

System Analysis, Appraisal & Proposal Guide

System Design Request Instructions

THERE ARE THREE BASIC CAUSES OF WATER/FLUID RELATED PROBLEMS

Scale

- Problems:
- *Loss of heat transfer efficiency*
 - *Flow restriction in pipes and frozen valves*
 - *Back pressure increases energy needed to pump*
 - *Reduced reaction vessel capacity*
 - *Localized corrosion*
 - *Visible surface scale objectionable*

Adverse Water Chemistry

- Problem:
- *General corrosion*

Biofilm

- Problems:
- *Loss of heat transfer efficiency*
 - *Biocorrosion (both general and local)*
 - *Sludge*
 - *Disease and odors*
 - *Bacteria, Algae, Fungus, etc.*

The End Results of Water Problems

- *Wasted water*
- *Ruined equipment*
- *High energy costs*
- *Productivity losses*
- *Product contamination or quality problems*
- *Disease and odor in the cooling water environment*

Materials That Deposit on Equipment and Cause Water/Fluid Problems

Materials may be animal, vegetable, mineral, or corrosive water chemistry. The sources of the materials include: pollution; wind borne dirt, bacteria, and algae; chemical additives; and process components themselves. Some of the materials can grow; such as bacteria, algae, fungus, etc.

Treatment

The bottom line is that if the problem causing materials are controlled, then of the problems are eliminated.



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Please fill out and submit the appropriate appraisal form (see Dealers and Distributors Area on our home page at www.triangularwave.com) to TWT as a means of obtaining system design guidance for a specific location, application, and customer. This appraisal is submitted to TWT management for review with our technical staff. The data provided on the Appraisal Form, along with the recommendations of TWT, will serve as the basis for you to prepare a specific product and installation proposal for the client. Accordingly, the information provided must be accurate and as complete and detailed as possible.

1. Summary of Conditions:

Describe the conditions as they now exist, the problems that are being experienced and/or the improvements that are being sought. This section of the appraisal form sets the background and provides the basic data needed for both the Appraisal and for the resulting Proposal. Attach charts, diagrams or any other illustrations that may clarify the situation.

2. Source of Water:

Designate the source of water for this situation [e.g., municipal water, well water, pond or stream, etc.] and describe the general condition of this water [treated by the municipal chlorinating system, untreated river water, deep well, etc.]. If available, provide any available analysis of the water [testing done by a lab, testing done by the facility maintenance or engineering staff, etc.].

3. Consumption Rate and/or Water Uses:

Consumption rate: how many gpd [gallons per day], gph [gallons per hour] or gpm [gallons per minute] are being consumed at this facility. Commercial industrial facilities often have a meter and monitor it regularly. Other facilities may only have a water bill with consumption rate shown.

Water uses: summarize what the water is used for [drinking, washing, swimming pool, hot tubs, cooling tower, food processing etc.]. We will treat water differently for human consumption or household use versus other commercial / industrial applications. Therefore, differentiate the uses, since different uses will require different treatment methods

4. Current Treatment System:

Describe any current method of water treatment and designate the location where this method is used [e.g., use of chemicals deposited directly into the pool, use of a kitchen counter filtration device, an in-line filter system located downline of the pump, etc.]. To the extent possible, obtain the brand name, model and general function of the treatment system [e.g., TWT under the counter system for drinking water, etc.], or, simply indicate that there is no treatment system in use. Ask how recently the water has been tested and obtain results if available.

5. Electricity Usage: Current Source

What is the current source (110/240) and how much electricity is required to operate each of the units [hot water heating, boilers, etc.] if known. If details are not available, obtain the general electric costs per month as a standard against which we can later show reduced costs from use of the TWT systems.

6. Maintenance Expenses (if available):

How much is being spent monthly or otherwise on maintenance of various parts of the system [such as cleaning the systems, time and labor for the blowdown of the cooling tower, replacement or repair of pipes and/or system, etc.]. Also obtain costs of any chemicals [specific type, amount and cost], again as a standard against which to show reduced costs resulting from the installation of a TWT system. **Note:** Current sources on attached forms.

7. Management Time:

How much time does the facility manager (or other persons involved) need to spend on a routine basis to supervise or otherwise attend to the operation of the current system? Reduction of this wasted time by the installation of a TWT system can be an advantage as it results in "one less thing to do" that accordingly liberates time and energy for other more important matters.

8. Other Associated Expenses:

Include any other costs that are a part of the operation, maintenance or management of the current system. For example, is any routine monitoring required, do certain parts of the systems [such as nozzles, or other functional parts] need to be cleaned routinely, is there down time during cleaning, are there routine reports to submit or regulations to observe that require time, has there been any

down time due to equipment clogging, have they replaced piping equipment due to problems, etc. This provides a possible base against which to illustrate possible savings resulting from investment in a TWT system.

9. Other Comments:

Is the client receptive to change or possible improvement, is there any urgency to get this job done, will this job lead to others within the company or within the industry, are there any cost or budgetary restrictions that may require special financing, will this installation serve as a model for other similar situations, etc.

10. Recommendations:

Based on your view of this situation, what recommendations do you offer? Your special insights into this situation will be valuable in preparing a proposal that will be acceptable to the client.

Important:

Use extra sheets as necessary In preparing the Appraisal Form, clarity is of the utmost importance. Do not try to crowd information into inadequate space but rather use as much paper as you need to prepare a comprehensive and useful report. Use separate sheets if necessary and number your responses according to the list above.

In order to ensure the greatest level of performance and satisfaction, we recommend that you contact our engineering staff, who will be pleased to work closely with you to determine the optimal installation for your needs.

Thank you

**SUBMIT
PROPOSAL**

**FOLLOW-UP CUSTOMER
SATISFACTION**



"Manage Customer Expectations":

Verify the product/system application, installation and performance needs, verify customer perceptions, and manage customer expectations.

