

SEM/EDS Analysis

Determine Make-Up of Deposits

Every **Innovation**
Has a Mission

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forward-looking energy

SEM/EDS Analysis

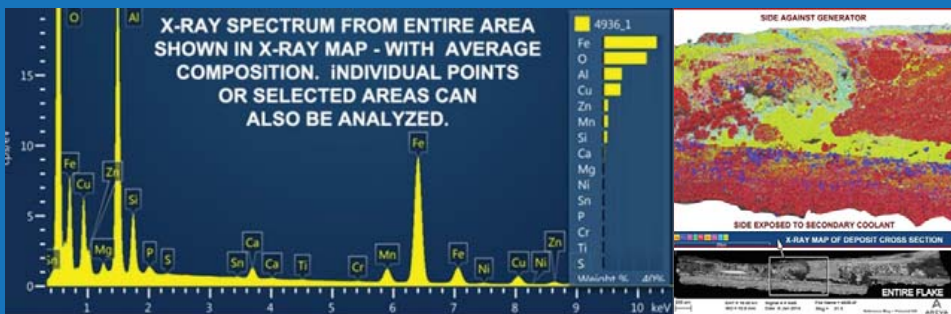
Determine Make-Up of Deposits

Benefits

- **Calculates** the loss of performance from reduced heat transfer in your heat exchangers
- **Assists** in adjusting water chemistry to minimize deposit buildup in both SGs and heat exchangers maximizing asset longevity

The Challenge

Plants experience deposits that build up on heat exchanger tubes over time, negatively impacting heat transfer and corrosion resistance. In addition, stainless steel tubing in steam generator (SG) stabilizers has spots or deposits on the interior diameter of some of the material. Further discovery unveiled residual chloride (Cl) from the tubing supplier's pickling process.



Element	Wt%	Wt% Sigma	Atomic %	Element	Wt%	Wt% Sigma	Atomic %
O	29.11	0.04	54.17	Cr	0.09	0.01	0.05
Mg	0.48	0.01	0.59	Mn	3.13	0.02	1.69
Al	12.48	0.02	13.77	Fe	35.83	0.05	19.10
Si	2.55	0.01	0.14	Ni	0.44	0.02	0.22
P	0.15	0.01	0.14	Cu	11.53	0.07	5.41
S	0.04	0.01	0.03	Zn	3.14	0.04	1.43
Ca	0.80	0.01	0.60	Sn	0.17	0.02	0.04
Ti	0.06	0.01	0.04	Total:	100.00		100.00

The Innovative Solution

AREVA's SEM/EDS analysis fully characterizes heat exchanger tube deposits through safe non-destructive techniques. In addition, SEM/EDS screens for the presence of chloride contamination on stainless steel, ensuring Cl is not smeared into the tubing ID surface. SEM/EDS analysis can also define the stratified chemistry of SG deposits. When used in conjunction with EDS software, actual porosity within each deposit can be determined.

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