MANN+HUMMEL

BIO-CEL® MBR PROCESS QUESTIONNAIRE

Project Name: _____
OEM: _____ Engineering Company: _____
End User: _____ Project Country: _____
Project Phase: ☐ Evaluation ☐ Tendering ☐ Bidding ☐ Job in Hand ☐ Other: _____
Project type: ☐ New plant ☐ Capacity expansion ☐ Replacement of existing MBR
Expected start-up date of the project: ☐ Q1 ☐ Q2 ☐ Q3 ☐ Q4 year 20 _____

1. **Source** of feed flow:
   ☐ Municipal ☐ Commercial (public use) ☐ Industrial → Type: _____
   % of each source (in case of **mixed industrial** wastewater):

2. Is there mechanical / chemical **pretreatment** upstream to MBR (please explain)?

3. When one / all filtration line(s) are out of service, is there enough **buffer capacity** for the required duration to hold the inflow upstream to the filtration step (1 hour / week), for module inspections (max. 1 day, once or twice per year)?

4. Must the permeate production be **non-stop (24 h, 7 days)** due to further use of it (e.g. use in production or as feed to RO)?

5. Hydraulic load to filtration step:

Please give ONLY the values after equalization tank.

- Annual daily average flow, Q_d: _____ m^3/d
- Hourly peak flow, $Q_{h,max}$ (dry weather, no mixture with rain water): _____ m^3/h
- Hourly peak flow, $Q_{h,max}$ (wet weather, applicable for municipal STP with combined sewer system): _____ m^3/h
- Maximum duration of **Peak** flow (per day and week): _____ h/d _____ d/w
- Maximum duration of **Rain** flow (municipal mixed sewer): _____ d/month _____ d/year

Wastewater temperature * (°C):

- Minimum temp. Summer: _____
- Maximum temp. Summer: _____
- Minimum temp. Winter: _____
- Maximum temp. Winter: _____

** If there is a table for long-term temperature regimen available, please attach it to your inquiry.*

6. Is there any **antifoam / chemical addition** in biological tank (if yes, please explain)?

7. The **composition of flow**: *(if a detailed water analysis is available in English or German, please attach it)*

Parameter	Value	Unit	Parameter	Value	Unit	Other Unit
COD		mg/L	Suspended Solids (TSS)		mg/L	
BOD_5		mg/L	FOG – Free		mg/L	
Total Nitrogen		mg/L	FOG – Emulsified		mg/L	
Ammonia NH_4-N		mg/L	Salinity (TDS)		mg/L	
Nitrate NO_3-N		mg/L	Chloride (Cl^-)		mg/L	
Phosphorus (as PO_4-P)		mg/L	TOC		mg/L	
Alkalinity (as $CaCO_3$)		mg/L	Conductivity		µS/cm	
Solvents_Cationic		mg/L	Solvents_Anionic		mg/L	

8. Required **effluent quality**:

		mg/L			mg/L	
		mg/L			mg/L	

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9. The **aim of the filtration (use of permeate)**:
   - ☐ Irrigation
   - ☐ Discharge to surface waters
   - ☐ Pretreatment before RO
   - ☐ Toilet flushing
   - ☐ Reuse in production
   - ☐ Other: _____

10. Further **details / tender specifications**:

- Which **automation level** is expected for the plant?
  - ☐ **High** automation level → all treatment steps including periodic chemical cleaning of MBR system will be 100% operated by **PLC**.
  - ☐ **Low** automation level → the plant is partly/mostly operated manually. The periodic chemical cleaning of MBR system will be done **manually** by staff.
- Is the **design flux** defined by the tender (please specify peak or average flux)?

_____

- Is the **number of filtration lines** fixed by the tender or project demands?

_____

- Are there any **existing plans and drawings** (P&ID, GA, etc.) of this plant? If yes, please attach.

_____

- Additional Information:

_____

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