



**COAL
&
ALLIED**

A Rio Tinto Group Company

 **UnitedGroup**
Limited

Long Term Storage of Motors, Coal & Allied

December 2007

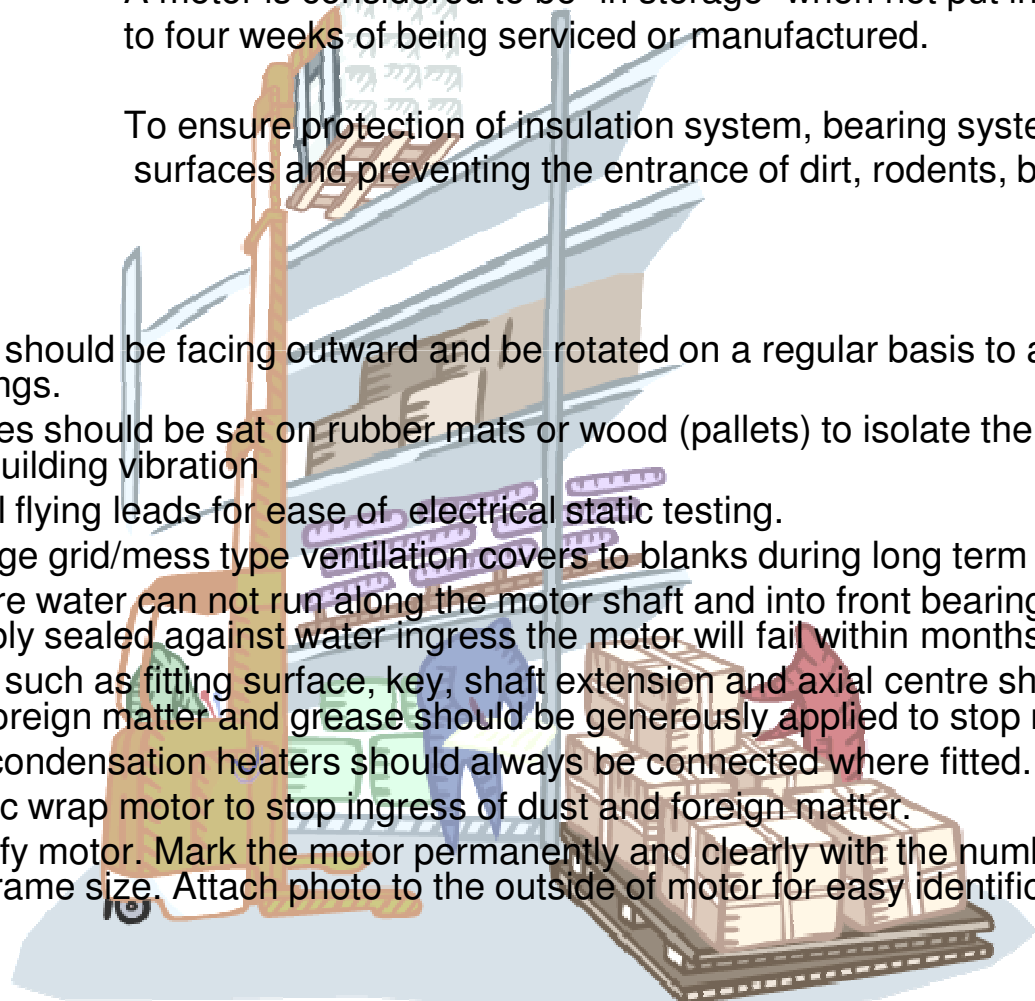
Audit Process

- Inspect Motors
 - Identify
 - Photograph
- Categorise Motors
 - Visually inspect
 - Static test
 - Long term storage
 - Strip / inspect



Guidelines For Long Term Motor Storage

- **Definition:** A motor is considered to be “in storage” when not put into service within three to four weeks of being serviced or manufactured.
- **Aim:** To ensure protection of insulation system, bearing system, bare machined surfaces and preventing the entrance of dirt, rodents, birds, etc into the motor
- **The Motor**
 - 1) Shaft should be facing outward and be rotated on a regular basis to avoid brinelling of bearings.
 - 2) Frames should be sat on rubber mats or wood (pallets) to isolate the bearings from ground and building vibration
 - 3) Install flying leads for ease of electrical static testing.
 - 4) Change grid/mess type ventilation covers to blanks during long term storage
 - 5) Ensure water can not run along the motor shaft and into front bearing. If the bearing is not suitably sealed against water ingress the motor will fail within months.
 - 6) Parts such as fitting surface, key, shaft extension and axial centre should be kept free from any foreign matter and grease should be generously applied to stop rust.
 - 7) Anti-condensation heaters should always be connected where fitted.
 - 8) Plastic wrap motor to stop ingress of dust and foreign matter.
 - 9) Identify motor. Mark the motor permanently and clearly with the numbers of poles, rating and frame size. Attach photo to the outside of motor for easy identification.



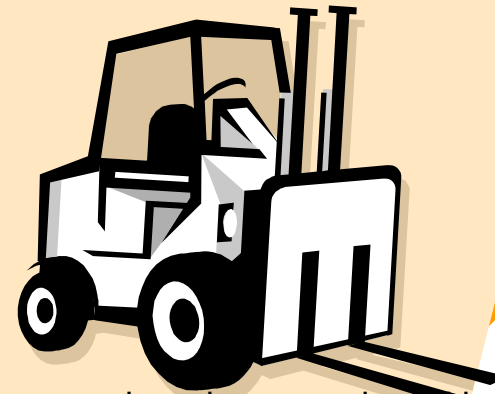
Guidelines For Long Term Motor Storage

- **The Environment**

- 1) Motors should be stored in a dry, well-ventilated area not subject to direct sunlight, dust or corrosive dust.
- 2) Do not locate motors close to a boiler or freezer
- 3) The area should be entirely free from vibration
- 4) The area should be easily accessible

- **Before Returning Motor to Service**

- 1) Clean motor thoroughly
- 2) Replenish grease
- 3) Even if ventilation system has been covered during storage time the area should be thoroughly cleaned to ensure no foreign matter or insects have entered the system
- 4) Measure the insulation resistance to ground
- 5) Ensure the hoisting hook is correctly connected to eye bolts or lugs of motor before hoisting
- 6) Test run motor
- 7) Return to Service



Recommended Annual Motor Health Management & Maintenance Schedule



	January	February	March	April	May	June	July	August	September	October	November	December
PDMA Motor Health Management Insulation to ground test, phase continuities, phase inductance, polarisation index, dielectric absorption, capacitance to ground, leakage current and visual inspections, rotate shafts, check lubrication seals.												
Vibration Analysis & Visual Inspection If Power Available Complete vibration analysis on all motors and pumps, ensure packaging is still appropriate												
Thermography If Power Available Thermal imaging survey on all electrical apparatus, plant and various mechanical components. Eg. Bearing pedestals												