

**Standby Generator Forced Circulation Block Heaters**

Date reviewed: 04/04/2016

Description of Technology		Energy Saving Opportunity	
<p>To meet the NFPA code for EPS, block heaters are used in standby generators. Forced circulation (Pump-Driven) block heaters include a heating element and a pump to heat and circulate the generators coolant. Currently the market is dominated by Thermo-Siphon block heaters which rely on the buoyancy of warmed water to circulate heated fluid throughout the generator.</p>	Sector(s):	<input type="checkbox"/> Residential	<input checked="" type="checkbox"/> Commercial & Industrial
	Applicability Criteria:	Standby generators	
	Efficiency Improvement:	Increased heat transfer and provides uniform temperature across the engine block	
	Energy (%) Savings Potential:	Approximately 40%	
	Demand (%) Reduction Potential:	None	
	<b>Strengths</b>		<b>Weakness</b>
<ul style="list-style-type: none"> <li>More consistent block temperature for engine therefore able to meet NFPA requirements with lower heater temperature and lower energy use</li> <li>Simple to retrofit to existing block heater systems i.e. no added materials</li> <li>Supplier offers training for installers</li> </ul>		<ul style="list-style-type: none"> <li>Education is needed to correctly install forced circulating block heaters. Qualified installers required</li> <li>Savings is variable dependent on the outdoor ambient temperature</li> <li>Thermo-Siphon block heaters dominate the market, creating a barrier for forced circulation block heaters, and are driven by OEM installations</li> <li>Since some standby generator manufacturers offer this technology on larger units, there is only an energy savings opportunity with retrofit applications</li> </ul>	
Third Party Analysis/ Previous MTAC Reviews		Suppliers Known to MTAC	MTAC Status
<p>Avista, Bonneville Power Administration, and Pacific Gas and Electric Company have conducted studies on this technology</p>		<p>Hot Start</p>	<p>Acknowledged to have energy savings potential and referred to individual PA for their own EE program consideration.</p>
Market Development Issues			
Cost:	\$1,000 - \$4,000		
Market Risk and Barriers:	Technician knowledge and OEM installation of thermo-siphon block heaters		
Time to Market:	Currently on market		
Simple Pay-back: (Years)	Varies		

