

Bioprocess Equipment Maintenance Technician Competency Matrix

Competency Area	Competency Description	Entry Level	Mid Level	Advanced Level
Technical Equipment Skills	Equipment Operation & Maintenance	Understands basic function of bioprocess equipment	Performs routine operation & minor repairs	Leads complex repairs, retrofits, & optimizations
Technical Equipment Skills	Preventive & Corrective Maintenance	Follows checklists under supervision	Independently conducts scheduled maintenance	Develops maintenance strategies & resolves chronic issues
Technical Equipment Skills	Calibration & Instrumentation	Assists with basic calibration tasks	Independently calibrates multiple instruments	Creates calibration SOPs & trains others
Technical Equipment Skills	Automation & Control Systems	Recognizes basic PLC/SCADA components	Troubleshoots automation faults	Programs/optimizes control systems
Technical Equipment Skills	Technical Troubleshooting	Identifies obvious equipment issues	Applies root cause analysis for recurring problems	Leads cross-functional troubleshooting teams
Industry Compliance Skills	GMP Compliance	Understands cGMP basics	Applies cGMP in maintenance work	Trains others & prepares for audits
Industry Compliance Skills	Cleanroom Protocols	Follows gowning & entry procedures	Performs aseptic maintenance tasks	Trains others & manages contamination control measures
Industry Compliance Skills	Documentation & Recordkeeping	Completes basic logs	Maintains accurate maintenance & calibration records	Audits records & ensures regulatory readiness
Industry Compliance Skills	Validation Support	Observes IQ/OQ/PQ activities	Supports validation & change control processes	Leads validation projects & ensures compliance
Industry Compliance Skills	Safety & Hazard Control	Understands LOTO & safety basics	Applies LOTO, chemical safety, and biohazard protocols	Trains teams & leads safety investigations
Cross-Functional Skills	Interdepartmental Communication	Communicates with supervisor	Coordinates with production & quality teams	Facilitates cross-department problem-solving
Cross-Functional Skills	Problem-Solving & Decision-Making	Resolves routine issues	Prioritizes & resolves moderate downtime events	Makes critical decisions under pressure
Cross-Functional Skills	Continuous Improvement	Suggests minor process enhancements	Applies Lean/Six Sigma tools	Leads reliability improvement projects
Cross-Functional Skills	Adaptability	Adjusts to basic changes	Learns new equipment & processes quickly	Champions technology adoption & process evolution