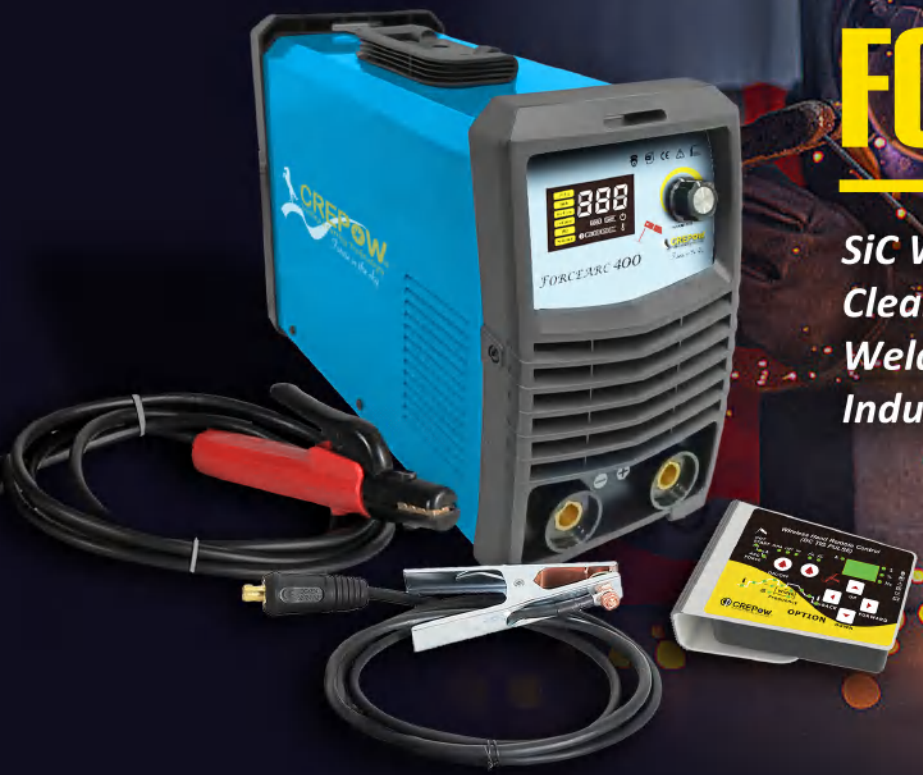
CREPOW
Welding & Cutting Technology
Future in the sky

FORCEARC 400

SiC Welding Machines: Energy-Efficient, Clean, and Compact – Perfecting Every Weld and Shaping the Next Era of Industry!



What is SiC welding machine?

SiC welding machine is base on silicon carbide (SiC) power semiconductors (such as SiC MOSFETs or diodes) instead of traditional silicon (Si) components in its power electronics. It is an advanced welding system, this technology enables higher efficiency, faster switching speeds, and superior thermal performance, making it ideal for demanding industrial welding applications with high-performance, high-reliability.

Why Choose SiC?

Energy savings

- Lower Power Losses
  SiC devices have 5–10x lower switching and conduction losses than silicon, improving overall efficiency by 5–10% and reducing energy waste.
- Reduced Electricity Costs
  Lower energy consumption leads to cost savings, especially in high-duty-cycle operations.

Precision Welding Control

- Stable Output Current, smoother welds with fewer defects.
- Easily integrates with smart welding systems for real-time monitoring and adaptive control.
- Multi-Material compatibility, excellent for stainless steel, aluminum, copper, and high-reflectivity metals (e.g., laser welding).

Cleaner welds

- Enables cleaner arcs, less spatter, and better weld quality, especially for thin metals & aluminum.

Compact & Lightweight Design

- Up to 30–50% smaller than Si-based welders, ideal for portable or space-constrained applications.

Long-Term Cost Savings

- Higher upfront cost (2–3x Si-based machines) but return on investment in 1–3 years due to energy savings and durability.

Longer lifespan & Reliability

- Less thermal degradation, reducing maintenance and downtime.

Future-proof tech

- Scalable for smart manufacturing

Features

SiC Power Devices

- Replace conventional silicon IGBTs/MOSFETs with SiC transistors/diodes, reducing energy losses.
- Operate at higher voltages, temperatures, and frequencies than silicon.

High-Frequency Inverter Design

- Supports 100kHz+ switching (vs. <50kHz for Si), allowing for:
- Smaller, lighter transformers & inductors.
- More precise arc control.

Enhanced Thermal Management

- SiC components run cooler and more efficiently, even at 200°C+ (vs. ~150°C limit for Si).

Applications

- Precision welding (aerospace, EVs, batteries)
- Automated robotic welding (high-speed production)
- Aluminum & high-reflectivity metal welding (better arc stability)
- Harsh environments (high-temperature, workshops, outdoor, or industrial settings)

SiC welding machines represent the future of high-end welding, offering unmatched efficiency, precision, and reliability. As SiC technology becomes more affordable, adoption will accelerate in industrial and automated welding systems.

How It Differs from Traditional Welding Machines?

Feature	SiC Welding Machine	Silicon (Si) Welding Machine
Efficiency	~95–98% (lower losses)	~85–92% (higher losses)
Switching Speed	Ultra-fast (µs response)	Slower (ms response)
Heat Resistance	Stable at 200°C+	Degrades near 150°C
Size/Weight	30–50% smaller/lighter	Bulkier, heavier
Cost	Higher upfront cost	Lower initial cost

FORCEARC400 (SiC Stick Welding Machine)

Stick Power Source
Digital Display

Quick Specs

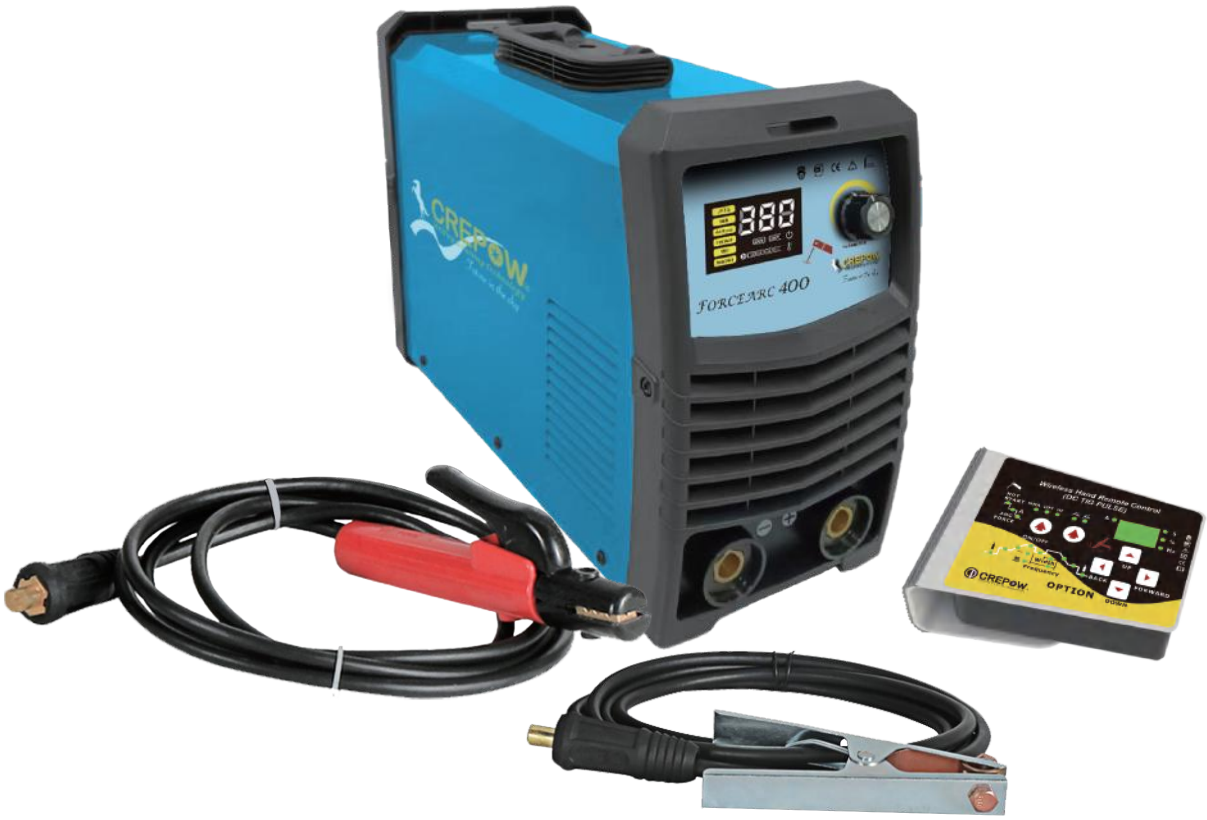
Applications
Semi Industrial
Industrial

Processes
STICK (SMAW)
STICK VRD
Lift TIG (GTAW)

Input Power	3 phase 380V
Amperage Range	40-350A
Net Weight	5.34kgs
Dimensions	360*158*260(mm)

FORCEARC400

Range is designed to provide basic functionality at an affordable price point, catering primarily to entry-level welders, hobbyists, and occasional users. It provides a balance between affordability and functionality, making them ideal for beginners or occasional users who require basic welding capabilities without the complexity or cost of more advanced equipment.



Reliability

Over Voltage Protection

Over voltage protection

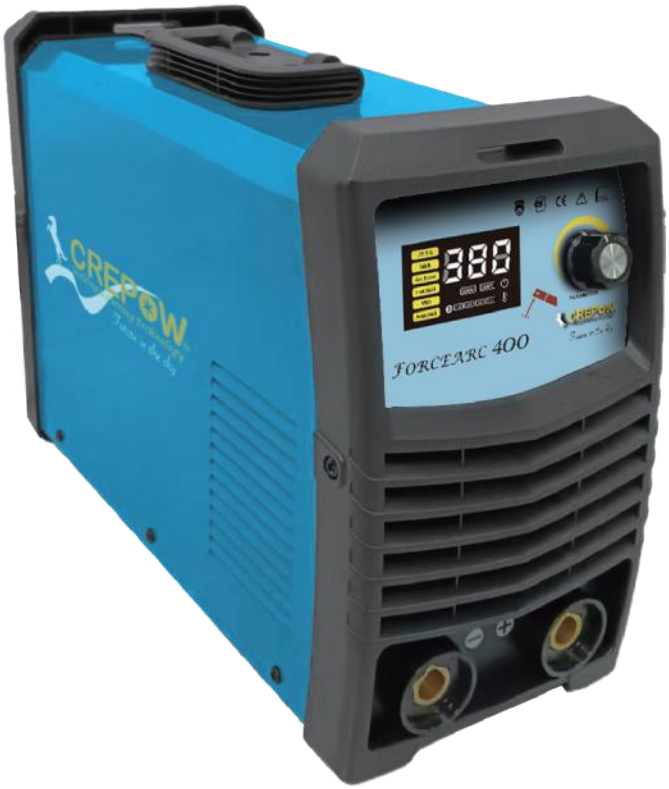
Over Current Protection

Over current protection

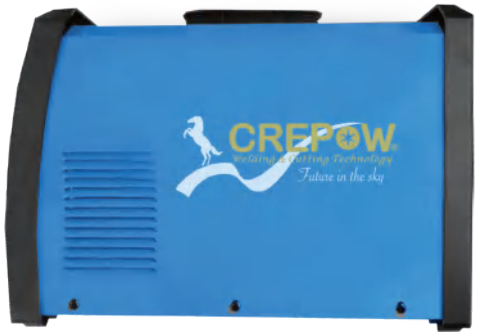
Over Heat Protection

Over heat protection

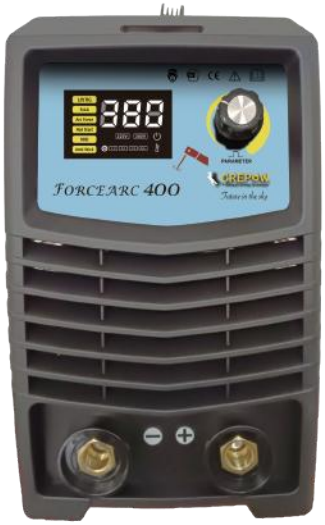
Features and Benefits



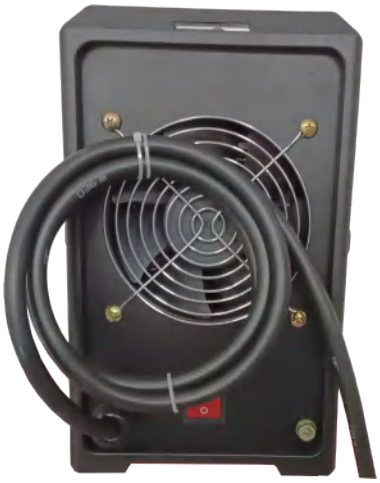
- 3phs 220V
- 3phs 380v
- Arc force
- Anti-stick
- VRD
- LED display
- Suitable for vertical up and down welding(3G)
- Suitable for overhead position welding (4G)
- Over-heat protection (E01)
- Under voltage protection (E02)
- Optional remote control
- 3550 Dins socket



Side view

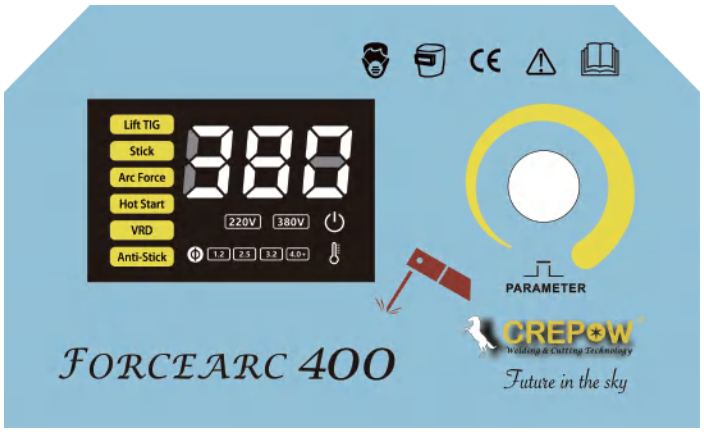


Front view



Rear view

Control Panel



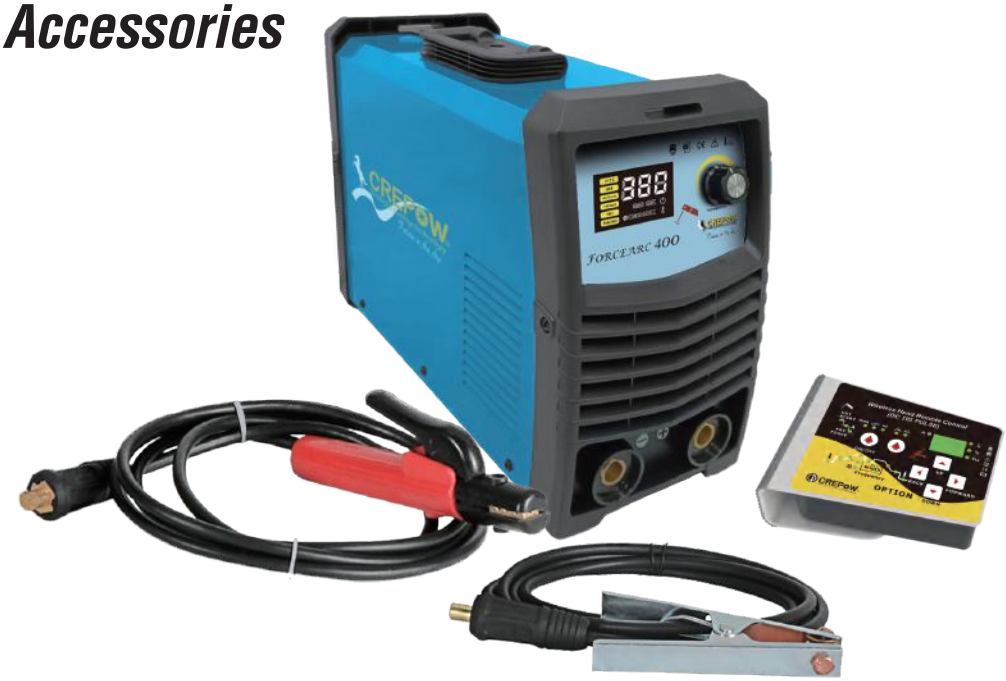
Control Panel Features

- Press the encoder button to select and improve the argon arc welding current, manual welding current, thrust, thermal arc starting, anti-electric shock, and anti-sticking functions.
- When the machine is overheated, the digital tube will display E01, and the protection light will be turned on at the same time.
- When the machine has under-voltage protection, the digital tube will display E02, and the protection lamp will turn on at the same time.
- Anti-electric shock function
- Anti-sticking function

FORCEARC400 Optional Accessorie

Machine Optional Accessories

- Earth Clamp
- Electrode Holder
- Remote control



FORCEARC400 Accessories

Earth cable and earth clamp

Earth cable and earth clamp play critical roles in electrical safety by providing reliable grounding connections to protect personnel, equipment and facilities from electrical hazards and ensure proper functioning of electrical and welding system.
Cable section can be selected from 6mm2 to 120mm2.
Color of PVC jacket can be customized.
Earth clamp types can be customized.

Welding cable and electrode holder

Welding cables are flexible, highly quality insulation and heavy-duty cables designed to carry the electric current from the power source to the electrode holder and ultimately to the workpiece. High insulation, jaw mechanism and heat resistance ensure efficient welding operation and electrode performance.
Cable section can be selected from 6mm2 to 120mm2.
Color of PVC jacket can be customized.
Electrode holder types can be customized.

Wireless Hand Remote Control

It communicates wirelessly with 2.4G. Rechargeable lithium battery to support extended use during shifts. It enhances operational efficiency, safety and flexibility across various industrial.

Welding gloves

Designed to provide protection to the hands and wrist of welders with excellent materials, heat resistance, insulation ,durability and comfort.

Welding apron

Choosing the right welding apron depends on factors like the type of welding being performed (MIG, TIG, stick welding, etc.), comfort preferences, and the level of protection needed. Ensuring proper protection with a welding apron is essential for welders to work safely and confidently.

Machine parameters

Model	FORCEARC400
Input voltage	3phs AC380V±15%
Frequency(Hz)	50/60
Rated input current(A)	23
No load voltage(V)	62
Output Current Range (A)	40-350
Rated Output Voltage (V)	34
Duty Cycle (%)	35%
No-load Loss (W)	40
Power Factor	0.8
Efficiency(%)	85
Insulation class	F
Protection class	IP21
Dimension(mm)	360*158*260
Weight (Kg)	5.34

Special symbols

Three phases

Direct current

Constant current

Voltage Reduction Device

LED Display

Hot Start

Arc Force