

## Effective equipment layup and restart Tips for managing a shutdown

An interruption of your business operations may lead you to shut down an entire facility or strategic parts of it. You may also put a piece of equipment in layup for a short period of time, in an extended layup (3–12 months) or mothball it altogether (12+ months). If so, you will have to prepare an extended layup plan to ensure that mechanical and electrical equipment will begin working properly when you turn it on later. Improper shutdown and inadequate maintenance could result in costly repairs and significant start-up delays.

We've prepared a checklist to help you prepare a plan for a layup and an eventual restart. Please review and customize your plan to your operation's specific needs to protect your assets for the future!



### Preparation

- Ensure that pre-shutdown preparations include a well-defined plan with knowledgeable personnel designated for the equipment shutdown and layup.
- Properly store documentation in a designated space for equipment design drawings, installation instructions, operating manuals, maintenance procedures and records, and even layup procedures, so that these documents can be readily accessed at restart time. Ensure that data for operation or production is stored in a secure location and backed up offsite.
- Implement your isolation procedures for system pump down, draining and inspecting, cleaning and flushing, switch off, de-energizing, closing valves, disconnecting, blanking, and protecting equipment. Protecting equipment may include wrapping, covering, greasing and anti-corrosion coating.
- Ensure that layup procedures are conducted based on the equipment's specific needs. Layups for boilers, chillers or cooling/heating systems require a special dry layup or wet layup procedure and a winterization plan in accordance with a specialist's recommendations. In cold weather, antifreeze must be used in a wet layup for external systems. These systems must also be blanked.

### Shutting down

- Shut down boilers, pressure vessels, air conditioning systems, turbines, generators, motors, compressors, electrical transformers, and any other electrical or mechanical machinery.
- Ensure that equipment will be safely shut down according to both your predefined procedures as well as requirements established by the relevant jurisdictional authority and the original equipment manufacturers (OEM). Take appropriate precautions and follow lockout/tagout procedures to prevent any unintended release of hazardous chemicals or energy.

### During layup

- Implement a care maintenance plan for the laid-up equipment according to the OEM recommendations and your industry's best practices:
  - Environment control: ambient temperature, humidity, dust, freezing, other potential hazards
  - Condition control: temperature, moisture, pressure, leakage, other required parameters

### During layup (continued)

- Monitor and alarm: in-house security or monitoring from local security, response team
- Care inspection: routine visual inspection for corrosion and deformation, inspection of environment heating devices
- Periodic test: water treatment analysis for boilers in wet layup and pH testing for cooling/heating systems (adjust dosing per specialist's recommendation), water content test for oil-filled transformers
- Periodic rotating and running test: rotate large rotating machinery or shaft for ¼ turn to prevent sagging, run pumps and fans, test electric motors/generators for extended layup

### Restarting



Prepare a restart plan with qualified and trained personnel who will be involved in the restart. The plan should include restoration procedures, and requirements from the relevant jurisdictional authority and the OEM. A checklist must be developed and implemented throughout recommissioning.

If you have any questions or concerns, please do not hesitate to contact your broker. You can also reach out to RSA's Equipment Breakdown Insurance Engineering and Risk Control Services team for additional guidance or visit [rsabroker.ca](https://rsabroker.ca).