



Ferro Resonant vs. High Frequency;

- It was widely assumed that HF was a much higher efficiency and would pay for itself in a short period of time. The reality is that HF is only marginally higher efficiency than a Charging Technologies, Inc ferroresonant charger equipped with our newer controls – about 5 – 6 % delta . FR 87% - HF 91 – 94% . It would take years for a HF charger to “pay for itself” when compared to a ferroresonant charger. The greatest efficiency gains come when replacing an aging SCR charger with efficiency in the low 70% range but the savings are similar when replacing with either a new HF or ferroresonant charger.
 In the example below, the 92% Charging Technologies, Inc Xtreme Power HF charger saves just \$36.4 per year over our XPT with an efficiency of 87%. Replace the SCR with a new Ferro resonant XPT and the savings is \$195/yr.

CELLS	18		KILOWATT HOURS=	33.70	shifts	1	Cost per Year
AMP HOUR	865				days	5	\$657.20
EFF	0.87	87%	Cost for Kw	0.075	weeks	52	
Ferroresonant XPT18-865B			Cost per charge	\$2.53	Number of chg cycles		260

CELLS	18		KILOWATT HOURS=	31.87	shifts	1	Cost per Year
AMP HOUR	865				days	5	\$621.49
EFF	0.92	92%	Cost for Kw	0.075	weeks	52	
High Frequency 36-2B-E3			Cost per charge	\$2.39	Number of chg cycles		260

CELLS	18		KILOWATT HOURS=	41.89	shifts	1	Cost per Year
AMP HOUR	865				days	5	\$816.81
EFF	0.7	70%	Cost for Kw	0.075	weeks	52	
SCR			Cost per charge	\$3.14	Number of chg cycles		260

2. Another consideration is the warranty- 10 years (5+5) for Ferroresonant- 2-3 yrs. typical for HF. Some manufacturers are saying the HF transformer is warranted for 10 years in the HF charger- That sounds great but it isn't the transformers that fail, it's the power boards (mosfets /IGBTs) and those are very costly to replace – 75-85% the cost of the original charger and it can take weeks to get a replacement board.
3. Expected lifetime; HF chargers are usually fan cooled. The fan brings with it all of the dust and debris that floats in the air and deposits it inside the charger on components. An exacting maintenance schedule must be followed to make sure that the inside of the HF charger remains free of that dust and debris-, if not, additional heat buildup occurs that significantly reduces the life of the components. In abusive environments filters are required, additional maintenance must be done to ensure that they are clean and allow the air to flow through.

High Frequency charging is here to stay but not every customer is a good fit for a High Frequency charger. Understanding the way the charger will be used; the conditions of the environment where the charging takes place and the customers' expectations should always be considered when placing a HF charger.

Call us to discuss your application and get the best charger solution; whether high frequency or ferroresonant we have the charger to meet the requirements.

Rex V Palmatier
Vice President Sales & Marketing
Charging Technologies, Inc
314-739-1414 ext 426 Office
314-620-4403 Cell
rpalmatier@chargingti.com



