

# DACUM Research Chart for

# Mechanical Plant Maintenance Technician (Field)

## DACUM Panel

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Tasks

Duties	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10
<b>A Manage Mechanical Work</b>	Check presence of staff	Assign the work to staff	Check conditions of work (e.g. safety, pollution, light etc)	Coordinate with other departments for support (e.g. Training Centre, Inspection, Electrical Dept etc)	Prepare equipment, tools, material for work	Prepare work-order for workshop	Participate in technical meetings for problem solving	Report work progress and unusual occurrences (daily monthly / verbal written)	Keep tools and equipment in good condition	Prepare for over-time work (e.g. food transport, light etc)
<b>B Handle Matters of Personnel</b>	Recommend training needs to Training Dept	Solve disagreement among staff	Support staff in solving personal problems (e.g. health)	Evaluate the training influence on staff (e.g. questionnaire)	Recognise abilities of staff (forman workers, technicians)	Participate in interviews to select temporary workers	Introduce "best-worker" to management	Report to management about misbehaviour of staff		
<b>C Organise Spare Parts for Mechanical Work</b>	Identify spare parts needed	Prepare "indent form" for spare parts	Compare quotations of vendors (technical aspects)	Prepare Material Application Proposal (MAP) for spare parts	Purchase spare parts direct from the market	Prepare Material Issue Voucher (MIV) and Material Return Voucher (MRV)	Draw sketches for spare parts to be self-made instead of purchased	Conduct practical tests of spare parts (operation tests)		
<b>D Conduct Routine Maintenance of Machines</b>	Visual inspection of machines	Diagnose failures in machines and equipment	Complete tools for measurements	Compare measurement data with reference data (e.g. noise, temperature, vibration, pressure, etc)	Check for leakage	Check oil level	Repair damaged parts (e.g. bearing, sealing, coupling, etc)	Prepare checklist for Routine A		
<b>E Conduct Routine Maintenance of Machines</b>	Perform Routine A	Shutdown of machine	Check alignment of machine	Check the coupling of machine	Check the bearing	Check for corrosion and erosion	Change oil and filter	Prepare checklist for Routine B		
<b>F Conduct Routine Maintenance of Machines</b>	Perform Routine B	Disassemble machine	Check rotating part	Balance the rotor(s)	Arrange for repair in workshop	Change damaged parts (e.g. bearing, sealing parts, etc)	Assemble machine	Align machine	Couple machines	Prepare checklist for Routine C
<b>G Participate in Major Overhaul of Machines and Equipment</b>	Overhaul rotating machines (Type C of Routine Maintenance)	Blind the input and output lines of equipment	Carry out inside inspection of static equipment (e.g. vessel, tower, reactor, exchanger, scrubber, heater, tank, etc)	Test hydrostatic of equipment (e.g. exchanger) (check and repair)	Repair static equipment (e.g. valves, steam trap, pipe, gas-kit, etc)	Change static equipment (e.g. valves, steam trap, pipe, gas-kit, etc)	Adjust valves (safety control)	Repair underground leakage	Line static equipment to prevent corrosion according to order of engineer	Modify equipment according to order of engineer
										Install new machines and equipment

Machines = compressor - turbine - pumps - blower - gear box - fan - elevator - radiator - extruder - boiler - exchanger

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Worker Behaviours		General Knowledge and Skills	
<ul style="list-style-type: none"> <li>• Team player</li> <li>• Communicative</li> <li>• Good Listener</li> <li>• Punctual</li> <li>• Flexible</li> <li>• Creative</li> <li>• Self-motivated</li> <li>• Motivate others</li> <li>• Open-minded</li> <li>• Sensitive toward others</li> <li>• Exact/accurate</li> <li>• Good body condition (healthy)</li> <li>• Active</li> <li>• Kind</li> <li>• Diplomatic</li> <li>• Patient</li> <li>• Work orientated</li> <li>• Logical</li> <li>• Interested in techniques</li> </ul>	<ul style="list-style-type: none"> <li>• Independent (Differentiate between family and job)</li> <li>• Stable personality (strong character)</li> <li>• Follow/obey law and regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Communication Skills</li> <li>• Language Skills (English)</li> <li>• Computer Skills</li> <li>• Training in machines (rotor, compressor, turbine, blower etc.)</li> <li>• Management Skills</li> <li>• Troubleshooting Skills</li> <li>• Maintenance procedures of rotary machines</li> <li>• Problem solving Skills</li> <li>• Static machines</li> <li>• Test and maintenance procedures of control machines</li> <li>• Basic vibration</li> <li>• Balancing rotors</li> <li>• Monitoring Skills</li> <li>• Training for alignment</li> <li>• Reading and analyse of drawings</li> </ul>	<ul style="list-style-type: none"> <li>• Technical Standards (ISO, AISA, ASME, API, DIN)</li> <li>• Petrochemical products (composite, polymer)</li> <li>• Type of valves</li> <li>• Bearing (different type)</li> <li>• Lubricating</li> <li>• Types of sealing</li> <li>• Knowledge of mechanical tools</li> <li>• Basic knowledge of boiler, vessel, tower, tower, pump, heat exchanger, furnace</li> <li>• Diagnostic skills</li> <li>• Basics of metallurgy</li> <li>• Knowledge in piping, filling, welding</li> <li>• Knowledge about static</li> <li>• Knowledge of Thermodynamic</li> <li>• Leadership Skills</li> <li>• Knowledge about safety</li> </ul>
Tools & Equipment		Future Trends / Concerns	
<ul style="list-style-type: none"> <li>• Toolbox</li> <li>• Micrometer</li> <li>• Calliper</li> <li>• Inside diameter</li> <li>• Outside diameter</li> <li>• Digital level gauge</li> <li>• Torque meter</li> <li>• Dial indicator gauge</li> <li>• Vibrometer</li> <li>• Ruler</li> <li>• Tachometer</li> <li>• Right Angle</li> <li>• Jack for Lifting</li> <li>• Bolt Tensioner</li> <li>• Hydro Tension Box</li> <li>• Hydro Bending Machine</li> <li>• Pipe Cutter</li> <li>• Daice machine</li> <li>• Bevelling Machine</li> </ul>	<ul style="list-style-type: none"> <li>• Drill Machine</li> <li>• Test Pump</li> <li>• Test Bench</li> <li>• Box machine</li> <li>• Air Wrench Machine</li> <li>• Expander Machine</li> <li>• Expander Gauge</li> <li>• Filler Gauge</li> <li>• Pressure Gauge</li> <li>• Jet Cleaner Machine</li> <li>• Thermometer</li> <li>• Tube Pulley</li> <li>• Chain Block</li> <li>• Hose Lever</li> <li>• Grinding Machine</li> <li>• Spindle Grinding Machine</li> <li>• Polish Machine</li> <li>• Pull Lift</li> </ul>	<ul style="list-style-type: none"> <li>• Fear the effects of privatisation, i.e. loose the job, stop of career</li> <li>• Sophisticated equipment and machinery require special training and skills</li> <li>• Pollution and polluted environment in petrochemical company effects health</li> <li>• Fewer chances of personal development in the company</li> </ul>	