

## **DEPLOYABLE, READY-TO-OPERATE PACKAGED PLANT MBR System Supply Warranty & Guarantee**

The intention of the warranty and or guarantee is as a legal document which commits the MBR System Supplier, to stand behind the product, if something goes wrong. The warranty should be provided by the MBR System Supplier and not the individual component manufacture. This requirement is to demonstrate the commitment of the MBR System Supplier to this project and to ensure the company most knowledgeable and responsible for the application of the technology provides the support.

Although warranty policies would appear to offer peace of mind, the warranty is typically the most misguided aspect in the specifications. Warranty statements which have numerous caveats, create multilevel “loop holes” for the Supplier to void the warranty. For example, where the Performance Warranty is contingent on operation per Contract documents and assumes a MLSS range between 2,500 mg/l and 18,000 mg/l, however, inappropriate operation of the biological system that results in exposure of membranes to mixed liquor suspended solids concentrations at 19,000 mg/l could void the warranty. Additionally, once the system is returned back to the 2,500 mg/l and 18,000 mg/l range, the warranty may not be reinstated. Another warranty item which has little value to the owner is an extended pro-rated warranty. The pro-rated warranty essentially means that the manufacturer will pay for the part or aspect of the item that failed and the Owner pays the remaining portion. As the term nears the end, the payment burden is greatly shifted to the Owner, in effect, providing no real value in the later years.

The best way to protect the Owners interests and avoid having warranties invalidated is to fully understand the terms of the warranty, reading the fine print. Full warranties are much less common than limited or prorated ones. Understanding the conditions and limitations of a warranty will usually inform the Owner of when the warranty can and cannot be invalidated. Clear and simple warranty statements make it easier for the Owner to compare what is promised. Only by comparing warranties can Owners decide which warranty offers the coverage that most closely meets their needs.

Guarantees are another great way for the owner to have assurance that the MBR System will perform as the Supplier promises. Many times, items such as power usage are required to be reported, however, there is generally no mechanism to keep estimates accurate. Adding a power guarantee to the spec language with financial penalties will provide accurate estimations at bid time.

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The following is suggested specification language to capture this topic:

Note to design Engineer: Verify values and statements bounded by square brackets, [ ], and remove highlighted alternates and instructions.

### **SECTION [XX XX XX] SPECIFICATION – WARRANTY & GUARANTEE**

#### **1.01 DEFINITIONS**

- A. MBR System Supplier / Supplier: The Company responsible for providing all equipment and services as described herein and for providing warranty support.

Package Plant MBR Specification, Membrane System Supply Warranty & Guarantee

- B. MBR System: A fully inclusive MBR System of equipment, tankage, and controls, pre-engineered to be ready-to-operate upon delivery.

## 1.02 WARRANTY

### A. MEMBRANE MODULE PERFORMANCE WARRANTY

1. The MBR System Supplier warrants that the membrane modules will be used for treatment of wastewater and will achieve the effluent water quality indicated herein.
  - a. The membrane module warranty shall be from the MBR System Supplier, not the membrane manufacturer.
2. MBR System Supplier Membrane Module Warranty Period shall be a full replacement warranty with a minimum warranty period of 60 months after date of installation.
  - a. The MBR System Supplier may offer a longer warranty period.
  - b. For Membrane Modules supplied as part of the original equipment installation, the date of installation is the date that the Notice of Substantial Completion is issued.
  - c. Any membrane modules replaced under warranty shall assume the remaining warranty of the membrane modules.
  - d. Membrane modules provided by means other than warranty replacement (e.g. purchase by Owner) shall be provided with the same warranty as the membrane modules provided as part of the original equipment installation period for a period of 20 years after Notice of Completed Commissioning.
3. The MBR System Supplier warrants that the membrane modules will be free from non-conformance in materials, workmanship, membrane integrity failure, and irreversible flux loss.
4. After final acceptance, if the membrane modules are determined to be non-conforming with respect to membrane integrity and/or irreversible flux loss, the MBR System Supplier will remedy.
5. If within sixty (60) days after notification to the MBR System Supplier it has become apparent to the Owner that membrane modules are not able to meet the provisions of the warranty, the Owner may pursue a breach of warranty claim or other available remedies.
6. Limitations of Membrane Module Warranty. Owner recognizes that the occurrence of any of the following shall void the remaining membrane module warranty.
  - a. Physical damage or faulty installation of the membrane modules by others
  - b. Unauthorized alteration of components manufactured by MBR System Supplier.

- c. Exposure to chemical or physical conditions outside of the recommended operating range for the membrane modules. Examples of such conditions include:
  - i Inappropriate operation of the biological system that results in exposure of the membrane modules to mixed liquor suspended solids concentrations in excess of 20 grams per liter for MBR, for more than 24 hours greater than three times per year or a cumulative total of 72 hours.
  - ii Catastrophic exposure to chemicals not normally associated with water or wastewater treatment as a result of accidents, vandalism or other acts outside the bounds of routine and normal treatment plant operation.
  - iii Exposure to fats, oils and grease at concentrations greater than 150 mg/l.
  - iv Use of chemicals or cleaning procedures other than those recommended and approved by the MBR System Supplier.
  - v Exposure of the membranes to treatment or cleaning chemicals at concentrations above levels or contact time or temperatures acceptable to the MBR SUPPLIER. The MBR System Supplier shall provide to the Owner a listing of known water treatment and cleaning chemicals and concentrations and time of exposure that could result in a loss of membrane integrity or cause irreversible fouling with the warranty certificate.
- d. Improper maintenance of equipment.
- e. Failure of the Owner to maintain electronic operational logs.
- f. Changes in the MBR System Supplier -established operational and maintenance guidelines cannot be applied retroactively to invalidate the membrane module warranty.
- g. The MBR System Supplier is solely responsible for identifying water quality parameters, instrumentation and control programming required to satisfy and maintain membrane module warranty provisions for operation and cleaning. The MBR SUPPLIER shall establish instrumentation alarm and shutdown limits to prevent operation of the equipment outside the established limits.
  - i The Owner shall maintain a high speed connection to the processor but all data monitoring shall be the responsibility of the MBR Supplier. The Owner shall not be required to monitor, report or record instrument field data for warranty purposes.
  - ii Any event or instance where connectivity is lost or where one or more operating parameters is non-conforming per Contract Documents for a period of one consecutive hour or for a total of six hours or less in each calendar year, shall not reduce or void the membrane warranty.

- h. In order to maintain the provisions of the membrane module warranty, the Owner agrees to the following:
  - i. The Owner will maintain a hand-written log if an occurrence develops that is totally outside the bounds of routine and normal operation or automated operation.
  - ii. The Owner shall maintain records regarding:
    - a) Date and time membranes are taken out of service or cleaned.
    - b) Chemical concentration, amount of chemical per treatment and soak time.
    - c) MLSS concentration once per day per MBR.
  - iii. In the event of the warranty claim, the Owner shall provide the MBR System Supplier with electronic and written logs.
- i. Aeration without filtration can be required at times for the purposes of mixing and oxygen delivery.
  - i. Aeration without filtration shall not reduce or void the warranty.
  - ii. For the first year of service, the MBR System Supplier shall guarantee that the air scouring diffusers will not clog or need manual cleaning under any and all conditions.
  - iii. If diffusers clog, the MBR System Supplier shall bear all costs to repair or remediate the diffusers and membranes as necessary to fully recover performance at no cost to the Owner.

## B. ANCILLARY EQUIPMENT WARRANTY

1. The MBR System Supplier warrants that the ancillary equipment will be used for treatment of wastewater and will achieve the effluent water quality and flow indicated herein.
  - a. The ancillary equipment warranty shall be from the MBR System Supplier, not the membrane manufacturer.
2. MBR System Supplier Membrane Module Warranty Period shall be a full replacement warranty with a minimum warranty period of 24 months after date of installation.
  - a. The MBR System Supplier warrants that the equipment will be free from non-conformance in materials and defects in workmanship.
  - b. The warranty period shall begin following completion of the System Commissioning as specified herein.

### 1.03 GUARANTEE

#### A. SYSTEM PROCESS GUARANTEE

1. The MBR System Supplier guarantees the system will be used for treatment of wastewater and will achieve the effluent water quality indicated herein.
2. The Process Guarantee Period shall be a minimum period of 12 months after date of successful completion of the Membrane System Commissioning, contingent on the following:
  - a. Satisfactory performance of the Goods to achieve equipment performance (e.g. design flows, backwash, chemical washing and Clean-In-Place intervals) and water quality (e.g. integrity failure) objectives.
  - b. The influent process parameters listed in warranty statement.
  - c. The minimum mixed liquor temperatures as shown in the warranty statement.
  - d. The design mixed liquor suspended solids in the MBR as reflected in the process design and/or warranty statement.
  - e. Addition of supplemental chemicals for aiding specific nutrient removal as reflected in the process design and/or warranty statement.
  - f. The Owner shall maintain a high speed connection to the processor but all data monitoring shall be the responsibility of the MBR System Supplier.
  - g. A change in operational parameters and protocols (e.g. backwash, chemical washing or chemical cleaning) will not represent an increase in the operational or membrane replacement cost to the Owner.
3. In the event that the Owner does not believe that the Goods meet the Contract Documents, the Owner shall notify the MBR System Supplier that the conditions for a breach of guarantee exists.
  - a. The Owner shall make available to the MFEM electronic records for MFEM review
  - b. The Supplier shall provide an acceptable remedy to the Owner in accordance with the **contract documents**.

#### B. POWER GUARANTEE

1. The MBR System Supplier shall guaranty average energy usage for a period of one (1) year from the date of successful completion of the Membrane System Commissioning.
2. The guaranty shall include all electrical loads on the system.
3. Average energy consumption is calculated by dividing total energy consumption within a calendar year by the total volume of water processed in that calendar year.

4. If average energy usage exceeds the stated use in kWh/m<sup>3</sup> of treated water, the MBR System Supplier shall have two options:
  - a. Modify the System as necessary, at no cost to the Owner, to reduce energy consumption.
  - b. Pay the Owner a lump sum equal to the difference between annual average consumption and the stated use based on average energy cost for that calendar year.
    - i. For example, assuming 1.25 kwh/m<sup>3</sup> is the suppliers estimate and an average flow of 62,500 GPD for one year, the total volume of water treated in 365 days, assuming constant flow, would be 86,248 m<sup>3</sup>. If the calculated energy usage is 2.25 kWh/m<sup>3</sup> based on flow data and energy bills, The MBR System Suppliers shall make necessary modifications to improve efficiency or pay to the Owner a lump of \$8,624.
      - a)  $[(2.25 - 1.25) \text{ kWh/m}^3] * 86,248 \text{ m}^3 * \$0.1/\text{m}^3$
    - ii. Owner shall only be required to submit energy bills and Daily Monitoring Reports as necessary to verify usage.
  - c. All modifications shall be made within 90 days of notification.

## END OF SECTION

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The following is suggested specification language to capture and evaluate the MBR System Supply Quality Assurance & Experience:

Note to design Engineer: Verify values and statements bounded by square brackets, [ ], and remove highlighted alternates and instructions.

## SECTION [XX XX XX] PROCUREMENT BID EVALUATION – WARRANTY & GUARANTEE

### 1.01 BID EVALUATION

- A. The MBR System Supplier shall provide all of the information required by the Bid Documents. This information, along with other design and equipment information contained in the Bid Documents or available to the Owner through information included in the Bid will be used by the Owner to determine the apparent successful Bidder. The Owner may verify information and references provided in the Bid as part of the Bid evaluation.
- B. In accordance with applicable law, the Owner reserves the right to reject any or all Bids and to waive any informality in any Bid. By submitting a Bid, each Bidder agrees that the Owner, in determining eligibility for the award, may consider the Bidders conduct and performance under other contracts, financial condition, and other factors, including claims against the Bidder, which could affect the Bidders ability to provide the Goods and Special Services. The Owner may conduct such investigations as the Owner deems necessary to assist in the evaluation of any Bidder and to establish the Package Plant MBR Specification, Membrane System Supply Warranty & Guarantee

responsibility, qualifications and financial ability of the Bidder to provide the Goods and Special Services in accordance with the Contract Documents to the Owner's satisfaction within the prescribed time. The Owner shall be the sole judge of responsiveness as well as who is considered a Responsible Bidder and reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to the sole satisfaction of the Owner.

**1.02 QUALITY ASSURANCE QUALIFICATION CRITERIA**

- A. MBR System Suppliers shall be experienced in providing the Goods and Special Services as described herein. MBR System Suppliers shall possess sufficient equipment, capital and manpower to provide the Goods and Special Services within the time allowed. A Bid may be rejected if MBR System Suppliers cannot show that they have the necessary ability, plant, and equipment to provide the Goods and Special Services at the time prescribed and thereafter to prosecute and complete the supply of Goods and Services within the time specified.
  
- B. Membrane System Suppliers submitted for consideration shall meet qualification criteria as described below. A "yes" answer shall be provided to all questions below to satisfy the qualification criteria for participation in Membrane Bioreactor Equipment Procurement.
  - 1. A Membrane Performance Warranty Certificate shall be submitted with the bid that is signed by the Product Manager or Application Manager responsible for the proposed membrane technology. The intent of this requirement is to demonstrate the commitment of the parent company to this project and to ensure the individual most knowledgeable and responsible for the application of the technology agrees with the terms.

The Bidder hereby certifies that the above is true.

Yes    \_\_\_\_\_

No     \_\_\_\_\_

Proof of current certification shall be provided.

- 2. A System Process Guarantee Certificate shall be submitted with the bid that is signed by the Product Manager or Application Manager responsible for the proposed system technology. The intent of this requirement is to demonstrate the commitment of the parent company to this project and to ensure the individual most knowledgeable and responsible for the application of the technology agrees with the terms.

The Bidder hereby certifies that the above is true.

Yes    \_\_\_\_\_

No     \_\_\_\_\_

Proof of current certification shall be provided.

3. The MBR System Supplier shall be a full replacement warranty and not non-prorated warranties. Warranties statements shall be clear and simple for the Owner to compare what is promised. The Owner will want to understand the conditions and limitations of a warranty and when the warranty can and cannot be invalidated.

The Bidder hereby certifies that the above is true.

Yes \_\_\_\_\_

No \_\_\_\_\_

Provide all warranty statements with the bid

4. The MBR System Supplier shall provide performance guarantees. Guarantee statements shall be clear and simple for the Owner to compare what is promised. The Owner will want to understand the conditions and limitations of a guarantee and when the guarantee can and cannot be invalidated.

The Bidder hereby certifies that the above is true.

Yes \_\_\_\_\_

No \_\_\_\_\_

Provide a complete guarantee statement with the bid

5. The MBR System Supplier for this project will provide certain warranty and guarantees. Below detail the warranties and guarantees provided with the bid.

1) Membrane Performance Warranty

Included with bid Yes: \_\_\_\_\_ No: \_\_\_\_\_

Prorated: \_\_\_\_\_ Non-prorated (Full): \_\_\_\_\_

Duration: \_\_\_\_\_

Number of total required data points for compliance: \_\_\_\_\_

In addition to the items listed in the specification section **1.02.A.6** Limitations of Membrane Module Warranty, provide a detailed list as to additional items which will void the warranty. Insert additional pages as necessary.

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2) Ancillary Equipment Warranty

Included with bid    Yes: \_\_\_\_\_ No: \_\_\_\_\_

Prorated: \_\_\_\_\_    Non-prorated (Full): \_\_\_\_\_

Duration: \_\_\_\_\_

Number of total required data points for compliance: \_\_\_\_\_

Provide a detailed list as to items which will void the warranty. Insert additional pages as necessary.

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3) System Process Guarantee

Included with bid Yes: \_\_\_\_\_ No: \_\_\_\_\_

Duration: \_\_\_\_\_

Number of total required data points for compliance: \_\_\_\_\_

In addition to the items listed in the specification section 1.03.A.2, provide a detailed list as to additional items which will void the guarantee. Insert additional pages as necessary.

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4) Power Guarantee

Included with bid Yes: \_\_\_\_\_ No: \_\_\_\_\_

Duration: \_\_\_\_\_

Number of total required data points for compliance: \_\_\_\_\_

Provide a detailed list as to additional items which will void the guarantee. Insert additional pages as necessary.

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**END OF SECTION**