. Abralov M.A., Ermatov Z.D., Dunyashin N.S. Hand-held welding equipment. - T.: Journal of the National Society of Files of Uzbekistan, 2012.
2. The main methods of charging The World N.S., Ermatov Z.D. o 'Learning Manual - T.: Lesson press, 2015.
3. Akulov A.I. Technology and equipment of fusion welding and thermal cutting. Textbook. - M.: Mashinostroenie, 2003.
4. Nikolaev A.A. Elektrogazosvarshchik. - Rostov-on-Don: Phoenix, 2000.
5. www.welding.com.
6. www.ziyonet.uz