



TECARC^{UK}

OPTeARC 400/500/650 MST multi-process CC/CV welding power source

STICK welding + MIG welding + TIG welding + gouging

These are a very capable range of industrial welding power sources, packed full of power & designed to cover a wide range of applications including MMA, (SMAW), MIG (FCAW, MCAW) DC TIG (GTAW) & arc air gouging. The design & operation of these is very simple yet we have included lots of advanced features to suit the most discerning user. The OPTeARC models all utilise our hybrid chopper technology which tolerates harsh operating conditions such as extreme temperatures, damp & dust & can be used outside in rain. The unique design of this means you get all the performance benefits of inverter based machines with a superior arc & very low power consumption, but with the rugged reliable build of a transformer machine. In addition the size, weight & input power are all around 50% lower than a conventional transformer rectifier power source due to the high efficiency of this technology. These models all have good duty cycles; in particular the 650MST has a very high duty cycle, ideal for the most demanding industrial applications.

Main features

- **MMA (SMAW) for all types of electrodes including 6010/6011**
- **MIG/MAG weld using additional wire feeder.**
- **TIG (GTAW) weld stainless steel, Mild steel, copper etc.**
- **Arc air Gouging on the 500 & 650A models.**
- **Infinite control of output power to get the exact setting.**
- **Digital ammeter/voltmeter shows preset values prior to welding & precise values when welding to meet EN1090 & other standards.**
- **Variable arc force control for stick welding.**
- **Anti-stick circuit cuts power if electrode shorts down on MMA**
- **Hot start built in to start all MMA electrodes easily.**
- **Variable inductance control for the best MIG welding.**
- **Run on a generator or extension cable etc.**
- **Auto compensation for unstable input & long cables.**
- **Remote or local control of output power.**
- **Digital volt/ammeter shows preset & exact welding parameters.**
- **Super smooth welding characteristics on all processes.**
- **Strong steel undercarriage takes substantial abuse.**
- **100% copper wound transformer with 5 year warranty.**
- **Really rugged machines for industry.**



MMA Stick electrode welding, (CC) the high OCV of 85V allows all electrode types including cellulosic types 6010 etc to be welded with ease. Output amps can be set on the digital display prior to actually welding. The arc characteristics are superb with a super smooth weld & minimal spatter right through the range. Built in hot start gives an instant arc up. Built in anti-stick circuit cuts the output to minimum if the electrode shorts down, this prevents damage to the electrode & allowing the short to be cleared easily. Adjustable arc force can be set to give a more forceful arc & to prevent freezing of the rod into the puddle.

TIG welding, (CC) Lift arc technology gives perfect contamination free arc starts from 20A upwards. Output amps can be set on the digital display prior to actually welding. TIG welding can be carried out with or without a torch switch. When used with a torch switch the output is only on when the switch is pressed allowing for controlled starts & finishes to each weld. If used without a torch switch the welding output is quickly reduced as it detects a long arc length to stop the arc promptly. The welding characteristic is superb, perfectly smooth, quiet & stable right through the range. The initial lift arc start current can be set to a higher value by adjusting the arc force so allowing for large tungsten electrodes to be used for heavy TIG welding applications.

MIG/MAG welding, (CV) Add a MIG wire feeder to the power source & you have a very capable MIG welding machine which has better performance than a standard switched type MIG machine. The wire feeder can be connected using only the welding cables (arc voltage wire feeder) or connect one of our OPTeARC 4 roll drive feeders & have full control of welding volts & amps on the wire feeder. Output volts can be set on the digital display prior to actually welding. Arc characteristics again are superb, with minimal spatter & a smooth welding arc from 20A upwards allowing even the very thinnest metals to be welded. Built in arc start circuit gives clean instant arc starts without 'machine gunning'. Variable inductance control allows the welding arc to be tuned to suit every operator or application perfectly.

Arc air gouging (CC) Modes 500MST is ideal for lighter duty gouging applications. The 650MST has a very high duty cycle so is ideal for heavier gouging up to a maximum size of 10mm carbons. The high OCV help maintains a consistent smooth arc regardless of length & built in anti-stick cuts the power in the event of a short down.

PTO for technical info & further reading



Further reading

With so many different makes & models of machines on the market today it can be difficult to make the right decision when considering which industrial welding power source to buy. The main choice for high output power sources is between traditional transformer rectifier types & inverter types.

Traditional transformer power sources. The older technology transformer & transformer thyristor based machines are still available from a few quality US & European manufacturers. These have a reputation for solid build & good reliability. The drawback with this older technology is welding performance is limited, size & weight is very high & input power consumption is very high.

Inverter based machines. Inverter machines solve the problems associated with the older transformer machines. Welding performance is superior, portability is very good & power consumption is low. However inverter based machines don't have the rugged reliable build of a transformer based machine & are very complex in design with 1000's of electronic parts on many PCB's. The power electronics work at over 600V which is a difficult task for sensitive electronic parts. This combined with real world operating conditions like grinding dust, damp, drops etc means inverter machines tend to have a poor life span & are unreliable. Even the best US & European made machines suffer these problems & the low cost imported equipment has become virtually throw away items.

OPTeARC machines. Our unique hybrid chopper technology combines the best parts of the other two technologies. Chopper technology works like an inverter by controlling the output at high frequency, but it works directly on the low voltage welding output (80V), not the high voltage mains input side like inverters do. They also tolerate massive over voltages & unstable input supplies. And the electronics are far simpler with only one PCB & no microprocessor needed. This means they do not suffer the reliability problems associated with inverters. But you get the superior performance of the best inverter combined with the reliability of a transformer based machine. No big repair bills to worry about & an expected life span of 25+ years which no inverter gets anywhere close to! The superior energy efficiency of these models also means your running costs are kept to an absolute minimum.

So whats the drawback? Our OPTeARC machines are about half the size & weight of an old style transformer based machine but are heavier than a small inverter. So from a portability point they sit somewhere in the middle between inverter & traditional. Unless portability is your number one priority our OPTeARC hybrid machines tick more boxes than any of the other options.

Notes;

Standard models are 400/415V 3 phase. 230V single phase is also available on the 400MST, other voltages on request.

Specifications	OPTeARC	400MST	500MST	650MST
Amps range MIG, STICK & TIG		20-400A	20-500A	20-650A
Max no load volts (OCV)		85V DC	85V DC	85V DC
Duty cycle @40°C @ max output		400A@40%	500A@40%	650A@60%
Duty cycle @40°C		325A@60%	410A@60%	500A@100%
Input fuse 400V supply (D rated)		16A/20A	32A	32/45A
Protection		IP23	IP23	IP23
Approx weight		77kg	90kg	120kg
Approx size all models (excludes external hardware)		310mm wide x 650mm long x 530mm high		

Note; Duty cycle figures are quoted at 40°C for TIG applications. For lower ambient temperatures the duty cycle will increase, for higher ambient temperatures it will decrease. When used on MMA, MIG or gouging the duty cycle figures will be approx. 15% lower.

Standard supply; Every machine is supplied with 3M input lead, 3M earth lead & comes with a top lifting bracket for easy transportation & strong steel sled under chassis.

Optional accessories

- Welding leads up to 100M long with options on clamps & electrode holders.
- MIG wire feeder 4 roll drive, options for arc voltage or fully controlled version.
- TIG torches & MIG torch options.
- Water cooling for MIG & TIG.
- Hand remote control up to 100M for all welding processes.
- Foot pedal control for TIG

Build options at time of order

- Wheeled undercarriage kit as shown fitted on picture, (10" wheels & 4" front casters)
- Retractable front handle to lift the front and pull the machine around busy workshops.
- 230V, 480V, 550V or other input voltages possible.
- TIG HF functions added & TIG gas solenoid included.
- Validation to BS EN50504



We guarantee to fully support these machines with spares & service for a minimum of 20 years.

'Invest in the best' quality made British welding equipment

All models comply with BS EN60974-1, BS EN50199, WEE/HD0071UZ