WORKING TOGETHER TO MANAGE BUSINESS RISK

What to do when temporarily closing

A few simple steps to help protect your equipment

Life being what it is, you can't predict the future with things like COVID19 and other threats. But you can be prepared for it. Sometimes it will be necessary to shut down plant and equipment for a longer period, so here are a few ideas to help ensure that this is done safely and in a way that might prevent damage or any complications further down the line.

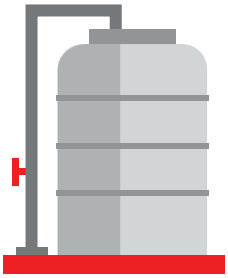
If you don't have a plan – make one

A little bit of preparation now can save you a heap of time and hassle later.

- When it comes to machinery, get to know the manufacturer's shutdown procedures, and what they recommend when preparing equipment to sit idle for a while. If in doubt or you can't find any info, contact the manufacturer – they'll be happy to help.
- Develop a plant "deactivation list" detailing how equipment has been deactivated and what precautions have been taken to preserve equipment during the shutdown. Failure to record these steps can lead to damaged equipment.

This plan will also be useful when it comes time to re-boot equipment.

Empty out and cover up



Reduce the risk of leaks, floods and pests with some simple processes

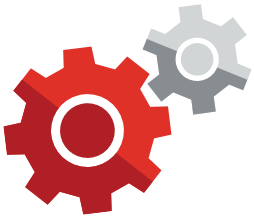
- Remove and drain all materials from process vessels, tanks, pumps, and pipes.
- Fasten covers over all building air condition/ventilation vent openings to prevent entry by insects, rodents, birds, and other animals. This can save you a lot of hassle later.

Don’t give corrosion a chance

Reduce the risk of rust and leakage

- Separate any materials that could lead to galvanic corrosion
- Check with the equipment manufacturer for guidance on the best way to prevent corrosion on the metal parts of a machine. This might include liquid protective waxes, polyvinyl chloride (PVC) spray coatings, vapour space inhibitors (VCI’s), water absorbing desiccants, oxygen scavengers, protective plastic films etc.
- Leave the wet side of the boiler full of feed-treated water (ask your water treatment company for advice on the optimal chemical composition of any treated water). Make sure you have heated dry air to the fire side, while including a drying agent in the form of a moisture absorbing package (desiccant).

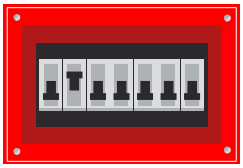
Power down any engines and motors



What to drain, and what to protect

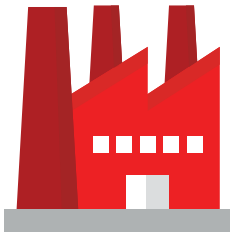
- Drain the fuel from large petrol- and diesel-powered engines. For added protection, use a rust inhibitor to lubricate, seal oil and coolant systems. (Before you do, however, please check with the equipment manufacturer for guidance of suitable rust inhibitors.)
- Lift carbon brushes from commutators/slip rings in large electric motors and generators, and leave oil-filled transformers energised.

Keep your electrical kit high and dry



- Maintain clean and dry conditions for sensitive electrical control equipment (PLCs, VSDs, electronic field devices, etc.), including any spare parts (control cards, etc.)
- Use desiccant packages and seal electrical enclosures if possible.

Don’t forget your monthly checks



Your plant should still be inspected each month by a qualified professional

- Rotate large rotating equipment 90 degrees to prevent bearing brinelling* (ask the manufacturer for advice if you need to)

* Brinelling is the permanent indentation of a hard surface caused by parts being in close proximity for lengthy periods of time. Brinelling can affect machine operation, increase vibration, and speed up wear and tear.

- Replace moisture absorbing packages (desiccants) as needed
- Check protective coatings applied on metal surfaces, and reapply as needed
- Carry out refrigerant leak testing on large refrigeration plant
- Check for rodent damage to electrical systems. Powered / energised plant and equipment should only be worked upon by competent persons following safe working procedures.

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