



# Waste Water Treatment

## Biological filter

### Trouble shooting guide

Problem	Possible cause	Corrective action		
Objectionable odours from filter	Excessive organic load causing anaerobic decomposition in filter	Calculate loading. Reduce loading by putting more bio-filters in service.		
		Increase COD removal in primary settling tanks by using all tanks available and minimising storage of primary sludge in tanks.		
		Encourage aerobic conditions in treatment units ahead of the bio-filter by adding chemical oxidants such as chlorine, potassium permanganate, or hydrogen peroxide, or by pre-aerating, recycling plant effluent, or increasing air to aerated grit chambers		
		Enforce industrial waste ordinance, if industry is source of excess load.		
		Scrub bio-filter off-gases.		
		Expand the plant.		
	Insufficient ventilation	Insufficient ventilation	Increase hydraulic loading to wash out excess biological growth	
			Remove debris from filter effluent channels and under drains. Remove debris from top of filter media. Unclog vent pipes.	
			Reduce hydraulic loading if underdrains are flooded.	
			Install fans to induce draught through filter.	
Ponding on filter media	Excessive biological growth	Check for filter plugging caused by breakdown of media.		
		Reduce organic loading.		
		Increase hydraulic loading to increase sloughing.		
		Flush filter surface with high-pressure stream of water.		
		Chlorinate influent for several hours. Maintain 1 to 2 mg . <sup>-1</sup> residual chlorine.		
		Flood filter for 24 hours		
	Poor media	Poor media	Shutdown filter until media dries out.	
			Replace media.	
	Rotating distributor slows down or stops	Insufficient flow to turn distributor	Keep area surrounding the filter mowed. Remove weeds and shrubs.	
			Increase hydraulic loading.	
Clogged arms or orifices		Clogged arms or orifices	Flush out arms by opening end plates. Flush out orifices.	
			Remove solids from influent wastewater.	
Clogged distributor vent pipe		Clogged distributor vent pipe	Remove material from vent pipe by rodding or flushing. Remove solids from influent wastewater.	
			Remove material from vent pipe by rodding or flushing. Remove solids from influent wastewater.	
Bad main bearing		Bad main bearing	Replace bearing.	
	Distributor arms not level		Distributor arms not level	Adjust guy wires at tie rods.
				Distributor rods hitting media
Dirt in main bearing oil	Dirt in main bearing oil	Worn bearing dust seal		
		Worn turntable seal or seal plate		
		Replace seal.		
		Replace seal. Inspect seal plate and replace if worn.		
Water leaking from distributor base	Water leaking from distributor base	Condensate not drained regularly or oil level too low		
		Check oil level, drain condensate, and refill if needed.		
		Replace seal.		
Insufficient flow from Recirculation pumps	Insufficient flow from Recirculation pumps	Leaking expansion joint between distributor and influent piping		
		Repair or replace expansion joint.		
Insufficient flow from Recirculation pumps	Excessive head	Open closed or throttled valves.		
		Excessive head	Unplug distributor arms, headers and laterals. Unplug distributor nozzles and orifices. Unplug distributor vent lines.	
			Pump malfunction	Pump malfunction
	Replace wear rings if worn excessively. Replace or resurface worn shaft sleeves.			
	Check impeller for wear and entangled solids. Remove debris.			
	Check pump casing for air lock. Release trapped air.			
	Pump drive motor failure	Pump drive motor failure	Lubricate bearings. Replace worn bearings.	
			Lubricate bearings. Replace worn bearings.	
			Keep motor as clean and dry as possible.	
			Pump and motor misaligned, check vibration and alignment. Redesign as needed.	
			Burned windings. Rewind or replace motor.	
			Check the drive motor for excessive current draw.	

**References:**

 Ref.1. Water Institute of Southern Africa (2002): **Handbook for the operation of waste water treatment plants.** ISBN 0-958-45346-2.
