Specification Sheet for

MTS MediaGem Sand Filter High-Efficiency Systems

SECTION _____
High-Efficiency Sand Filter System

Part I – General

1.01 Purpose

A. The system will remove unwanted particulates from down to 0.45 micron from the cooling tower via a side-stream recirculated system. This will help prevent particle fouling of the cooling system's components, reduce maintenance and servicing routines, maintain optimum energy efficiency of the heat exchange process, limit water loss & chemical use practices, and control harmful bacteria growth in the cooling water system.

B. Control of particulates in the recirculated cooling water system shall be accomplished via a side-stream flow of not less than 5% of the recirculation system flow or system volume through a completely assembled high efficiency sand filter package. The package's pump shall provide sufficient pressure for the re-introduction of side-stream fluid back into system flow.

C. Equipment for this purpose shall be a LAKOS MTS High Efficiency MediaGem Sand Filter package as manufactured by the Claude Laval Corporation.

1.02 System Performance

A. In a recirculated cooling water system and a flow of not less than 5% of the full-stream system flow, expected performance shall be 80% down to 2 micron and 50% down to 0.5 micron.

Part II - Products

2.01 Manufacturer

A. The high efficiency sand filter system shall be manufactured by LAKOS Filtration Systems, a division of Claude Laval Corporation in Fresno, California USA. Specific model designation is: _____

2.02 Filter Tank Vessel

A. All MTS filter tanks are fabricated from 304L stainless steel. Grooved 304L stainless steel pipe connections provided at the inlet and outlet. A top grooved access port with cover provided for filling/inspection.

B. *As a specified option only:* The filter tank shall be fabricated and constructed in accordance with the standards of the American Society of Mechanical Engineers (ASME), Section VIII, Division 1 for pressure vessels. Certification shall be confirmed with the registered "U-stamp" on the body of the tank.

C. Maximum system pressure is 100 psi. Higher pressure ratings are available.

D. Outlet & Backwash connections shall be threaded NPTF size: _____

E. Pump inlet connection shall be flanged size: _____

2.03 Backwash & Solids Handling

A. The evacuation (backwash) of the solids and particulates that accumulate on the sand bed in the tank may be accomplished automatically, employing electric actuated butterfly valves using a PLC to control the frequency and duration of the backwash. The standard backwash setting for the system is 8 minutes every 24 hours.

B. The system is also equipped with a pressure differential switch that senses differential pressure in the tank. Differential pressure increases as solids build up on top of the sand bed. Once the differential pressure reaches a certain point (10-15 psi), the switch will send a signal to start a backwash cycle.

C. A manual push button is provided on the front of the control panel so that a backwash cycle can be initiated at any time if necessary.

D. The backwash water will need to be piped out to a drain or tank that is adequately sized to accept the quantity of water. The amount of water being backwashed (purged) from the system is based on the flow rates below:

- 20" diameter vessel: 35 gpm
- 24" diameter vessel: 40 gpm
- 30" diameter vessel: 50 gpm

E. MTS systems are provided with a connection for city backwash. Water for the backwash cycle is provided by municipal/other (city) water. This water is used by reversing the flow back thru the underdrain to agitate the top layer of the sand bed for removal of solids. The water then pushes the solids out of the tank thru the backwash piping, thus "cleaning" the sand bed and preparing it for another filtering cycle.

F. The city water backwash source shall supply a minimum of 30 psig, 100 psig maximum.

2.05 Underdrain

A. Laser cut perforated stainless steel

2.06 Suction Diffuser

A. Provided with system to protect system pump from damage or fouling by larger solids or debris.

B. Cast-iron housing; manual-cleaning; 1/8-inch (3.2 mm) or larger minimum mesh rating; stainless steel screen.

2.07 Pump

A. End-suction, single stage; high efficiency TEFC motor; 1800 rpm; cast iron housing; bronze or cast iron impeller; mechanical shaft seal (Buna-Ceramic); flooded suction required.

2.08 Piping

A. Schedule 40 galvanized pipe with grooved couplings.

2.09 Backwash Valves

A. Electrically-actuated, mechanically-link butterfly valves using a single actuator. Butterfly valve is epoxy coated ductile iron body with EPDM rubber encapsulated dual-seal disc.

2.10 Valves

A. Manual 2-way brass ball valves on system outlet, backwash outlet, and city water inlet connections for isolation of the system.

2.11 Electrical Control

A. IEC starter with overload module; HOA selector switch; NEMA-4X UL Listed enclosure; re-set/disconnect/trip switch; 120 volt, single phase control voltage; Allen Bradley PLC with door mounted view panel; PLC controls backwash duration and frequency, differential pressure (for backwash), backwash cycle count; PLC monitors pump RUN and TRIP status; Backwash cycle light on door for visual reference.

2.12 Skid Plate

A. 304 stainless steel, 3/16-inch (5 mm) minimum thickness on single tank systems.

2.13 Media

A. Multi-media sand/gravel shall be natural quartz, certified to meet NSF standards. Uniformity coefficient (UC) to be < 1.5. Media must not be crushed or ground.

Part III - EXECUTION

3.01 Installation

A. Coordinate with the installing contractor to ensure equipment is installed in conformance with manufacturer's recommendations and those found in the specification.

B. If deficiencies are noted by the field service representative, the contractor shall make the necessary corrections and the manufacturer's field service personnel will visit the installation site and oversee any corrections and or modifications required. A written report shall be filed with the Engineer at each visit.

Limited Warranty

This product series is warranted to be free of defects in material or workmanship, given the following terms:

LAKOS Media Tank: 1 year
All other components: 12 months from date of installation; if installed 6 months or more after ship date, warranty shall be a maximum of 18 months from ship date.

If a fault develops, notify us, giving a complete description of the alleged malfunction. Include the model number(s), date of delivery and operating conditions of subject product(s). We will subsequently review this information and, at our option, supply you with either servicing data or shipping instruction and returned materials authorization. Upon prepaid receipt of subject product(s) at the instructed designation, we will then either repair or replace such product(s), at our option, and if determined to be a warranted defect, we will perform such necessary product repairs or replace such product(s) at our expense.

This limited warranty does not cover any products, damages or injuries resulting from misuse, neglect, normal expected wear, chemically-caused corrosion, improper installation or operation contrary to factory recommendation. Nor does it cover equipment that has been modified, tampered with or altered without authorization.

No other extended liabilities are stated or implied and this warranty in no event covers incidental or consequential damages, injuries or costs resulting from any such defective product(s).