

RAFTTM

Resistive **A**daptive **F**eedback **T**echnology

BEYOND ADAPTIVE WELDING.....

RAFT = AdaptQ + SoftQ

AdaptQ *Automatic optimization of weld schedule's current and time to overcome process disturbances*

SoftQ **IT'S ALL ABOUT THE DATA & WHAT IT TELLS YOU!**

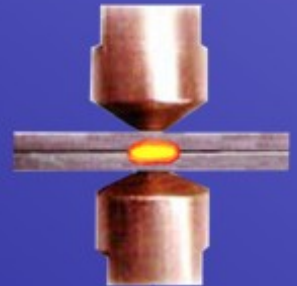
Expulsion Free Reporting

Tip Dress Verification

Nugget Integrity

Tooling Integrity

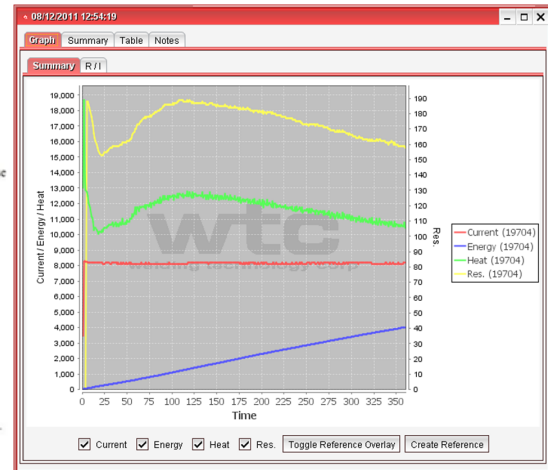
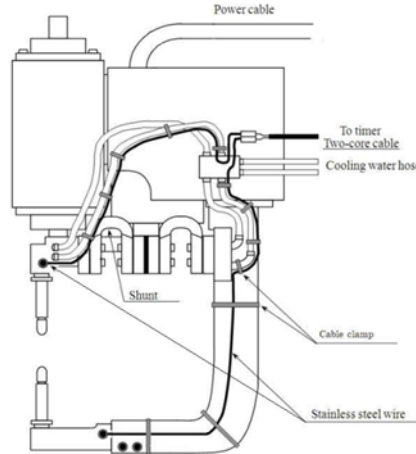
Process Integrity



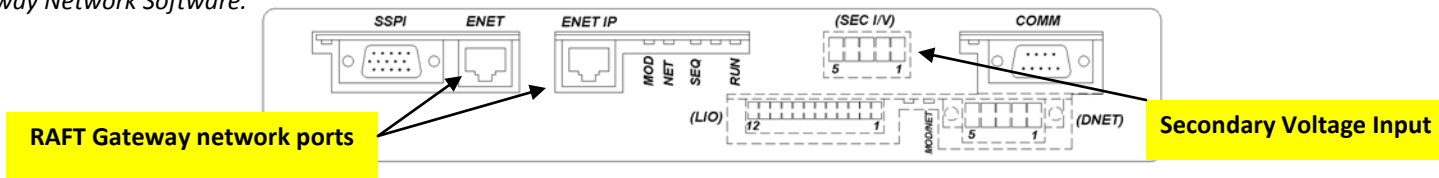
wtc

RAFT

Resistive Adaptive Feedback Technology - What Equipment Do You Need?



You need a WTC welding control equipped with a Gen6 inverter. The welding gun needs to be instrumented with secondary voltage sensing leads that will route through robot dress package and eventually land onto the weld timer voltage input. In order to see the millisecond resistance, current, heat, and energy curves, you will need to connect to the timer using RAFT Gateway Network Software.



SoftQ

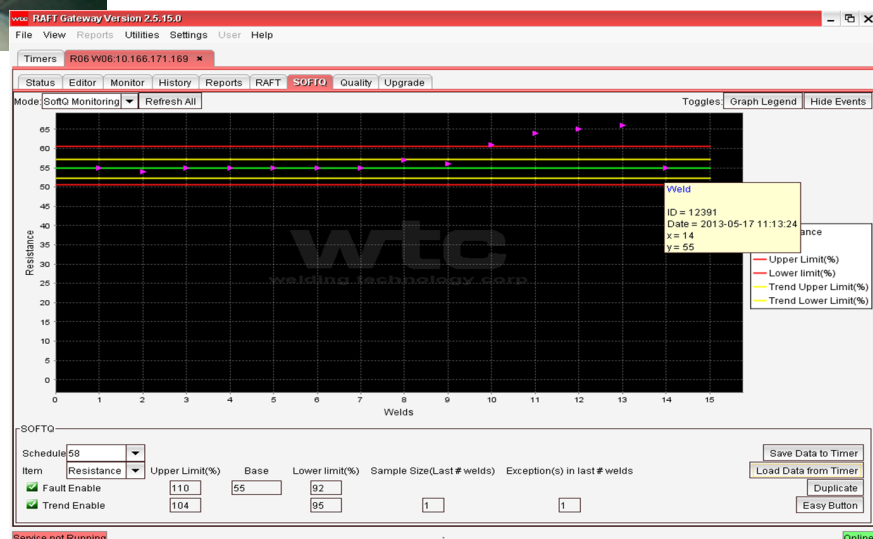
Keeping an Eye on Tip Dress Operations - **Tip Dress Verification!**

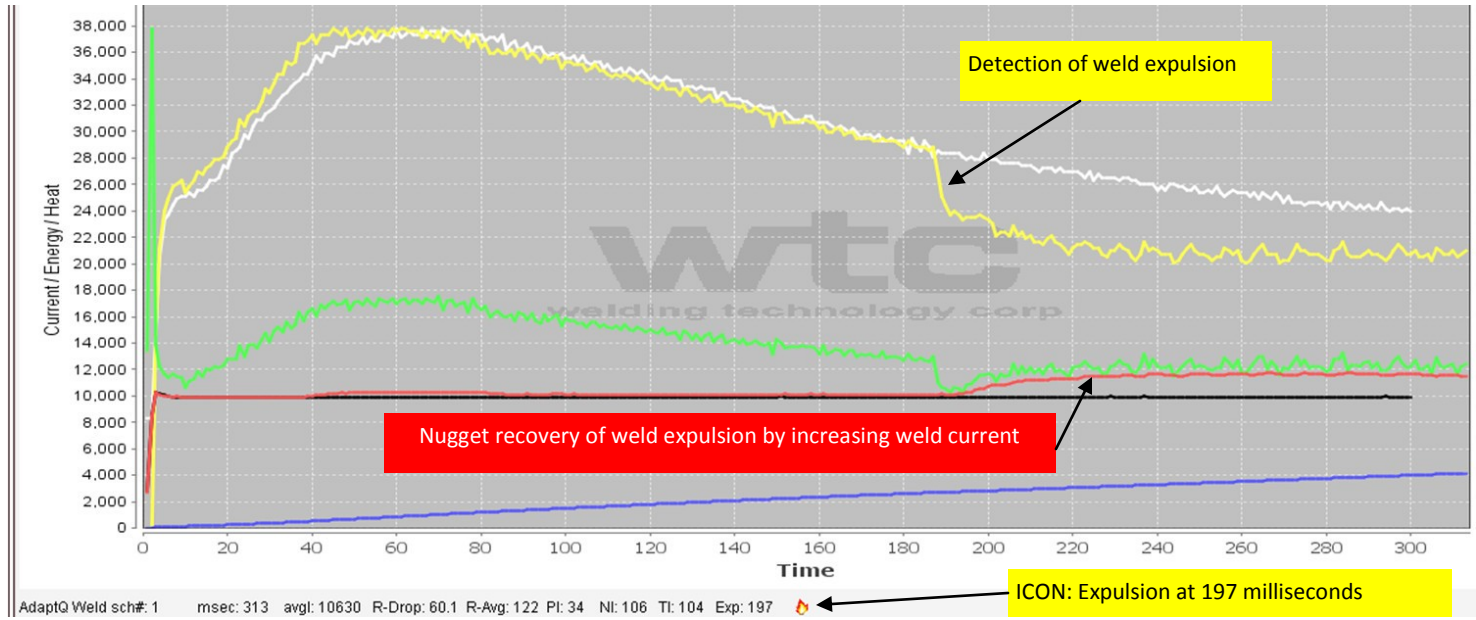


The WTC control can measure precise resistances of welding tips after they have been dressed. Although dressers can remove slag from the edges, the control will identify if the surface of the electrodes are brought back to an approved condition.

RAFT Gateway has a SoftQ tool for graphing the results of the tip dress operation so that you can monitor the effectiveness of the tip dresser cutter blades. You can set an alert level and a faulted level.

Users claim that the SoftQ Tip Dress monitor is the fastest payback feature of **RAFT** for welding.

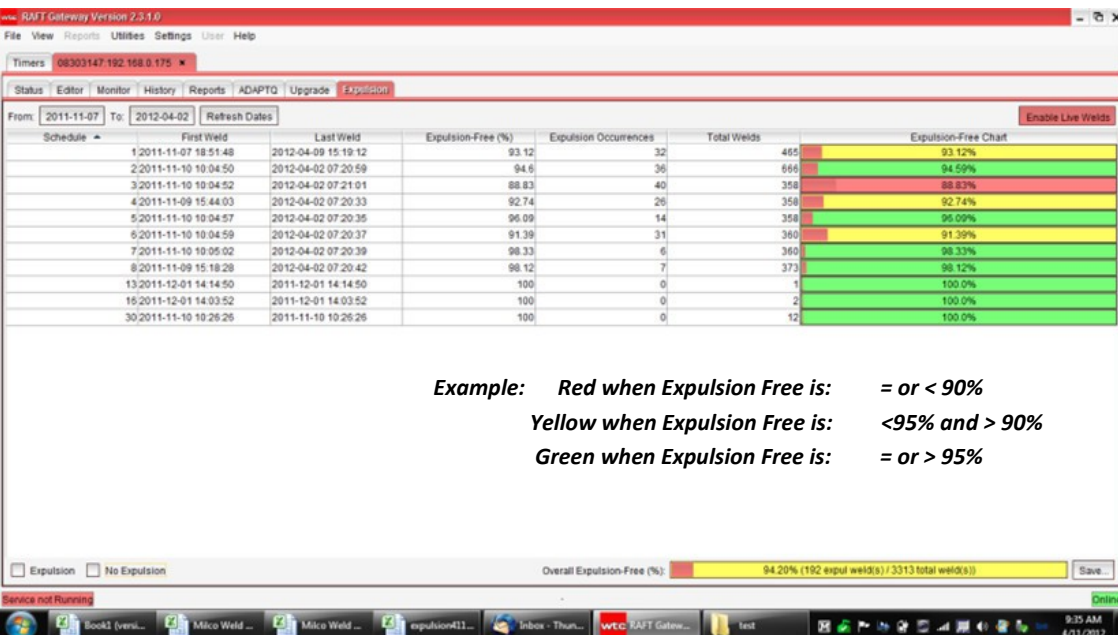




The WTC control can detect expulsion very easily. On this weld above, the yellow resistance curve reveals that expulsion occurred at the 197 millisecond time. Detection of expulsion happens regardless if you are welding in current regulation mode or in adaptive mode. In adaptive mode, the weld control will generally weld in the lower section of the lobe to reduce expulsion.

Expulsion Free Reporting!

Summarizing Where Expulsion Occurs in Entire Welding Shop - What Level Are You Expulsion Free?

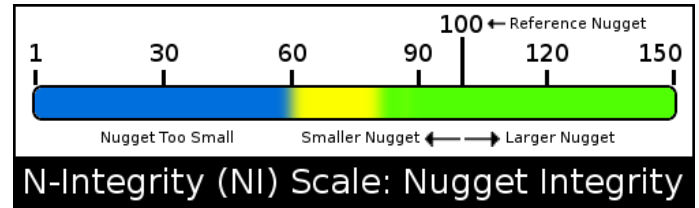


RAFT Gateway Network Software can summarize and report where expulsion is occurring in the plant - regardless of whether you are operating in Adaptive Mode or Current Regulation Mode.

This chart shows all the welding in a range of time and highlights where your expulsion problems are. Red are the most occurring followed by Yellow and then Green which are under control. You can set limits as you wish.

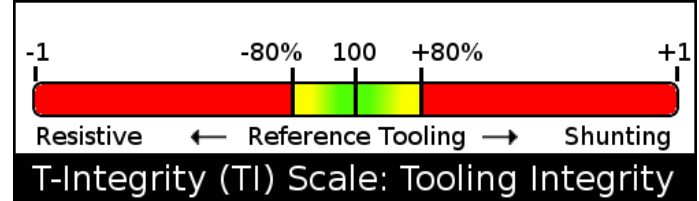
Nugget Integrity - Verification of Weld Nugget Size

SoftQ reports the nugget integrity for each weld, which is derived from the ratio of the actual weld against your reference weld nugget size



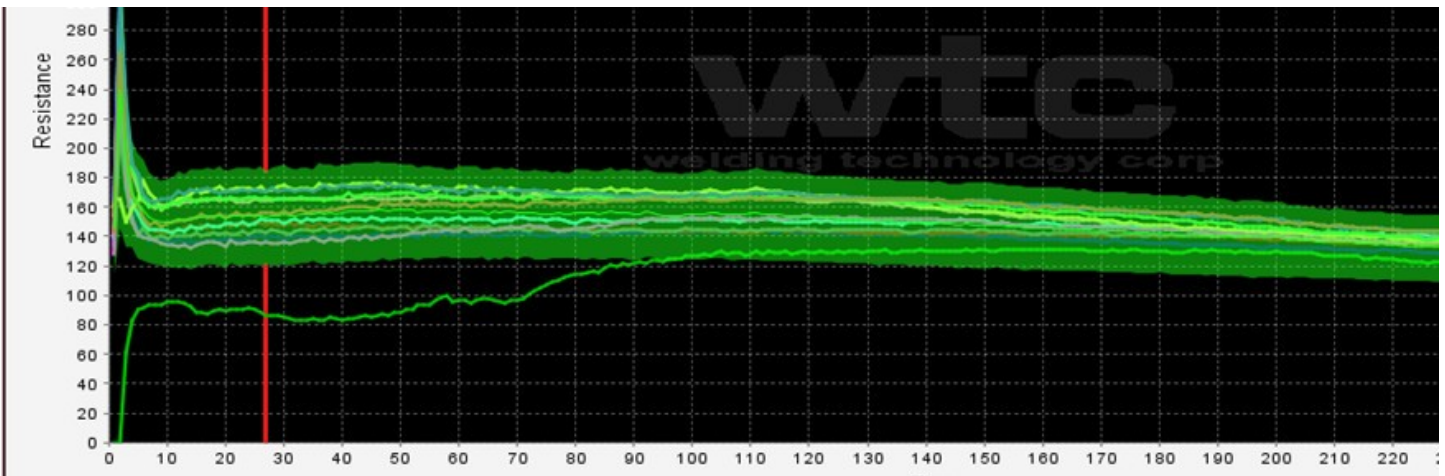
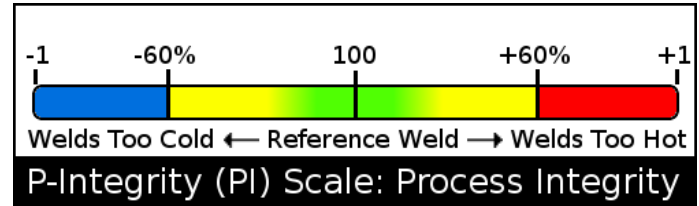
Tooling Integrity -The Tooling Health

Schedule maintenance with Tooling Integrity . SoftQ reports tooling wear and shunting paths.



Process Integrity - Identify Process Changes

SoftQ identifies process changes caused by disturbances. These disturbances could be a result of part fit up, shunting, sealer, part coating, incorrect stack up and knowing these process changes before they cause problems will improve the quality in your welding processes.



You can easily develop comprehensive process resistance envelope and detect any operations that goes outside these boundaries. With RAFT Gateway Network software, you can report these excursions by control, by machine, and by part.

AdaptQ - Running in Cruise Control!

With SoftQ constantly performing the analysis of the weld nugget, the tooling and the process, you can let the weld control's intelligent adaptive algorithm make immediate changes to current and weld time to recover immediately to disturbances. This allows you to set your initial current regulation schedule in the lower part of the weld lobe as far away from the expulsion limit, thus allowing you to reduce flash on your parts.

