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Series Active Compensation of Current Harmonics Generated by High Power Rectifiers

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Abstract. This paper presents a series active filter to compensate current harmonics generated by high power rectifiers. The advantage of the proposed scheme is that is able to compensate current distortion by injecting a distorted voltage in only two lines, avoiding resonances and reducing compensator's rated capacity. The paper presents the series active filter in terms of principles of operation, design procedure, and compensation performance. Simulated results applied to an electro-winning rectifier demonstrate the viability of the proposed scheme. The proposed design procedure and compensation performance are demonstrated experimentally on a 10 kVA laboratory prototype.