Unisin®2100 Neutral Current Filter Benefits for Radar Systems

Application Note ***September 2003*** **AN405.1**

Background

For electronic equipment and devices that are susceptible to malfunction caused by harmonic distortion, IEEE Standard 519 states that AC sources shall have no more than 5% total harmonic voltage distortion and no more than 3% for single harmonics for computers and allied equipment. Radar systems fall into this category. Radar systems and other electronic devices in this category are very sensitive to neutral-to-ground voltage which can be very significant due to heavy currents in the neutral conductor, including zero sequence and other currents, of up to 3 times the fundamental power current.

Application

There are several possible remedies available of which the most effective appears to be the use of a grounding transformer filter, Unisin® 2100, to bypass the high magnitude neutral current and reduce the neutral-to-ground voltage significantly by up to 90% or more, resulting in very low neutral current, very low neutral-to-ground voltage and much lower voltage distortion.

Experience has demonstrated significant proven benefits of utilizing grounding transformer filters for single-phase nonlinear loads, including:

1. Ensured normal operation of connected loads.
2. Prevention of overheating and burnout of the distribution transformer
3. Avoidance of neutral conductor overheating and therefore of the need to oversize the neutral conductor
4. Improvement of system power factor
5. Minimization of power loss in conductors and connected loads
6. Reduction in voltage distortion
7. Reusability of grounding transformer filters in successive facility renovations.

Conclusion

The Unisin® 2100 can provide major technical and economic benefits for systems with single phase nonlinear loads, including radar systems.

Power Quality Consultation

Please feel free to contact us for free consultation.

Unisin Power Technology, P.O. Box 3308, 444 North Amelia Avenue, San Dimas, CA 91773 USA
Tel: 909-305-4846, Fax: 909-971-0206, Email: eng@unisin.com
Customer Service: 866-521-4926
Web: www.unisin.com