

Isolation Transformers for Rail Electrification Projects

Blakley Electrics are currently supplying a series of 1:1 ratio isolation transformers for a major rail electrification project in the UK. Single phase and three phase transformers are being supplied in ratings from 25 kVA through to 90 kVA. Their purpose is to separate traction supplies from the mains network. The transformers are to be permanently installed in outdoor locations necessitating the use of IP55 enclosures fabricated from stainless steel with a painted finish.

Although Blakley Electrics had a Network Rail Certificate of Acceptance for 1:1 ratio isolation transformers (certificate PA05/04648), the new project required transformers rated up to 90 kVA in non-vented IP55 enclosures, which was beyond the range of the transformers covered by the existing certificate. Therefore a comprehensive series of Type Tests has been carried out to demonstrate that the new transformers meet key performance requirements, such as temperature rise, inrush current and ingress protection to IP55. The scope of PA05/04648 has now been extended to include these new transformers up to 90 kVA rating.

At the time the new transformers were being developed for the major electrification project, a similar requirement arose on another Network Rail Project for a 1 off 55 kVA three phase 1:1 ratio isolation transformer. On this project, in addition to the requirement for an IP55 stainless steel enclosure, etc., there was also a requirement for additional switch and fuse gear to be incorporated. As can be seen from the images alongside, the design of the 55 kVA transformer is very similar to that of the newly approved 25 to 90 kVA transformers and the client has accepted that the recent type testing carried out on these can be used to demonstrate that the 55 kVA meets the required standards and is suitable for installation on a Network Rail project.

In the rail sector there is a regular need for transformers to meet specific power and installation requirements, which means that non-standard transformer assemblies have to be produced on a regular basis. Due to the cost and time to carry out a full suite of type tests, it is widely accepted that compliance with standards can be demonstrated by extrapolating from the results of type tests carried out on similar products. For long term, high profile projects requiring large quantities of transformers, specific type testing can be undertaken. However, this does extend time scales and increases cost, which should be factored in from the start of the project.

Blakley Electrics specialises in the design and manufacture of transformers and distribution equipment for use in harsh, demanding environments, such as alongside railway lines, in tunnels and in dockyards. If you would like to discuss a specific requirement, please contact our Projects team.



Part A7040185 - 40 kVA IP55 Isolation Transformer



40 kVA IP55 Transformer after dust ingress type test



Part A7042960 - 55 kVA Isolation Transformer with additional switchgear