



A 75 KVA Motor Generator Set had been installed to protect a 30 KVA Magnet Resonance Imaging system. Why was the output voltage so distorted?

	<p>Initial Problem</p> <p>No problem, really!</p> <p>We just found the voltage feeding a magnetic resonance imaging (MRI) system to be very distorted – over 6% THD.</p> <p>The MRI was operating properly, and we discovered that an MG-Set had been installed to provide ride-through and power conditioning.</p> <p>Still, the voltage distortion concerned us. <i>Was the MG-Set overloaded?</i></p>
	<p>An Experiment</p> <p>We discovered that the MG-Set had a Bypass switch, so we asked the local service engineers to switch device to Bypass.</p> <p>The voltage distortion disappeared!</p> <p>The MG-Set, rated for 75 KVA, was only loaded to about 30 KVA maximum. The distortion was a result on the non-linear load current drawn by the MRI and the output impedance of the MG Set.</p>
	<p>Supporting Information</p> <p>We caught a transfer from Bypass back to the MG-Set. The change in voltage waveshape, peak voltage, and distortion is very pronounced.</p> <p>The distortion was not causing a problem – so no remedial action was needed. However, this site is a good reminder about the importance of impedance and loading when applying power conditioning devices.</p> <p>KVA rating alone is not enough!</p>