

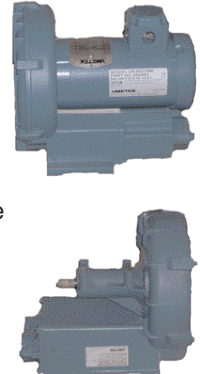
# EXHIBIT AIR SYSTEM QUESTIONNAIRE



Aquaculture Research/Environmental Associates, Inc. P.O. BOX 901303 Homestead, FL 33090-1303  
 TEL: 305/248-4205 E-MAIL: info@areainc.com WEB: www.areainc.com FAX: 305/248-1756

Dear Client:

Thank you for trusting in our experience and professionalism and allowing us to design your system. For over 33 years, we are proud to be the leader in providing quality **aeration system design** and equipment to the industry. We introduced our **Rotron Regenerative Blower** as the air source of choice. We are also proud to be the developer of the **Industry Standard 'Pro-Glass' II Fused Alumina Diffuser** which is the diffuser of choice for any aeration application. With over 3,500 products, our **FREE** systems design allows us to incorporate our equipment into the **Most Efficient** and **Cost Effective Systems** with the **Most Management Flexibility**. Our systems design we provide includes everything you require to make the most informed decision from the **Budgeting Process** to the **Final Purchase**. The design packages typically consist of **Manifold Drawings, Detailed Quotations, Product Sheets** and a **Detailed Letter** explaining the system. Further, our **Technical Representatives** are always available for on the spot technical assistance throughout the purchasing process and beyond at any time!



If you are planning to **Construct A New Exhibit, Aerate An Existing Exhibit** or simply **Design A New Exhibit/Facility** to explore your options, let our qualified and experienced associates assist you. Our associates are current in all devices and methods for all methods of aeration and our **R & D Department** is always developing new systems for same.

In order to properly size your aeration system, below is a list of information we require to ensure that you receive the best system for your particular application. Please fill out the form below and **FAX** back to **305-248-1756** to the attention of our **Engineering Department**. If you received this via E-MAIL, send the filled out form to **areainc@aol.com** or to the FAX mentioned above.

Thank you again for the opportunity and we look forward to having the opportunity to serve you and your equipment/system needs. You can also visit our full service website at **www.areainc.com** for our **On-Line Catalog, Newsletter, Area In Actions**, and more.

## AERATION SYSTEM FORM

Below is the information we require to design the best aeration system for your application. In addition to sizing the appropriate equipment, we will also provide an **Air Distribution Layout** with pipe sizes. To do so, please provide a sketch depicting the actual and/or anticipated tank arrangement with distances indicated as well as the location(s) of power supply.

**ORGANISM:** \_\_\_\_\_

**MAX. DENSITY/BIOMASS:** \_\_\_\_\_

**ELECTRICAL SUPPLY:** VOLTS \_\_\_\_\_ PHASE \_\_\_\_\_ HZ \_\_\_\_\_

**ELEVATION (MSL):** \_\_\_\_\_

<b>QTY OF TANKS</b>	<b>USE</b>	<b>DIMENSIONS</b> (l x w x d OR Ø x d)	<b>APPLICATION DEVICE</b> (If Unknown, We Will Recommend)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____



# EXHIBIT HEATING/CHILLING QUESTIONNAIRE



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Dear Client:

Thank you for trusting in our experience and professionalism and allowing us to design your Heating and/or Chilling system. For over 37 years, we are proud to be the leader in providing quality systems design and our experienced staff will analyze the information you provide and will design the most efficient and cost effective system that offers you the most management flexibility. Before we begin, please provide the following contact information so that we can effectively process your request.

COMPANY NAME \_\_\_\_\_ CONTACT NAME \_\_\_\_\_ EXHIBIT NAME \_\_\_\_\_  
 MAILING ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_  
 STATE \_\_\_\_\_ ZIP/POSTAL CODE \_\_\_\_\_ COUNTRY \_\_\_\_\_  
 TELEPHONE \_\_\_\_\_ FAX \_\_\_\_\_ E-MAIL ADDRESS \_\_\_\_\_

There are three (3) primary factors, other than the type of solution, to consider when sizing temperature control equipment for liquids. They are:

**TEMPERATURE MAINTENANCE:** This is the amount of energy required to maintain the temperature of the solution when the ambient air temperature is different than the temperature you wish to maintain. This is a function of the surface area of the container(s) in which the solution is held. It is defined in terms of BTUH (BTU's/Hour) or kwh (kilowatts per hour) that is either lost or gained due to the ambient air temperature.

**TEMPERATURE CHANGE:** This is the amount of energy required to change a given volume of solution from one temperature to another. This is a function of the volume of the solution. It is also defined in terms of BTUH (BTU's/Hour) or kwh (kilowatts per hour), thus the amount of energy required is divisible by the number of hours one is willing to allow this to occur in.

**NEW SOLUTION:** This is the amount of energy required to change the temperature of solution being added. This is a function of the volume of the solution added within a one hour period. It is also defined in terms of BTUH (BTU's/Hour) or kwh (kilowatts per hour).

Final sizing is then a function of **Temperature Maintenance + Temperature Change** in a situation where the solution is continually recycled. If new solution is added, then final sizing may be a function of all three. One may decide to use just **Temperature Maintenance + New Solution** if the amount of **New Solution** is considerable and one is willing to wait for the **Temperature Change** to occur over an extended period of time. In order to assist you, please fill in the blanks below.

1/ What Is The **Solution** That You Are Trying To Heat And/Or Chill? \_\_\_\_\_

2/ Please List The **Three Dimensional Information** On All Tanks In The System Including The Reservoir (if any):

No. TANKS	VOLUME	DIMENSIONS (l x w x d or ø x d)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

3/ What Temperature Is The Solution Now And What Temperature Do You Wish To Maintain? **Now** \_\_\_\_ °C **Desired** \_\_\_\_ °C

4/ How Much Time (in hours) Do You Wish To Allow For The **Temperature Change** To Occur In? **Time** \_\_\_\_\_ Hours

5/ What Is Your Ambient Air Temperature? **Temp** \_\_\_\_ °C

6/ How Much **New Solution** Is Added?? **GPM** \_\_\_\_\_ or **GPH** \_\_\_\_\_

7/ What Is The Temperature Of This **New Solution**? **Temp** \_\_\_\_\_ °C

8/ What Is Your Available Electrical Power Rating? **Volts** \_\_\_\_\_, **Phases** \_\_\_\_\_, **Cycles** \_\_\_\_\_, **Hz** \_\_\_\_\_,

To avoid any confusion regarding flow rates reflected on our 'Pro-Cool' Titanium Chillers/Heat Pumps product sheet, the minimum flow recommended has to do with preventing freezing of the solution on the titanium heat exchangers. The maximum flow rate is the flow that should not be exceeded which will result in inefficient heat transfer due to a lack of adequate contact with the heat exchangers. If your planned flow rate is within these limits, then the chiller may be mounted in-line. If your planned flow rates are not within these limits, then the chiller may not be mounted in-line. A reservoir of not less than twice the hourly flow rate (gph) should be installed with the chiller operating on a closed circuit with the reservoir. Water may be added and/or removed from the reservoir at the desired flow rate.

# EXHIBIT WATER SYSTEM QUESTIONNAIRE 1



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Dear Client:

Thank you for trusting in our experience and professionalism and allowing us to design your water system whether your need is pumping, filtration, or both. For over 33 years, we are proud to be the leader in providing quality **water pumping** and **water filtration system design**. Relative to your water system(s), the information requested below is required to assist in sizing the appropriate system based on your exhibit need(s). In *Exhibit Systems* traditionally found in Zoos/Public Aquariums, there are typically two (2) types. These include the **New/Make-Up Water System** and the **Recirculation System**. Please be advised that if you are getting your new water from the ocean, well, reservoir or a pond; use the new/makeup water questionnaire below. When only one system is employed, then you only need to complete that particular questionnaire. If you will in fact use both systems, then please complete both questionnaires.

Please fill out the appropriate questionnaire and **FAX** back to **305-248-1756** to the attention of our *Engineering Department*. If you received this via E-MAIL, send the filled out form to **info@areainc.com** or to the FAX number previously mentioned.

Thank you again for the opportunity and we look forward to having the opportunity to serve you and your equipment/system needs. You can also visit our full service website at **www.areainc.com** and **www.aquaticlss.com** for our *On-Line Catalog, Newsletter, Area In Action*, and more.

## WATER SYSTEM FORM (NEW/MAKEUP WATER)

**NEW/MAKEUP WATER** (Source(s) **TO** Exhibit)

- Horizontal Distance Of Pipe From Source To Pump \_\_\_\_\_
- Maximum Vertical Elevation Differential Between The Source And Pump \_\_\_\_\_
- Horizontal Distance Of Pipe From Pump To Exhibit \_\_\_\_\_
- Vertical Elevation Differential Between Pump And Exhibit \_\_\_\_\_
- Flow Rate (GPM) You Desire Delivered To The Exhibit \_\_\_\_\_
- Flow Rate (GPM) You Desire From Each Pump \_\_\_\_\_
- Filtration You Desire (if any) \_\_\_\_\_
  - *Biological*
  - *Carbon*
  - *Cartridge*
  - *DE*
  - *Ozone*
  - *Protein Skimmer*
  - *Sand*
  - *UV Sterilization*
- Specific Objectives Of System \_\_\_\_\_
- Worst Case Turbidity Level Of Intake Water \_\_\_\_\_
- Power Availability Volts \_\_\_\_\_ Phase \_\_\_\_\_ Hz \_\_\_\_\_
- Type System Desired (**Manual** - On/Off or **Auto** - Demand) \_\_\_\_\_



**WWW.AREAINC.COM**  
**WWW.AQUATICLSS.COM**

# EXHIBIT WATER SYSTEM QUESTIONNAIRE 2



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Dear Client:

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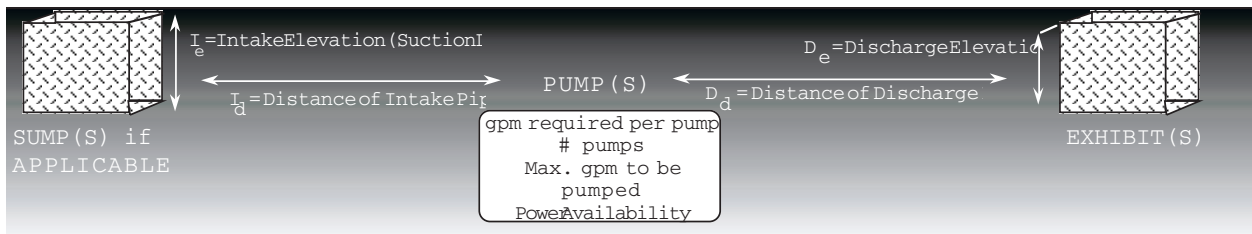
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## WATER SYSTEM FORM (RECIRCULATING)

### RECIRCULATING (Sump Or Exhibit to Exhibit)

- Horizontal Distance Of Pipe From Exhibit And Pumps \_\_\_\_\_
- Maximum Vertical Elevation Between Exhibit And Pumps \_\_\_\_\_
- Horizontal Distance Of Pipe From Pumps And Exhibit \_\_\_\_\_
- Vertical Elevation Between Pumps And Exhibit \_\_\_\_\_
- Pumps Are Generally Located Below Or Beside The Exhibit - Thus The Pumps Have a Flooded Intake. Is This The Case? \_\_\_\_\_
- Gallons Per Minute You Desire Recirculated \_\_\_\_\_
- Gallons Per Minute You Desire From Each Pump \_\_\_\_\_
- Filtration You Desire (if any) \_\_\_\_\_
  - Biological \_\_\_\_\_
  - Carbon \_\_\_\_\_
  - Cartridge \_\_\_\_\_
  - DE \_\_\_\_\_
  - Ozone \_\_\_\_\_
  - Protein Skimmer \_\_\_\_\_
  - Sand \_\_\_\_\_
  - UV \_\_\_\_\_
- Power Availability Volts \_\_\_\_\_ Phase \_\_\_\_\_ Hz \_\_\_\_\_
- Type System Desired (**Manual** - On/Off or **Auto** - Demand) \_\_\_\_\_
- We Need To Know The How Much (GPM) Of The Total Water Requirement Will Need Additional Treatment:
  - **Some Facilities Treat All The Water The Same** (ie. Sand Filters, 5µ to 1µ Cartridge, and UV)
  - **Others Treat Different Sections Differently** (ie. Sand Filters - All Water / To Prevent Cross Contamination In Some Tanks **OR UV OR Ozone Is Used**)
  - **Do You Have A Flow Plan For The Facility Operations Identifying Maximum Flow Rate (GPM) And Type Of Treatment(s) Desired?**



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