



Heat Exchanger Candidate Form

Eligibility for Ultrasonic
Scale Prevention

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Heat Exchanger Candidate Form

Ultrasonic Scale Prevention Eligibility

*Thank you for your interest in our **online cleaning technology!***

By completing this assessment, you will help us determine if your equipment and processes are candidates for the [Ultrasonic Scale Prevention](#) solution. **Save this document to your computer before completing the form, or your completion progress will be lost.**

This form is in compliance with (FEL1) assessment and intended for Shell-and-Tube, TEMA designated heat exchangers. If you are considering a different type of exchanger for this technology, please contact us at info@orangeultrasonics.com.

In order to confirm eligibility, **please complete the form in its entirety.** To get started, we have included some operating parameters and limitations of the technology to help guide your choice of candidate for this technology.

Please avoid the following characteristics when selecting a candidate:

- Brazed aluminum platefin-tube heat exchangers
- Floating tube-sheet design (where BOTH tube sheets are hidden inside the shell)
- Plate and frame exchangers with gasketed plates
- Pure (not alloyed) aluminum metallurgy or aluminum-finned tubes
- Breech-lock type heat exchangers
- Temperatures greater than 390°C (734°F)
- Straight-tube bundle length greater than 14m
- U-Bend bundle length greater than 8m
- A heat exchanger design that does not have (at least) one tube sheet that is visible/exposed

About You

First Name

Last Name

Company

Location

Occupation

Email

Telephone

How did you find us?

Please select the process(es) you are considering for online cleaning technology:

Crude Distillation Unit

HVU

FCCU

PRH Polyurethanes

Other

Shell & Tube TEMA Designation

FRONT END STATIONARY HEAD TYPES		SHELL TYPES		REAR END HEAD TYPES	
A	 CHANNEL AND REMOVABLE COVER	E	 ONE PASS SHELL	L	 FIXED TUBESHEET LIKE "A" STATIONARY HEAD
B	 BONNET (INTEGRAL COVER)	F	 TWO PASS SHELL WITH LONGITUDINAL BAFFLE	M	 FIXED TUBESHEET LIKE "B" STATIONARY HEAD
C	 REMOVABLE TUBE BUNDLE ONLY CHANNEL INTEGRAL WITH TUBESHEET AND REMOVABLE COVER	G	 SPLIT FLOW	N	 FIXED TUBESHEET LIKE "N" STATIONARY HEAD
N	 CHANNEL INTEGRAL WITH TUBESHEET AND REMOVABLE COVER	H	 DOUBLE SPLIT FLOW	P	 OUTSIDE PACKED FLOATING HEAD
D	 SPECIAL HIGH PRESSURE CLOSURE	J	 DIVIDED FLOW	S	 FLOATING HEAD WITH BACKING DEVICE
		K	 KETTLE TYPE REBOILER	T	 PULL THROUGH FLOATING HEAD
		X	 CROSS FLOW	U	 U-TUBE BUNDLE
				W	 EXTERNALLY SEALED FLOATING TUBESHEET

Standards of the Tubular Exchanger Manufacturers Association

TEMA Type Designation:

Front Head Type:

Shell Type:

Rear Head Type:

Other (Spiral, Double-pipe, etc.)

Heat Exchanger Modifications:

Tube inserts

Finned tubes

Anti-fouling coatings in/on the tubes

Spiral/Twist tubes

If these selections do not describe your equipment, please elaborate:

About Your Equipment

Designated Plant Equipment Bundle Identifier

Years in service:

Orientation:

Please provide the following dimensions in millimeters

Length of the bundle mm

Tube internal diameter mm

Tube-sheet diameter mm

Is the tube-sheet(s) exposed?

The image to the right depicts the US P technology affixed to an exposed tube-sheet.

Exposed tube-sheet



Tube-side (ID) Details

What media is flowing on the Tube-side?

If it is steam, does it consist of 50% or greater water vapour by volume?

Maximum temperature (°C)	°C	Maximum flow rate	m/sec
Maximum tube-side viscosity	cp	Minimum flow rate	m/sec
Maximum operating pressure	barg		

Shell-side (ID) Details

What media is flowing on the Shell-side?

If it is steam, does it consist of 50% or greater water vapour by volume?

Maximum temperature (°C)	°C	Maximum flow rate	m/sec
Maximum tube-side viscosity	cp	Minimum flow rate	m/sec
Maximum operating pressure	barg		

Metallurgy

Tube-sheet	Tube-sheet Subgroup
Shell-side	Shell-side Subgroup
Tube-side	Tube-side Subgroup

Other Metallurgy (please describe major metallurgy and subgroups as applicable)

Fouling and/or Precipitants

Please identify where the fouling occurs in the exchanger:

Tube-side

Shell-side

Both

Describe the **tube-side fouling** in detail:

Describe the **shell-side fouling** in detail:

Are there parts or sections within the Heat Exchanger where **fouling deposits are heavier** than in other sections? If so, please describe what you see in the box below.

Cleaning Information

1. Please check all the methods that you are presently using to clean this Heat Exchanger. If another method is used, please describe it briefly in the box below.

HP/Water Jetting

Chemical Cleaning

Ultrasonic Immersion Bath

Other Method:

2. What method are you using to clean in-situ?

3. How often are you having to clean this heat exchanger in-situ?

5. For an in situ cleaning on this exchanger, what is the downtime in days?

Extensive cleaning

This Hx unit needs to be removed from the processing unit for cleaning

5. How often do you perform an extensive cleaning of this unit?

6. In an extensive cleaning, how many *days* is the unit offline?

7. What method are using to extensively clean?

8. When is the next scheduled extensive cleaning on this heat exchanger?

Month

Year

About Your Performance Goals

9. What is the current experienced run-length (up-time) of this exchanger? *(in days)*

10. What is the run-length you want to achieve for this exchanger? *(in days)*

11. Which statement(s) best describe the current performance of this heat exchanger?

Please select all options that apply:

- a. You have to stop/bypass this exchanger to clean it, before you've anticipated.
- b. If you've checked box (a), how many days are you actually reaching? _____ days.
- c. The process run-length indicated in question 9 is achieved, but performance is poor.

12. Please rank each of these deliverables gained in order of importance from for your business, where **1 is most important** and **5 is least important**. You may give the same rank to more than one deliverable.

Energy savings

Environmental impact

Up-time / Run-length

Heat transfer efficiency

Process Throughput

Avoid a Cleaning Interval

What To Do Next

Thank you for taking the time in completing this form. Review this document to ensure it is answered to the best of your knowledge, and also that a local copy with your responses is saved for your own reference.

Once the form is completed:

1. Click on the 'Submit Form' button below to open the website submission page
2. Enter your email address
3. Attach this completed PDF via "Choose File" under *Heat Exchanger Candidate Form File*
4. Click on the Submit button

If for some reason you are unable to submit this way, you can email the document to us directly, or ask us any questions at info@orangeultrasonics.com.

SUBMIT FORM

*Your data is protected by Hyper Text Transfer Protocol Secure,
Cloudflare and Siteground security frameworks*

ORANGE Cleantech Notes

For internal use only.

Candidate form reviewed by: