Remote Isolation Device

A revolution in Welding Safety and Control

zRID Pty. Ltd. is proud to announce:

A Revolutionary Shock-Protection Device

- Zero volts when not welding
- Eliminates hazard when changing electrodes
- Allows direct control over weld initiation
- Eliminates all secondary control cables

Voltage Elimination Remote Isolation Device (zRID)

zRID has developed a practical Trigger/Isolation system **(zRID)** eliminating partially energized cables and hand-pieces during non-arcing operations.

zRID's design manifesto looked at all aspects of welding electrical safety with the aim of removing unnecessary cables and electricity from the workplace as well as other inline devices, secondary control circuits, their restrictions, limitations and costs.

zRID uses a Wireless Trigger and Isolation device to switch the primary circuit of the welding machine to provide a superior level of protection with zero volts in the secondary circuit during non-arcing operations, dramatically reducing the window of opportunity for exposure to electrical shock hazard. **zRID** is a true **Dead Man's** switch and is **Fail-to-safe**.

zRID arcs are activated manually by pressing a trigger on the electrode-holder when ready to initiate the weld. De-activation is automatic and instantaneous on cessation of the weld and requires conscious re-activation through the trigger. **zRID** arcs strike with full welding power with no more chipping, grinding to find a conductive path on rusting or scaly work surfaces.

zRID is unsurpassed in achieving a safe working environment especially under Category (B) confined space and (C) wet operations in an electrically hazardous environment. **zRID** puts previously unheard-of control and personal safety in the hands of the welder enabling them to place the electrode on the work-piece and to manoeuvre the electrode-holder to find the most suitable position to initiate the weld without fear of unintentional arc activation.

www.zrid.us

VRD & Z-RID SAFETY CONTROLLER

"VRD"– Voltage Reduction Device

- 1. Reduced Open Circuit Voltage (OCV) – **4V(ZRID-LVD)** 12V, 17V, 24V, 31V when not welding.???
- 2. When not welding the welding cable is always live between 12-31V – **never switching OFF.???**
- 3. Current flowing through the human body is dangerous and is not time limited. (I = V/R)???
- 4. **Operator has no control** at starting arc and automatically restart (reset) !!!????
- 5. Accidental spark/flash when touching welding surface with electrode causing arc ray burns to eyes.$???
- 6. Impossible to judge the operation of " VRD "i.e. whether On or Off when not welding.???
- 7. Hard to start arc on rusting or scaly work plates with celluloid or low nitrogen electrodes. $$$$
- 8. Restricted in cable length due to reduced voltage drop, and unsuccessful arc starts.
- 9. To start arc involves time to find a good contact below 200 Ohms $???
- 10. Forces operator to breach **duty-of-care** by using both hands for scratching surface to start arc. This method causes more electrocutions then a welding machine without any "VRD" protection device. $???
- 11. **Leakage of a few (mA)** between earth and electrode results in the device being On all the time. ???
- 12. Difficult to spot weld on rusty or scaly welding surfaces.$$$$
- 13. For multiprocessor machines like Plasma, Tig HF and Mig a **VRD bypass switch is required.?????**
- 14. Operator gets agitated due to not finding a 200-Ohm(resistance) contact on welding surface. $$$$
- 15. Preparing the surface for welding increases labour and time. (Consumables, work-time, grinding disc, power tools and power) $$$$
- 16. Waste of electrodes resulting from unsuccessful arc start (chipping) or arc dragging $$$$
- 17. **Does not comply with confined spaces Cat.B and C,** requires use of secondary dead-man switch at a cost of $1000.00 and observer/assistance (min.$ 20.00/hour), all the time for switching on/off output of welding leads when operator changes electrodes.$$$$
- 18. In confined spaces, accidental spark/flash burns operator eyes and they feel 12-31V present all the time .Accident reports, medical costs, absence from work, loss of productivity, insurance fees increase. $$$$
- 19. Does not comply with underwater welding – requires deadman switch and observer all the time $$$$
- 20. Changes the characteristics to start welding - time delay before full OCV will present -cold start. $$$$
- 21. Requires testing of devices, and constant maintaining of welding leads, mechanical connectors, earth clamp, and electrode holder. (Resistance below 200 Ohms for satisfaction operation required) $$$$
- 22. Reduces the life of electronic components and PC boards in the welder due to constant turning on-off.
- 23. Cyclic operation of device is dangerous to operator i.e. on-off all the time and resets automatically.???
- 24. 30 years old idea from South Africa with no patent.
- 25. Some devices are not certified and they provide full OCV when a contact below 200 Ohms is found.???
- 26. Design for stick operation only, should reduce the hazard when changing electrodes only.!!!????
- 27. **Not Fail-to-Safe ???**
- 28.Some devices not Cμ approved.
- 29.**All" VRDs" are self-starting devices and not should be sold as safety devices.???**
- 30.**" VRD" does not remove the welding hazard**, control cable and mechanical switches; it is like a half-cocked gun all the time.$$$
- 31. Unauthorised person can use welder
- 32. In confined spaces it is required to carry a plastic bucket to place electrode holder when not welding.$$

Safety Switches in your switchboard, RCD or ELCB are calibrated at 30mA and time for switching OFF power is 0.3 seconds. For all Hospitals, Medical Institutions all RCDs, ELCBs are calibrated at 10mA and switching OFF time is 0.3 seconds.

1. When you want to start the arc, do you want reduced voltage or full voltage at the electrode???

ZRID – Wireless control

- 1. Eliminate (Open Circuit Voltage) **OCV- 0V when not welding** –
- Acts as an isolation switch for safety and tamper proofing.
- 2. When not welding the welding **cable has 0V running through it all the time**.
- 3. Full OCV-limited time 0.5-1.5 second, dependent on design of welder and inertia as specified by welding machine manufacturers Time can be adjustable for customer request via softer program.
- 4. Operator has full control at starting arc like Mig, Tig and Plasma guns. No false starts *and* not auto reset.
- 5. Impossible to accidentally start arc with double press trigger or other available options.
- 6. Full operational control of zRID i.e. **always off when not welding**.
- 7. Easy to start arc any time, full power when trigger is pressed.
- 8. Is not restricted to cable length – transmitter repeater can be used.
- 9. Full power to start arc as per manufacture design of the welder – limited time only.
- 10. Operatable by one hand when starting to weld.
- 11. Any leakage of current between earth and electrode do not start the ZRID device.
- 12. Easy to spot weld.
- 13. Available to use on all multiprocessor machines Stick, Tig HF, Plasma, Mig, AC-DC welders
- 14. Operator feels comfortable and in full control of welder when starting arc.
- 15. No need to prepare surface for welding.
- 16. Easy to start arc therefore saving electrodes, and time.
- 17. Does not require secondary deadman switch, which involves a human reaction to switch off welder and complies with category **A, B, C, OCV- (0Volts) when changing electrode**.
- 18. Freedom to put electrode anywhere without causing accidental spark/flash - eliminate a hazard
- 19. Complies with underwater welding don't need Deadman switch and assistant all the time.
- 20. Does not change the characteristics of the welder.
- 21. Does not require any maintenance, testing or calibration is a **self-test device**.
- 22. No damage to electrical boards occurs.
- 23. Transmitter does not have a cyclic operation **(Deadman switch)** can be operate by assistant
- 24. New technology with an Australian and International patent.
- 25. **Certificated and NATA approval for use on welding equipment.**
- 26. Comply with Australian Standards 3195-2002 and 1674.2-2003
- 27. **Fail-to-Safe** it's a isolation device (switch)
- 28. Cμ approved.
- 29. Not a self-start device**. Self tested every time when arc is broken**
- 30. Can be used on **all welding processes, eliminates all control cables, mechanical switches – reduces maintenance, repair, and breakdown time and increases productivity. Eliminates R.S.I (Repetitive Strain Injury) syndrome and reduces insurance claims .$$$$$**
- 31. Prevents unauthorised person from using welder when trigger is removed
- 32. In confined spaces no need a plastic bucket for electrode holder as welding system is switched off.

All SAFETY DEVICES CAN BE FITTED WITH;
Extra trigger on electrode holder for stick operation
Transmitter repeater for difficult situation like pipes, tanks or long distances.

Z-RID devices do not produce any full open circuit voltage (OCV), but are designed to switch off existing OCV on manufacturer welders.
What is a different form of sending information (signal) other then via cable or air ?????

DON'T COMPROMISE YOUR SAFETY

Benefits

- ZRID gives the operator direct control over weld initiation (ie. no false starts) and gives full power at start up.
- ZRID eliminates all electrical maintenance costs on control cables, mechanical switches, amphenal plugs and sockets.
- ZRID eliminates breakdown time, parts replacement and increases productivity.
- ZRID acts as a deadman switch therefore complying with all welding categories A,B & C and eliminates other inline devices (switches) and extra men (observer).
- ZRID reduces repetitive strain injury (R.S.I.) which is caused by holding down a mechanical trigger for long periods of time.
- ZRID reduces electric shock hazard when changing electrodes.
- ZRID is a self testing device, every time the arc is broken.
- ZRID can be installed on all AC/DC arc machines such as Stick, Mig, Tig HF, Plasma etc.
- ZRID eliminates accidental arc ray eye burn hazard, which reduces absence from work and medical costs to employer.
- ZRID can be used for under water welding with out extra communication equipment.
- ZRID has a multi positional trigger used on the handle, or it can be removed and operated by an observer.
- ZRID's transmitter can have three operation modes : instant, time delay or double press via DIP switch selection on transmitter PC board for personal safety or to comply with local standards.
- ZRID products are an excellent tool for all mines sites, shipyards, training centres, industrial welding and maintenance areas, water corporation, all pipelines and under water control systems.
- ZRID devices are individually encoded for machine separation.
- ZRID presents zero volts on the electrode holder and welding cable during non-arc operation - reducing welding hazard.
- ZRID is not a self start device.
- ZRID has been certified C-Tick and radio transmission approved to be used on all arc welding machines.
- ZRID wireless system does not required any bypass switches.

4V-LVD - Low Voltage Device

- One model for all AC/DC welders except for HF operation
- 4 Volts (0CV) when not welding.
- Hazard reduction device for stick operation only.

ON/OFF Switches

New generation of wireless technology can replace all mechanical switches that turn on/off water pumps, relays, fans, power, lights, electric motors, electrical solenoids, valves and can also be installed as a cut off switch for cars or used as a personal alarm with a buzzer or many other uses.

4 in 1 Zero volt Remote Isolation Device

ZRID Wireless System

Package Supplied

Repeater

US Patent 7 193 176

Address: Unit 1/77 Motivation Drive, Wangara WA 6065 Australia **Tel/Fax:** 61 8 9302 2120 **Email:** zrid@zrid.us **Website:** www.zrid.us

Marcus Punch Pty. Ltd.
Risk and Reliability

Marcus Punch Pty. Ltd. (ABN 27 131 307 723)
70 Collinson St, Tenambit NSW 2323, Australia.
Phone: +61 (0)2 49333989
Mobile: +61 (0)432168849
Email: marcus@marcuspunch.com
Web: www.marcuspunch.com

Capability Resources Pty. Ltd.
230 John St, Singleton
NSW 2330

7th February 2009

Re: zRID Wireless Remote Isolation System

Dear Sir,

We have conducted a reliability analysis on the zRID Wireless Remote Isolation System for welding machine applications. This analysis used the calculation methods provided in AS61508 for the determination of the probability of dangerous failure of electrical / electronic / programmable electronic safety-related systems.

The analysis was based on the standard installation arrangements for DC stick, Mig, Tig and engine driven welders, as shown on the zRID installation instructions. The analysis considered the reliability of the zRID transmitter, zRID receiver, SW200 contactor and MS-324 reed switch and Hall-effect current sensors. Annual proof-testing of the system has been assumed.

We have predicted the Probability of Dangerous Failure Per Hour (PFH) of these standard installation configurations and found them to be within the range of SIL1 reliability performance. SIL1 reliability performance requires less than one dangerous failure per 100,000 hours.

Furthermore, we have found that if the single SW200 contactor arrangement is replaced with a dual-redundant SW204 contactor arrangement, the reliability performance of the installations may be increased to SIL2 range. SIL2 reliability performance requires less than one dangerous failure per 1,000,000 hours.

Details of the reliability analysis and SIL calculations are contained in our report:
CAP-09-01-A: zRID Wireless Remote Isolation System – Safety Integrity Level (SIL) Calculations.

Yours sincerely,

Marcus Punch
Director