

Improve your bottom line: The dollars and sense of clean boiler tubes

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Fouled HRSG finned-tube bundles can penalize your bottom line by hundreds of thousands of dollars on an annual basis, so it makes good sense to call in a cleaning contractor—either during planned annual outages or when pressure drop reaches what you decide is the “action-required” level.

According to experts, every additional inch (water column) of pressure drop through a typical F-class HRSG reduces the bottom line by about \$170,000 to \$190,000—depending on the price of fuel.

An informal poll of users attending the exposition during the HRSG User’s Group meeting told the editors they were most likely to contract for cleaning when the pressure drop was about 3 in. H₂O above the as-new delta p. Payback on the investment should be three or four months at that point and appealing to management.

Attendees generally agreed that corrosion products are easy to remove from finned-tube panels, providing there’s sufficient access space. By comparison, ammonia salts are difficult. The biggest challenges typically are found at plants not regulated on slip, where there may be a temptation to overfeed ammonia as a way to assure that NO_x emissions are maintained within permit limits; also, at plants burning gas with above-average levels of sulfur.



Before and after tube cleaning

Contractors typically rely on dry ice to remove deposits, sometimes air or water. Several users warned against the use of water because it can turn otherwise manageable deposits into “concrete.” Plus, water can contribute to corrosion of the HRSG floor and shorten the lives of penetration seals.

The editors spent a few minutes with [Keith Boye](#) in [Precision Iceblast Corp’s](#) booth to develop a list of questions that would help owner/operators select the most capable contractor for tube cleaning, recognizing that no service provider can guarantee a pressure-drop improvement. Here is that list:

- * Does the contractor provide a turnkey service? This means the contractor arrives onsite with scaffolding, air compressor, hoses, dry ice, tooling, etc, required to complete the job.
- * How long will the job take? If there are access ports for sky climbers, electric power is accessible, and accurate boiler drawings are made available to the contractor, a 12-hour window should suffice for setting up the sky climbers. Cleaning can take anywhere from as few as several to possibly more than 20 12-hr shifts, depending on the nature of the deposits.
- * How many people will be on the cleaning team, how many nozzles will be operated simultaneously?
- * How many passes will be made on a face?



* Does the contractor have the capability to spread tube rows (without damaging them) to facilitate access and assure a proper cleaning? Precision Iceblast consults with HRST Inc, Eden Prairie, Minn, regarding the number of tube spreaders to use, how far to spread adjacent rows, etc.

* What pressure does the contractor use for cleaning the tubes? Boye said that particularly high pressures may be needed for severely fouled tubes. Can the contractor work at pressures of 350 psig? Important to recognize that if the pressure is too low to remove a given deposit, there is a chance debris will be packed into downstream tubes and become much more difficult to remove.

- * What’s the prospective contractor’s experience? Boye suggested that owner/operators ask for perhaps 10 references, including a couple from plants with the same boiler you have, and at least one from an OEM.
- * What is the experience of the principals running your job? Ask for resumes.
- * Are the members of the contractor’s team employees or local hires with little or no experience?
- * How much repeat business does the prospective contractor have? How many long-term contracts?
- * Will the contract escort you on a full inspection up and down the face of accessible bundles to assure your satisfaction with the job?