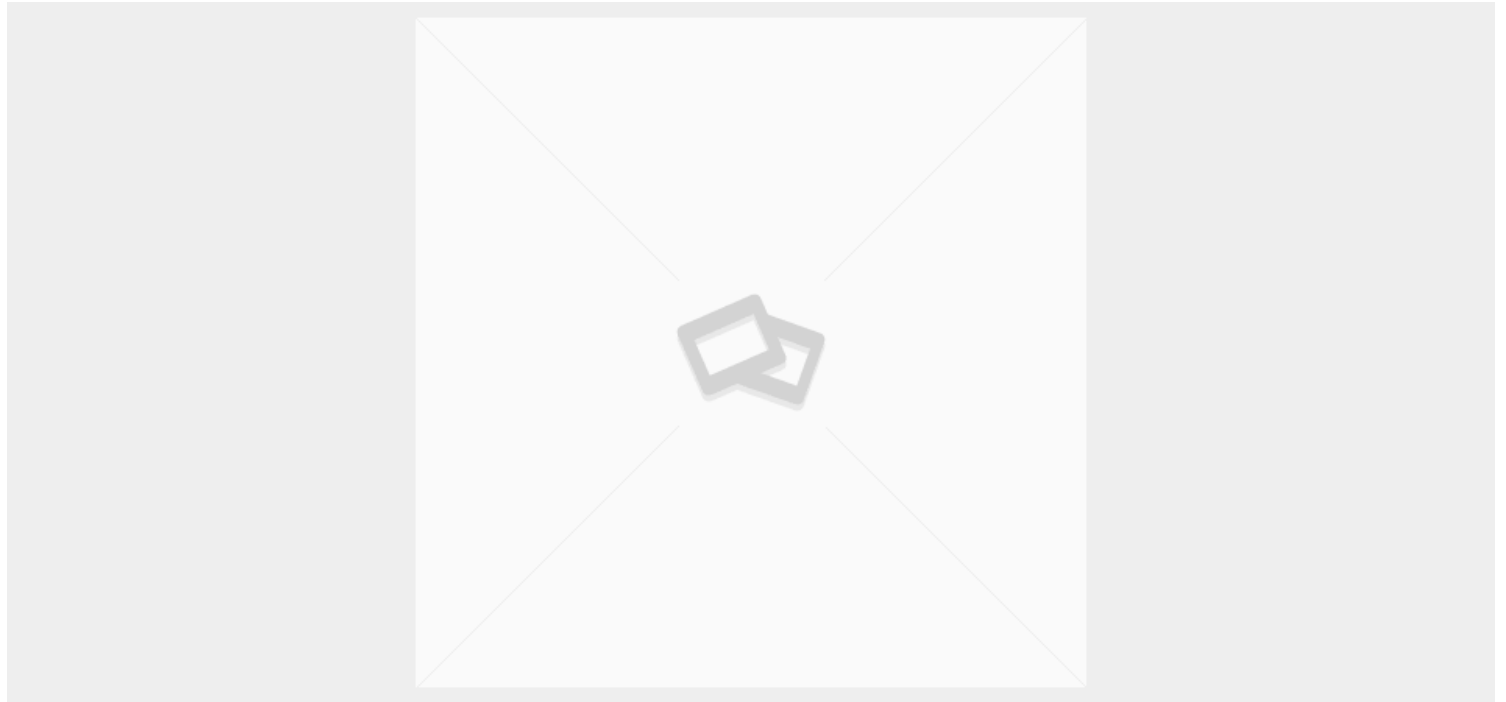


# DOES THE LASER CUTTING MACHINE EMIT RADIATION?

*Posted on 2023-05-26 by redsail*



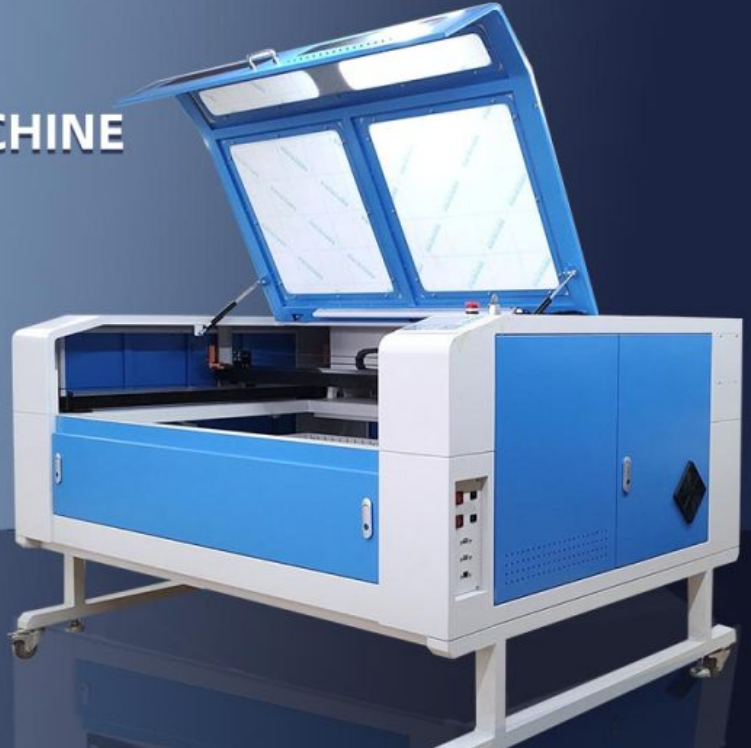
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# REDSAIL CM1390E LASER ENGRAVING/CUTTING MACHINE

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laser cutting machine

Is there radiation from the laser cutting machine?

Laser cutting machines all have radiation. The laser cutting machine emits laser light from the laser and focuses it into a high-power laser beam through the optical path system. The laser beam irradiates the surface of the workpiece, causing it to reach the melting or boiling point, and high-pressure gas coaxial with the beam blows away the melted or vaporized metal. During the cutting process of a laser cutting machine, the beam of light is focused into a small focal point through the lens of the cutting head, achieving high power density. The cutting head is fixed on the z-axis. At this point, the heat input by the beam far exceeds the heat reflected, transmitted, or diffused by the material, and the material quickly heats up to the melting and evaporation temperatures. At the same time, a high-speed airflow blows out the melted and evaporated material from the coaxial or non coaxial side, forming holes for cutting the material. With the relative movement of the focus and material, the hole forms a continuous and narrow cutting seam, completing the cutting of the material.

How much electricity does the laser cutting machine charge per hour?

The power consumption of laser cutting machines mainly includes several aspects (I refer to high-power metal laser cutting machines)

1. Laser generator (Based on the power of the generator, it is generally around. If the generator is around, the higher the power, the greater the power consumption)
2. The power consumption of mechanical components (including servo systems, NC, and various electrical components) depends on the power consumption of the motor size designed and used by the cutting manufacturer.
3. Water chiller (If used for cooling the optical path and generator, the water cooling capacity should also be matched based on the power of the generator. Generally, the above)
4. Air compressor (cutting machine manufacturers have different power requirements for air compressors, at least 5KVA or above)
5. Some manufacturers also have dust removal devices.

In summary, the maximum power consumption for one hour of laser cutting is approximately 50 degrees Celsius.

Of course, laser cutting machines cannot always operate at full power. Generally, there is a 70% discount and 30 to 40 kilowatt hours of electricity. Calculated at 1 yuan/kWh of electricity, the metal laser cutting machine consumes 30-40 yuan per hour of electricity.

### 3. Is laser cutting machine harmful to human health?

Especially long-term observation of fiber optic lasers can seriously harm the retina! All operators must wear them strictly

Laser protective glasses! Do not operate and observe without glasses! Avoid using any part of the body

In the flight path of laser equipment, avoid accidental operation that may cause injury.

Eye and skin protection: Usually used for laser processing, different types of CO<sub>2</sub> and YAG lasers cause different harm to the human body compared to fiber lasers. YAG may damage the retina of the eyes due to the high transmittance of YAG laser wavelength, which poses greater harm. The main harm of CO laser is burning cornea. Both types of laser irradiation can cause eye cataracts and skin burns. Therefore, corresponding protective measures should be taken based on the type of laser. The laser on the machine tool is a fiber laser, so strictly wear protective glasses.

Fire prevention: During the laser cutting process, oxygen is often used, and in addition to the splashing of sparks during the cutting process, oxygen can easily lead to the risk of fire. Therefore, there should be no flammable or explosive materials in the work area, and corresponding preventive measures should be taken