

**Portable Socket
Outlet Assembly
(PSOA) Report**





**Transition to Renewables
and Electrification of our Nation**

**The Impact of Resultant Safety Risks
&
Reliability of the Distribution Grid**

PSOA Report
Submitted to

**Standards Australia
&
NSW Fair Trading**

15 June 2023

Approval of HRE/RVT Technology to AS/NZS 3000:2018

Standards Australia

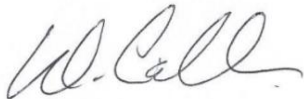
On 28 April 2023, World Wide Electrical Safety Technology Pty Ltd (WWEST) submitted a proposal to Standards Australia regarding the WWEST technology solution, utilising High Resistive Earthing (HRE) / Residual Voltage Technology (RVT).

At a meeting with Standards Australia on 5 May 2023, Standards Australia recommended WWEST submit the proposal, using the Standards Australia online Portal, for review by the (AS/NZS 3000:2018) EL-001 Committee.

On 8 May 2023, WWEST commenced the online process of Submitting a Proposal to Standards Australia.

NSW Department of Fair Trading

On 19 May 2023, WWEST was advised by the NSW Department of Fair Trading that the RVT complies with all Standards requirements as certified to AS/NZS 3000:2018 (May 2019), as a non-declared article with CS Number 10890N.



Wayne Callen

Director, World Wide Electrical Safety Technology Pty Ltd

E: wayne@wwest.com.au M: 0488 125 546

www.wwest.com.au

Videos & Supporting Technical Papers

Technical Drawings – Video Explanation

1. **Drawing A** - Final Subcircuit Arrangement within a Multiple Earth Neutral (M.E.N.) System of Earthing.
2. **Drawing A1** - Alternative Final Sub-Circuits Within an M.E.N. Utilising RVT-HRE.
3. **Drawing A01** - M.E.N. 3 Phase Supply Distribution (Protective Earthing) & RVT-HRE.
4. **Drawing A03** - M.E.N. 3 Phase Supply Distribution (Protective Earthing) & RVT-HRE & P.S.O.A (Portable Socket outlet Assembly).

Corporate Videos

1. **How WWEST Started.**
2. **Welcome to WWEST.**
3. **Instructional – With Subtitles.**
4. **Industry Applications.**

WWEST – Videos Available At This Link

www.youtube.com/channel/UCy5kbI93VDNjaDCkt3X_Wmw

or

QR Video Link:

Scan QR code below with your phone camera.



Technical Papers & Drawings

1. **WWEST Research Paper (May 2023)**, – Renewables Are Compromising the Safety & Reliability of The Distribution Grid.
2. **WWEST Technical Drawings – (A, A1, A2, A2EV, A01, A02,A03, A04,A05,A06)**
 - **Drawing A** - *Final Subcircuit Arrangement within a Multiple Earth Neutral (M.E.N.) System of Earthing.*
 - **Drawing A1** - *Alternative Final Sub-Circuits Within an M.E.N. Utilising RVT-HRE.*
 - **Drawing A01** - *(M.E.N.) System 3 Phase Supply Distribution (Protective Earthing) & RVT-HRE of Earthing, Utilising RVT-HRE.*
 - **Drawing A2** - *Alternative Final Sub-Circuit Arrangement Within an M.E.N. Utilising Functional Earthing (FE) EV Charging Circuits.*
 - **Drawing A2 EV** - *Alternative Final Sub-Circuit Arrangement Within an M.E.N. Utilising Functional Earthing (FE) EV Charging Circuits.*
 - **Drawing A02** - *Final Subcircuit Arrangement within a Multiple Earth Neutral (M.E.N.) System of Earthing, Utilising RVT-HRE.*
 - **Drawing A03** – *M.E.N. 3 Phase Supply Distribution (Protective Earthing) & RVT-HRE & P.S.O.A (Portable Socket outlet Assembly).*
 - **Drawing A04** - *TN Earthing Diagrams.*
 - **Drawing A05** - *3 PH Star Distribution System*
 - **Drawing A06** - *3 PH Star Distribution System Showing Example Voltage & Current Neutral Rise*
3. **Paul Malanchuk (Director) Electrical Projects Australia**
- *Independent Review of WWEST RVT-VMD Technology (Dec 2022).*
4. **Jonathan Carrol** – Final Sub Circuit Drawing A.
5. **Jonathan Carrol** – Final Sub Circuit Drawing A01.
6. **Sam Dib** – **BE MIE Aust C.Eng. NER RPEQ (3495475)** - PSOA Independent Review 18 March 2021.
7. **Geoff Cronshaw (Chief Electrical Engineer at IET)** - BS 7671 Amendment 1 (2018).
8. **AUSTEST Compliance Testing Final Report** – 31 May 2019, Residual Voltage Technology (RVT).
9. **NSW Fair Trading** – CS Certification NSW CS10890N.
10. **Taylor Callen** – **Thesis Paper** - “Earthing Systems in Relationship to the Characteristics of Protection Devices.”
11. **Trevor Blackburn, Associate Professor UNSW School of Electrical Engineering & Telecoms** “RVD White Paper, Alternative Earthing Method, (Protecelec Sept. 2004)”
12. **Trevor Blackburn, Associate Professor UNSW School of Electrical** – Letter to Protecelec Sept. 2005
13. **Craig Tickner** – Mt Owen Coal Washery Case Study.

All Technical Papers Available At This Link

<https://1drv.ms/f/s!ArifSWHO80k1yDXMB50ASObZBAzN?e=fMK442>

or

QR Video Link:

Scan QR code below with your phone camera.



Independent Reviews - Summary

Report 1: Sam Dib – BE MIE Aust C.Eng. NER RPEQ (3495475

Unique PSOA Report – Independent Review (18 March 2021)

My name is Sam Dib, the Managing Director of GES and the Founder of IINGEN. I have read and researched the product to the best of my ability, and I conclude in support of the Residual Voltage Technology (RVT) to be of a great voltage measuring device capable in providing additional safety utility of the RCD when used in conjunction as a single device. I ask the electrical committee to have an open and pragmatic discussion, to provide the professional support, to collaborate, to embrace and endorse without prejudice the advancement of technology and continuous development of products and systems such as RVT to play an important part of ensuring safety of persons, livestock and property against the dangers that may arise in an electrical installation.

Report 2: Paul Malanchuk (Director) Electrical Projects Australia

Independent Review of WWEST RVT Technology for PSOA (10 July 2022)

I, Paul Malanchuk, the director of Electrical Projects Australia, and practicing Electrical Engineer for over 25 years declare that I am in support of the proposed RVT technology to be delivered within the PSOA by WWEST Pty Ltd as I believe that it can provide additional safety benefits over an RCD only protected PSOA.

This is based on my review and research into the proposed RVT technology which I declare was carried out with due diligence and to the best of my ability.

Enhanced Electrical Safety for Portable Socket Outlet Assembly (PSOA)

Background

The operation of the 3 Phase TN-C-S MEN Distribution system used in Australia is 'no longer fit for purpose' and many lives are at risk without urgent action to address the major issues. There are many contributing factors which have led us to the situation, where basic electrical safety for many is compromised due to the integrity of the Earthing system being eroded.

Ensuring good Earth integrity is the simplest, yet often overlooked way of ensuring that the protective system is always in the best possible condition however, many issues impinge on even this most basic of fundamentals.

Soil types play an important role and impact significantly on the basic safety principle of the TN-C-S MEN earthing system. Resistance levels can range anywhere from 15Ωm to 1050Ωm dependent on material make-up, moisture, and other factors, all of which are outside of our control. RCD manufacturers state an operational range 1660Ω and 12.5kΩ, is necessary to achieve a touch potential of 50V and residual current of 30mA for a fixed wired electrical installation.

Ageing infrastructure along with Building Codes and Plumbing Standards changes have been very impactful on the number of multiple earth points present in dwellings/buildings. Earth stakes and connections are subject to corrosion/degradation and mechanical damage but are seldom verified. The widespread use of PVC piping for water and gas has meant that the multiple earth paths necessary for correct functioning of the MEN system are no longer present and the only earth present is the earth-stake itself, culminating in a phenomenon called Island Mode which is well documented in International Standards such as BS:7671.

TN-C-S MEN & PSOA

It is not possible for an RCD to operate in a T.N.S. system used in existing PSOA's when plugged an alternative power source such as Power Inverters, portable generators and battery powered systems. The neutral and earth conductors are not combined and do not form a TN-C-S arrangement to enable the RCD to function, yet they are widely used in the above-mentioned applications as well as the Caravan and RV industries.

False Perception of Safety

Both Domestic and Industrial PSOA (Power-boards) are wired using the TNS wiring method, whereas an RCD will only operate within an TN-C-S (MEN) environment. PSOA's are often used in situations or electrical environments where the RCD will not provide electrical protection and can result in dangerous outcomes for users as outlined in **AS/NZS 3012:2010 Clause 2.4.6.3**. Alternate unearthed / unbonded power sources are problematic when used with PSOA's as the RCD will provide no protection against a 2nd fault scenario which can

result when multiple outlets are used and thus **leaving users 'falsely' protected.**

Removal of Relevant Clause

It is our assertion that the removal of Clause 2.4.6.3 B2 from the AS/NZS:3012 2019 Standard is manifestly incongruent with the essence of Standards and should be reviewed. *"Portable RCD will not operate as there is no neutral to earth connection upstream of the RCD"*.

This information should be available to consumers and clearly marked on all existing PSOA and represents a 'failure of Duty of Care' by Standards.

WWEST Solution

A technical solution has now been engineered and proven which requires 3 aspects to provide the ultimate level of electrical protection. The combination of **RCD** (residual current) with **RVT** (*residual voltage technology - fully tested and approved*) when applied in a **TN-C-S MEN+ High Resistive Earth** environment (**TN-C-S remains unchanged**), enables superior electrical safety outcomes for consumers.

Benefits

The combination of the RCD and RVT provides a solution to many of the well documented and most dangerous faults including:

- **Loss of supply neutral**
- **Loss of supply earth**
- **Short-circuit protection**
- **Corroded or damaged earth stakes**
- **Loss of MEN bond**
- **Reverse polarity**
- **Island Mode (earth)**
- **Voltage rise**
- **Suitable for use in all Earthing Systems**

In the WWEST PSOA, it should be noted that the combination of the RVT with an RCD, in no way impacts or detracts from the normal operation of the RCD nor does it impinge on the normal operation of the TN-C-S earthing system as shown in Drawing A03. A HRE is recognised as a viable option of Earthing in IEC 60364.

Conclusion

The proven and supported safety outcomes claimed for the WWEST PSOA are irrefutable, clearly enhancing the electrical safety provisions of a fixed wired electrical installation which uses the TN-C-S MEN or an alternate/renewable power supply. This is demonstrated by the benefits listed in the 2 independent Engineers Reviews and as detailed above, where the TN-C-S MEN is not changed by using a HRE earthing method at the socket outlets of the PSOA.

As shown in the linked video's and mentioned in independent Engineering reports, there are many areas where existing PSOA's do not provide electrical safety in line with the basic principles outlined by Standards. The WWEST PSOA including an RCD working together with the RVT enables a broader range of fault detection while eliminating problematic safety issues, enabling safer electrical outcomes for consumers in all areas of application.



PSOA with RVT-VMD combined with RCD

The WWEST PSOA utilises the TN-C method of earthing, where any fault is localised and the PSOA can be used as a fault-finding or test and tagging tool. The unprecedented capability of the PSOA incorporating both voltage (43V) and current (10mA) detection, achieves the ultimate level of safety. The combination of the RCD together with the RVT enables a far greater range of electrical fault detection.

The WWEST PSOA provides enhanced electrical protection in all International Earthing systems.

The image shows the outcome of both existing and WWEST PSOA's plugged into a renewable power source. The RCD testers indicate polarity, and we can see that the existing PSOA has only one illuminated light, showing a failure of verification as per Clause 8 of AS/NZ3000/2018.

The WWEST PSOA clearly shows two lights, indicating correct polarity. (Refer WWEST Instructional Video).

The WWEST PSOA provides protection in existing TN-C-S installations and alternative/renewables power sources including micro-grids.

This image shows the test button when depressed, does not trip the existing PSOA RCD proven by the illuminated second light.

The RCD tester used with the WWEST PSOA, shows correct polarity (2 lights) indicating a true TN-C-S Earthing at the socket outlets and trips at new benchmark safety levels as per the manufacturers' specifications.



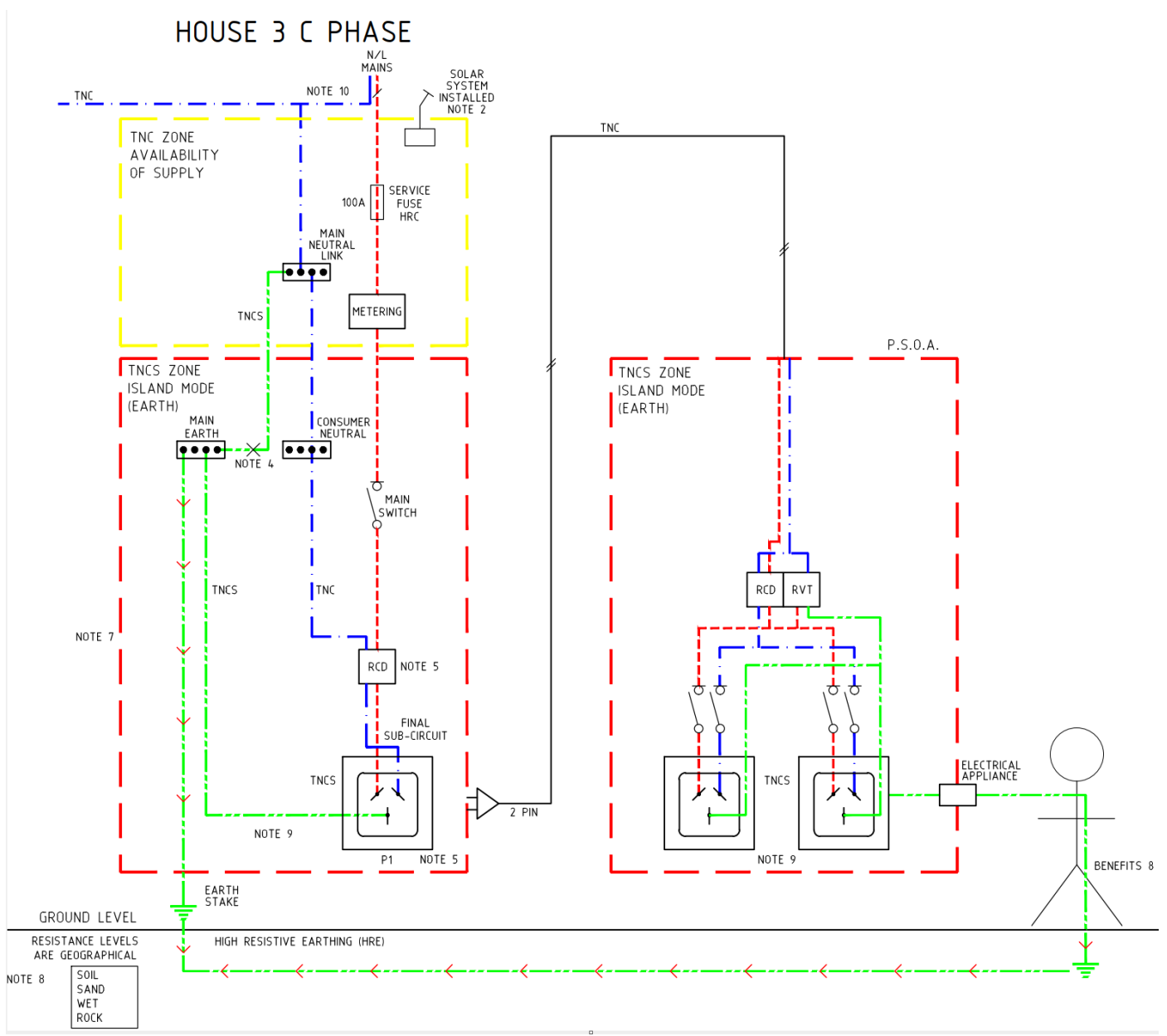
Images of existing PSOA and the WWEST PSOA showing Polarity test results



PSOA – Drawing A03

MEN 3 Phase Supply Distribution (Protective Earthing) and PSOA (Portable Socket Outlet Assembly)

The drawing below is designed to show how the RCD/RVT combination enhances the safety provisions of a fixed wired electrical installation (House 3) that utilises the TN-C-S system where the basic safety has been compromised.



Drawing A03 - PSOA – Notes

- A fault can appear on all 3 houses in a TN-C-S MEN system final sub-circuit however RCD/RVT protected PSOA will provide protection. Any voltage rise on the house earth is not transferred due to Island Mode connection
- A fault on H3 Solar Array can supply a dangerous voltage rise on H1 and H2. (See Drawing A2) Solar fault creates 2nd MEN Point which can result in Solar fires
- Loss of Supply Neutral in H1 can cause a voltage rise in H2 and H3 creating a TNS. PSOA will provide protection
- Loss of MEN Link in H1 can cause a voltage rise on H2 and H3 creating a TNS. RCD/RVT PSOA will provide protection
- Main Earth and Main Neutral faults are upstream of the RCD and provides no protection. RCD/RVT PSOA will provide protection
- Lightning surge eliminated due to High Resistive Earth
- Water Pipe bond not required on PVC Piping due to the benefits of Island Mode
- Soil Resistivity represents a High Resistive Earth where H1-H2 is 6K Ohms and H2-H3 is 10K Ohms (Typical)

Report 1

Sam Dib – BE MIE Aust C.Eng. NER RPEQ (3495475)

Unique PSOA Report – Independent Review (18 March 2021)

We concluded that the device is fit for purpose and deemed superior to other products that are currently compliant and approved for distribution in Australia.

**WWEST Submission to
Joint Australian/New
Zealand Technical
Committee EL-001 –
UNIQUE PSOA
Independent Review**

Sam Dib

BE MIEAust Ceng NER RPEQ (3495475)

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WWEST Unique PSOA Independent Review

By Sam Dib BE MIEAust Ceng NER RPEQ (3495475)

1 Abstract

World Wide Electrical Safety Technology (WWEST) are seeking a technical review from an independent Electrical Engineer (or subject matter expert) relating to the Combined (RCD and Residual Voltage Technology “RVT”) Device proposed to be installed in the Portable Socket Outlet Assembly.

The documents received Monday 1st of March 2021 included supporting attachments to be considered as part of our assessment. No further documents were assessed at this stage.

Our review comprised of a very high level desktop assessment, one on one interview with WWEST and live demonstration of the working product.

We concluded that the RVT/RCD device is fit for purpose and deemed superior to other products that are currently compliant and approved for distribution in Australia.

2 Description and References

2.1 Description

WWEST have contacted Goldenratio Engineering Services (GES) on the 1st of March 2021, seeking an independent technical review from experienced Electrical Engineer on the newly developed prototype Portable Socket Outlet Assembly (PSOA). The Email included supporting documents together with correspondence to “Standards Australia”, seeking approval from the joint Australian/New Zealand Standard Technical Committee EL-001 to sell the PSOA utilizing a functional earth system to supply all class 1 and 2 portable tools and equipment on construction sites.

GES have extensive experience in Building Services mainly in Electrical systems and have agreed to provide a high-level review of the documents (provided as part of the submission to the committee) and present an overview assessment of the product focusing on the following main principles:

- Design functionality of the new product (RVT) against the current Australian Standard AS/NZS 3000:2018, and
- Validating its use in conjunction of what is currently approved by Standards Australia.

GES have provided an independent technical opinion on the product herein and to our knowledge we trust the information provided by WWEST are accurate and truthful.

2.2 References

- Attachment A – **Supporting Information** - Request to EL-001 Committee (4 pages).
- Attachment B - **AUSTEST** - Compliance Testing Report AS-NZS 3100:2017+A
- 31 May 2019, (3 pages 1,2 & 76) - the full report is 76 pages and available on request.
- Attachment C – Email from Michael Dunbar – (16 March 2020,1 page).
- Attachment D – Standards Compliance (March 2019, 4 pages).
- Attachment E – Independent Report - Removal of Earth in Coal Washery (14 March 2014, 1 page).
- Attachment F 1 – Letter from Associate-Professor-Trevor-Blackburn (2005, 1 page).
- Attachment F 2 - White-Paper-1-Associate-Professor-Trevor-Blackburn (2005, 22 pages).
- Attachment G - Email from Michael Dunbar - (20 May 2019,1 page).
- Attachment H – NSW Fair Trading CS Certificate (8 July 2019, 2 pages).
- Attachment I – Schematic Drawing of The Portable Socket Outlet Assembly (PSOA).
- Email from Robert Zullo Titled “EL 001 Committee”
- Emails to & From Gary Busbridge in Response to WWEST Submission[33].pdf
- WWEST - PSOA Final Submission - Joint Australian New Zealand Standard Technical Committee E1-001-23 March 2020 [16].pdf
- WWEST Newsletter - Feb 2021[70].pdf
- Welcome to WWEST: <https://youtu.be/IF1VpqCcirM>
- How our product works: <https://youtu.be/vtnphPDIPLA>
- WWEST video on Sydney Water Safety Issues: https://youtu.be/kWAB_rD4Rqs

3 Assessment

3.1 Residual Voltage Technology (RVT)

WWEST have developed an RVT or voltage measuring device as a supplementary safety device to enhance the functionality of the current Residual Current Device (RCD) installed in the current Portable Power Socket Assembly units.



Figure 1

The RVT works on measuring the Voltage via the utilization of an Alternative Earthing system called “functional earthing or (FE)”.

Functional Earthing (FE) as described in *AS3000:2018 clause 5.2.2 Example:*

- 1. Functional earth (FE) connections fitted to certain types of RCDs to provide an earth for an alternative supply connection for the internal electronic circuit operation in the event of the incoming neutral connection becoming disconnected.*

Also, as described in AS/NZS 3000:2018 section 5 Clause 5.1.1 Application:

- This section specifies the minimum requirements for the selection and installation of earthing arrangements that shall be achieved to satisfy Part 1 of this standard.*

And Clause 5.1.4 Other Earthing Systems

- *Alternatives to the MEN system may be permitted, provide that the requirements of part 1 of this standard are satisfied, taking into account any effects on the distribution system supplying the installation.*

Examples:

1. *Electrical installations and supply systems, in accordance with the descriptions and compliance conditions permitted by IEC 60364 series.*
2. *Electrical installations in surface mines complying with AS/NZS 3007 which permits the use of TN, TT and IT systems*
3. *Existing installations may still remain connected under former direct earthing or voltage operated earth leakage circuit breaker (ELCB) systems permitted by superseded editions of this standard.*
4. *Earthing/bonding arrangements for installations that are not supplied for a distribution system*
5. *Electrical installations complying with IEC 60364 series which permits the use of TN, TT, and IT systems as alternatives to the MEN system*

You will find from the above reiteration of sections in the AS/NZS 3000 that the RVT can play a vital role in added safety to an existing earthing system (MEN) but conversely its role can also extend largely in alternative power source where earthing is not installed or separated from the original source. (i.e. IT and TT) systems which are still used in some parts of Australia, and majority of the smaller independent generators supplied systems.

3.1 Alternative Power Supply (Earthing System)

Generally, under the normal mains power systems using TN-C-S or Multiple Earth Neutral (MEN) system which is mandated in Australia, the protective earth is connected back to the main switchboard and grounded to an Earth Electrode. The neutral is connected to the earth terminal in the main switchboard to form a loop, so if there is an electrical fault to earth, the earth fault loop impedance which is usually required to be low, will facilitate the current flow through the protective earth (abnormal leakage) and trigger the protective devices to trip accordingly and therefore isolating power within the appropriate time minimizing damage and saving lives.

Most portable generators and alternative power supplies do not use an MEN system and the use of IT power system is preferred in many cases. Here in this system, you will find that is either no earthing at the supply or it is done via a high impedance connection, which makes the functionality of the protective device and RCD ineffective and undesirable under fault. Although, there is no current flow (no earth path to the source), under what they call first fault a person cannot be electrocuted, also if an RCD is used the RCD cannot trip. Conversely, the voltage potential that is present gets carried unnoticed until a second fault and potential electrocution strike.

3.2 Benefits of the RVT

As per our desktop assessment and live experimentation of the PSOA (combined RCD/RVT), we found also that at the event of failure of the earthing system on a MEN installation or Neutral from the main source, the RVT played a major role in providing continuity of protection enhancing the safety characteristics of the RCD in an electrical installation. In addition to the MEN system, and when assessed on other earthing system arrangement as mentioned in 3.1, the RVT have shown to provide extra and more superior protection when working in conjunction with the RCD.

From our observation of the technology used in RVT/RCD in the PSOA, we bring forward the following benefits:

- 1) Upon failure of Earth, Floating Voltage to earth cannot be detected by the RCD (as it is an earth function operated device), the detection of both voltage and current faults are shown to provide added safety to the system.
- 2) Loss of supply neutral. The RVT detects a voltage rise on the earth cable and trips at a predetermined level of 43v. (equivalent to 30mA)
- 3) Fault level detection. 10mA to 30mA and/or 43v
- 4) Allows the RCD to operate at 110v/240v
- 5) Allows the current fault level to be within 10mA - 30mA. Whereas RCDs are restricted to a predetermined level.
- 6) The RVT works on most earthing systems
- 7) The RVT has a **test function** (button) to verify the operation of the RCD

3.3 Scenario

A good example of a situation that happened in 2018 in Tasmania when a girl was electrocuted due to an accidental loss of the Neutral wire creating a floating voltage 230V to Ground, although the Line Neutral and Earth is properly connected at the consumer side, the appliances weren't operating, thinking there was a problem from the Network and therefore electricity is down. With lots of water in the garden, the person touches the water tap and got fatally electrocuted. The question that was raised from this is whether the RCD played its full role in detecting the fault, and obviously there are a host of other questions to be asked, although the focus here is whether a further enhancement of the current electrical system is necessary to prevent accidents that may lead to fatalities.

From this upsetting scenario we can learn a great deal that electricity and its long journey since its onset, continues to be a dangerous predator in our lives and it certainly will continue to be ubiquitous for many generations ahead, and our role as engineers, specialist contractors, scientists and professional experts is to continue safe guarding the potential risks to human lives at work and also at home.

3.4 Statement

My name is Sam Dib, the Managing Director of GES and the Founder of IINGEN. I have read and researched the product to the best of my ability, and I conclude in support of the Residual Voltage Technology (RVT) to be of a great voltage measuring device capable in providing additional safety utility of the RCD when used in conjunction as a single device. I ask the electrical committee to have an open and pragmatic discussion, to provide the professional support, to collaborate, to embrace and endorse without prejudice the advancement of technology and continuous development of products and systems such as RVT to play an important part of ensuring safety of persons, livestock and property against the dangers that may arise in an electrical installation.

Report 2

Paul Malanchuk (Director) Electrical Projects Australia
Independent Review of WWEST RVT Technology for PSOA (10 July 2022)



INDEPENDENT REVIEW OF WWEST – RVT TECHNOLOGY FOR PSOA

Prepared by:
Electrical Projects Australia
368 Maitland Road
PO Box 365
MAYFIELD NSW 2304
Phone: 02 4967 5999
Facsimile: 02 4967 5933
Email: mail@electricalprojectsaustralia.com.au
ABN 72 053 112 502

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1.1 GENERAL

We have been requested by WWEST Pty Ltd to carry out an independent review of their RVT technology proposed to be installed within their Portable Socket Outlet Assembly (PSOA) as shown on their drawing A03.

1.2 ASSESSMENT

Our desktop review of the technology and review of live demonstrations of various scenarios, including loss of earth and loss of neutral, which are common 'real-world' situations, it was evident to me that the RVT technology has some tangible benefits over the common protection technology for PSOA's which is typically just a 30mA RCD.

We believe that a common usage for PSOA devices is with portable generators and the like, and the majority of these in the real world are operated unearthed, or with a poor earth connection which renders the RCD protection ineffective. There is however an expectation by most that the RCD would protect them as there is no requirement for labelling on existing PSOA units that the RCD will not operate unless an earth is provided at the generator. So, there is currently a false sense of protection offered by the current PSOA units on the market.

We believe that the benefits of the proposed RVT Technology by WWEST Pty Ltd include the following:

- a. Protection against loss of neutral.
- b. Protection against loss of main earth and M.E.N. bond.
- c. Combined current and voltage fault detection.
- d. Lower fault level detection (10mA – 30mA).
- e. High impedance earth connection within the RVT device reduces fault level at PSOA outlets.

We have also found the following in relation to what changes etc can be expected in the deployment of this proposed RVT technology.

- a. The RVT technology is proposed to be used in conjunction with existing RCD technology, so all the protection that is provided by RCD's does not change, but it is complimented by the additional protection provide by the RVT device as noted above.
- b. Standard test equipment that is current available to test operation of RCD's can be used to test the RCD/RVT combination proposed for the PSOA, along with the inbuilt test button. So, there is no requirement for re-training or the like with the introduction of this new protective device.

1.3 STATEMENT

I, Paul Malanchuk, the director of Electrical Projects Australia, and practicing Electrical Engineer for over 25 years declare that I am in support of the proposed RVT technology to be delivered within the PSOA by WWEST Pty Ltd as I believe that it can provide additional safety benefits over an RCD only protected PSOA.

This is based on my review and research into the proposed RVT technology which I declare was carried out with due diligence and to the best of my ability.