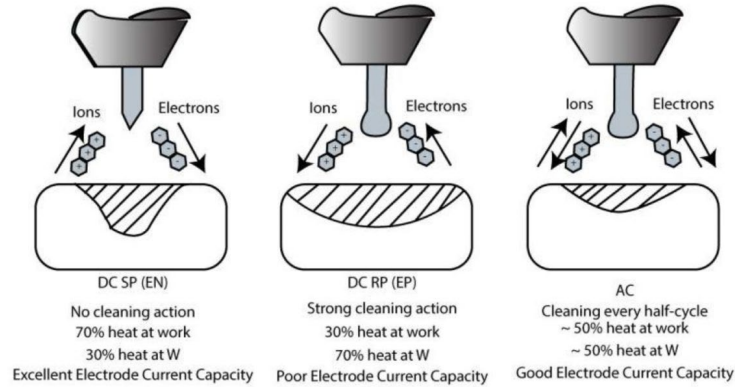


## AC Welding

First off the HF has nothing to do with cleaning. HF is only for non-contact arc starting. THE RP Reverse Polarity of the AC cycle does the cleaning. The SP Straight Polarity does the welding.



So what actually does the cleaning? It is the positively charge gas ions that bombard the surface of the aluminum to remove the oxide. This action only happens when the AC wave cycle is in reverse polarity. Action is like sand blasting paint off a surface. Cannot weld the aluminum without removing the oxide. The reason is the oxide's melting temperature is way higher than the aluminum being welded. By the time you reach the melting temperature of the oxide the aluminum has melted away.

So, what is the Balance setting? The balance setting is an option in Square wave AC welding machines. As explained above the reverse polarity cleans the aluminum surface of oxide. The heat generated by the reverse half cycle is absorbed by the electrode and the torch. The Straight half cycle does the welding. If you limit the time spent in the reverse polarity you reduce the heat input into the electrode and Torch. You typically only require enough reverse polarity to cause the cleaning gas ion phenomenon to remove the oxide on the surface of the aluminum. Anymore is wasted heat into the torch. So, by minimizing the percent of reverse polarity lets say to 10% then 90% of the sinewave is used for welding. What you gain is a stable arc that can be welded with a pointed tungsten. What you want is to set the reverse polarity to perform the cleaning without overheating the electrode or torch. Typically, on clean metal around 15% to 20%.

