	VEDANTA LIMITED – VALUE ADDED BUSINESS	Format No.:	VL/IMS/PP2/MECH/WI/1
	INTEGRATED MANAGEMENT SYSTEM	Revision Date:	05.04.2021
	<u>Work instruction for Maintenance of pumps</u>	Revision No.:	02
		Page No.:	1 of 3

Objective : Maintenance of pumps
Scope : All Pumps in plant
Responsibility : Engineer in charge and workmen at job
PPEs to be used : Helmet, Safety shoes, safety hand gloves, ear plugs and nose mask

Aspect-Impact

Oil/Grease spillage	Land contamination
Oil/Grease traced waste generation	Land contamination & Resource Depletion
Generation of waste oil/Grease	Generation of hazardous waste
Waste water	Resource Depletion, Land contamination (in case of saline water)
Noise	Work environment

Hazards Identified

Mechanical Hazard	Trip and fall between coupling, impeller, casing etc Entangles between moving parts Fall of spares, tools etc Slip and fall
Physical Hazard	Water Pressure
Electrical Hazard	Electrocution
Human behavior	improper housekeeping, Non use of PPEs, Alcoholism, over confidence, negligence,

Safety precautions:


Do not Work on Running Equipment's
 Avoid using mobile phone while working.
 Use appropriate tools required for the job.
 After job always do proper housekeeping.
 Always prevent body from line of action of force.
 Perform proper communication verbal and non-verbal as required.

Procedure

1. Gland Packing Changing

- Take work permit from concerned shift incharge as per work permit procedure
- Take electrical shutdown of the pump from electrical engineer
- Take electrical shut down of the pump of which gland is to be changed.
- Loosen the bolts of stuffing box packing ring and remove the ring.
- Remove all the old packing from the gland housing with the help of pointed rod.

Prepared & Reviewed:	Approved:	Issued:
HOD – Mech – PP	Head – Power	MR
05.04.2021	05.04.2021	05.04.2021

	VEDANTA LIMITED – VALUE ADDED BUSINESS	Format No.:	VL/IMS/PP2/MECH/WI/1
	INTEGRATED MANAGEMENT SYSTEM	Revision Date:	05.04.2021
	<u>Work instruction for Maintenance of pumps</u>	Revision No.:	02
		Page No.:	2 of 3

- Reinstall new packing rings (see that ends of each ring is away from each other, Joints to be staggered).
- Reinstall the stuffing box ring and gradually tighten the bolts. Press the gland rope by tightening stud nut, rotate pump shaft for freeness
- Clear electrical shut down and take trial for leakage through gland housing.
- If leakage still persists, then slightly tighten the gland and give clearance to production department
- Always maintain drop by drop leakage through gland.
- Removed gland packing to be thrown in barrels named hazardous waste barrel.


2. Coupling Pads Changing

- Take work permit from concerned Shift Incharge as per work permit procedure
- Take electrical shut down of the pump whose pads is to be changed as per procedure
- Remove the Coupling guard
- Remove the bolts of distance piece and take out the distance piece.(if applicable)
- Remove old coupling pads, install new pads.
- Check the alignment and reinstall the distance piece.
- Tighten all the bolts and release electrical shut down.
- Old coupling pads to be thrown in rubber scrap bin.
- Take trial of the system.

3. Assembly Changing

- Take work permit from concerned Shift Incharge as per work permit procedure
- Take electrical shut down of the system as per procedure
- Close suction and discharge valves and depressurize the casing by opening vent valve / plug in casing
- Remove Coupling guard and De-couple the coupling.
- Drain the oil in an OILCAN with care. Remove oil cup with care to avoid breakage in handling. Applicable pumps with lubricating oils
- Support assembly to carry weight after dismantling.
- Open the casing bolts wit correct size spanner. Keep two bolts loose.
- Sling the pump assembly with chain pulley bock on monorail trolley / hydra.
- Remove pump assembly from casing by tightening jack bolts. Due care to be taken to avoid fall of pump assembly in leg or entanglement.
- If impeller is to be replaced, remove the impeller nut and fix new impeller. The Impeller should be tight on shaft and lock nut should be fixed with washer / gasket.

Prepared & Reviewed:	Approved:	Issued:
HOD – Mech – PP	Head – Power	MR
05.04.2021	05.04.2021	05.04.2021

	VEDANTA LIMITED – VALUE ADDED BUSINESS	Format No.:	VL/IMS/PP2/MECH/WI/1
	INTEGRATED MANAGEMENT SYSTEM	Revision Date:	05.04.2021
	<u>Work instruction for Maintenance of pumps</u>	Revision No.:	02
		Page No.:	3 of 3

- Pump assembly has to be shifted as per material handling procedure to site
- Replace gasket , O-rings and damaged studs
- Inspect the casing wear ring for wear and replace it with new one.
- Sling the pump assembly and insert inside casing. Fix bolts and uniformly tight.
- Fix L – support below pump assembly.
- Align with dial gauge within 10 divisions of dial gauge for axial and radial directions.
- Couple the pump with motor and fix guard.
- Fill oil after fixing plug and oil gauge.
- For grease lubricated pumps, apply grease in bearings by hand rotation of rotating assembly
- Do handle oil with utmost care to avoid the spillage. Use the lubricant recommended as per maintenance manual and as per procedure
- Open suction valve of pump to check leakage.
- Fix back the motor cover.
- Clear electrical shutdown and take trail of pump in presence of an engineer from production department
- Measure vibration, current, pressure, gland leakage, casing leakage.
- If found within acceptable limits, Give clearance to production department.
- Carry out housekeeping activity as per work procedure

4. Overhauling of pump

- Drain the oil completely, in tray and pour it in waste oil reservoir.
- Start disassembling the pump in an overhauling tray.
- While overhauling of the pump, check each frictional part of the pump for wear out, bearing conditions, oil seal damage as per problem faced in the assembly.
- Replace worn-out/damaged part if any.
- Re-assemble with new oil seal ring, gasket packing, gland rope, etc.
- Check impeller, impeller nut, and shaft treading before fixing impeller and tighten it thoroughly.
- Check coupling for looseness, wear out/damage. Refit coupling with proper key and grub screw.
- Check leakage by filling oil in bearing block. Ensure drain port is plugged.
- Rotate shaft for freeness.
- Tag the overhauled assembly with job description, date of overhauling and keep in allotted area.

Prepared & Reviewed:	Approved:	Issued:
HOD – Mech – PP	Head – Power	MR
05.04.2021	05.04.2021	05.04.2021