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Degassing of materials inside a vacuum interrupter, measurements by residual-gas analysis and calculations

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Abstract:

Materials of vacuum interrupters have to be almost free of gases, since these determine the quality of the vacuum inside the interrupter. In order to support the development of interrupters and to control the production process, the residual gases inside a sealed-for-life interrupter were investigated. Also, the temporal increase of pressure in a pumped vacuum system after high current interruption was measured. The residual-gas analyzer consists of an Omegatron detector in UHV apparatus, which can be connected to the vacuum interrupter. This technique is used to detect the inner gas sources and to investigate the diffusion of gases from materials in a vacuum. The degassing of stainless steel is measured and compared with theory. A numerical calculation describes the complete process of degassing during the soldering of a vacuum interrupter.

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Keywords

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circuit-breaking arcs, vacuum interrupters, vacuum breakdown, vacuum arcs, vacuum techniques, electric breakdown, switchgear testing, insulation testing, numerical analysis

INSPEC: Non-Controlled Indexing

numerical calculation, vacuum interrupter, residual-gas analysis, measurements, arcing gases,

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