

Table 1
Recommended ECRM's⁹

Overall Ranking	ECRM ^{1,5,6}	Engineering Opinion of Probable Costs		Typical Energy Savings		Potential Annual Energy Savings (MMBtu ² /Kwh ³)		Potential Annual Energy Cost Savings		Simple Payback Period ^{4, 8} (years)	
		low	high	low	high	low	high	low	high	low	high
1	Automatic/Continuous Skimmer	\$3,000	\$5,000	0.5%	1.0%	1700	3400	\$7,650	\$15,300	0.2	0.7
2	Electronic Parallel Positioning	\$50,000	\$70,000	2.0%	5.0%	6800	17000	\$30,600	\$76,500	0.7	2.3
3	Oxygen Trim	\$25,000	\$35,000	1.0%	2.0%	3400	6800	\$15,300	\$30,600	0.8	2.3
4	Blowdown Heat Recovery Unit	\$40,000	\$50,000	1.0%	2.0%	3400	6800	\$15,300	\$30,600	1.3	3.3
5	VFD for Continuous Duty Motors ⁷	\$10,000	\$15,000	20.0%	40.0%	24051	48102	\$2,405	\$4,810	2.1	6.2

Notes:

1. ECRM = Energy Conservation and Retrofit Measures
2. MMBtu = Million British Thermal Unit (Btu); 1 BTU is equivalent to the amount of heat energy required to raise 1 pound of water 1 degree Fahrenheit (F)
3. kWh = Kilowatt - hour (1 Hp = 0.746 Kw)
4. Simple Payback = Initial Investment Cost / Savings per Unit of Time
5. Only perform the ECRM if boiler condition (controls, tubes, refractory, etc...) has been inspected; depending on these conditions, it may be cheaper in the long-term to replace boiler.
6. Maxis recommends further engineering analysis be performed and/or site-specific cost estimates be obtained prior to implementing the Recommended ECRMs.
7. Example ECRM based on 25 Hp motor with 7% to 15% reduction in speed; additional savings for larger motors are directly proportional to the ratio of motor size.
8. Simple payback period assumes recommended ECRM will operate 100% of baseline hours; cost savings directly proportional to ration of actual/baseline hours.
9. Recommended ECRM's are based on the following Baseline Conditions:

Average Electric Costs =	\$0.10	(\$/Kwh)	Estimated electrical costs
Average Natural Gas (Fuel) Costs =	\$4.50	(\$/MMBtu)	Estimated natural gas cost (\$/MMBtu) based on 2012 fuel bills for multiple facilities
Approximate Energy Utilized by Steam System =	340000	(MMBtu/year)	Approximate energy utilized was based on 2012/2013 fuel bills or documentation provided by
Facility Annual Operating Hours =	6448	(hours/year)	24 / 7 (M - F, boilers shut down on Sa. at 8 am, and restarted on M at 4 am)