

Lifecycle Planning for Lifts – Soft Launch of Maintenance Control Plan (MCP) Guide for Lifts

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Content

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- Part 1
Maintenance Control Plan (MCP)
- Part 2
MCP - Parts Replacement Guide



Challenges faced by lift owner

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- 1) Difficulty to review the parts replacement proposed by the contractor
- 2) Fund not set aside for replacement for “unexpected” failure
- 3) Long downtime due to non-availability of parts
- 4) Unsure on how or what to modernize for older lifts



What do we want to achieve

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Objective

Increased safety and reliability of lifts

Desired outcomes

Better informed owner

Timely replacement of safety and reliability critical parts

Adoption of preventive maintenance

With MCP

Current Situation

No replacement criteria that owner can refer to

Fund not set aside

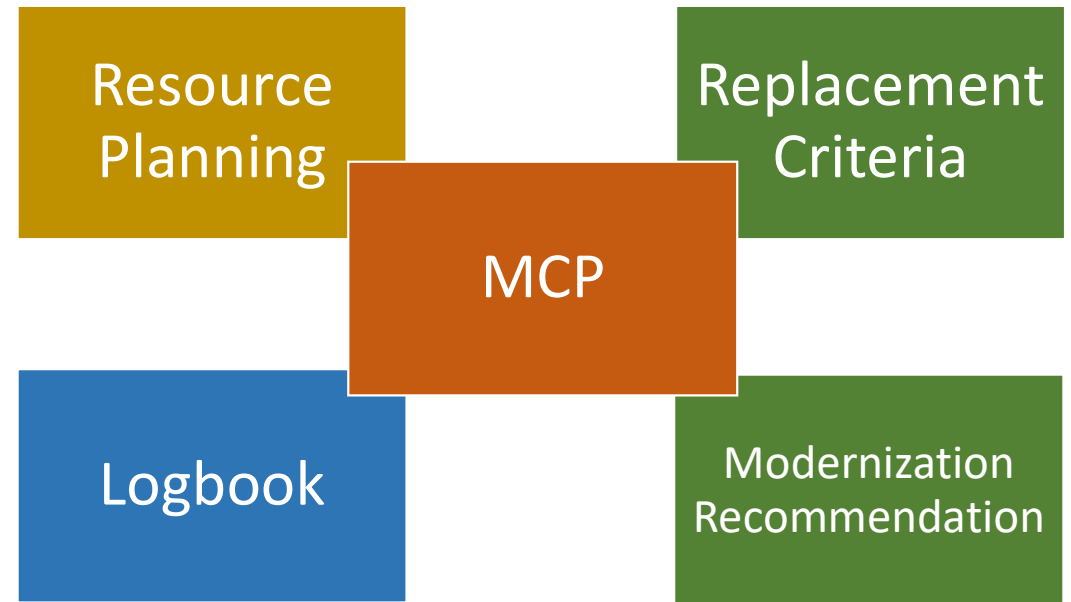
Long downtime due to parts non-availability



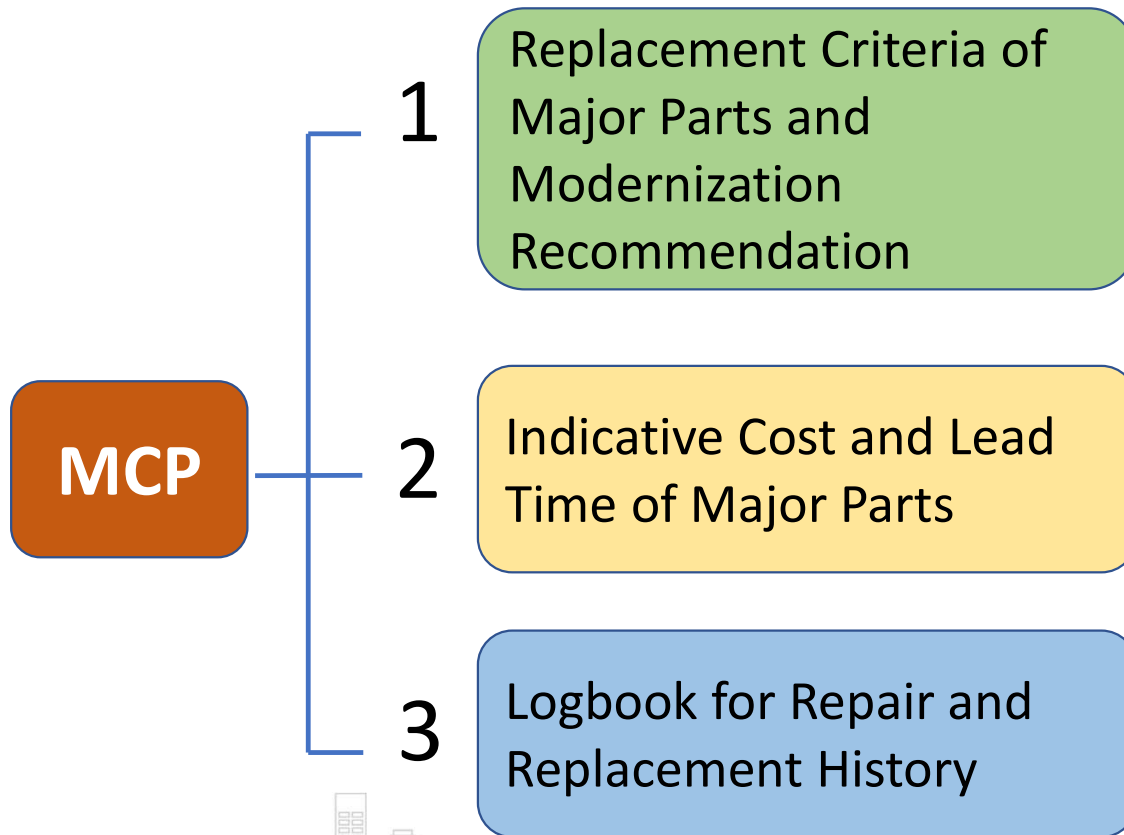
What is Maintenance Control Plan (MCP)?

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A set of documents prepared by the contractor in agreement with owner for lifecycle planning of lift and management of parts replacement



Three Key Elements of MCP



Preventive maintenance to address likely worn off or obsolete parts

To allow for early planning including ensuring sufficient budget for replacement

For data review and analysis by owner, contractor and SPE



Part 2

MCP – Parts Replacement Guide

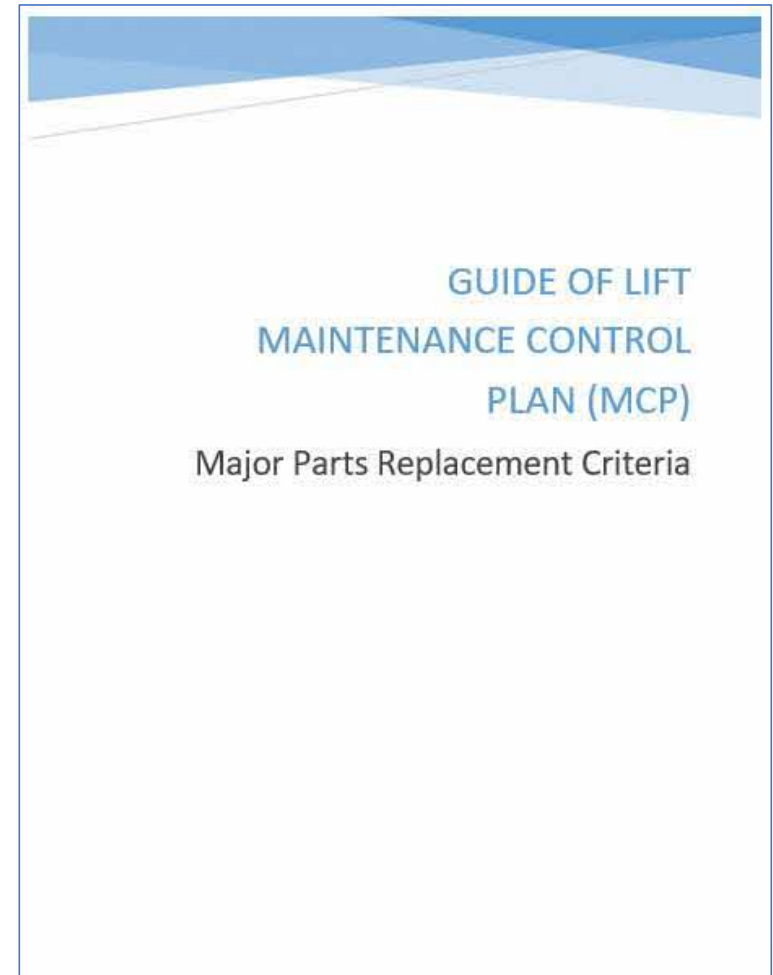


What is inside MCP Guide

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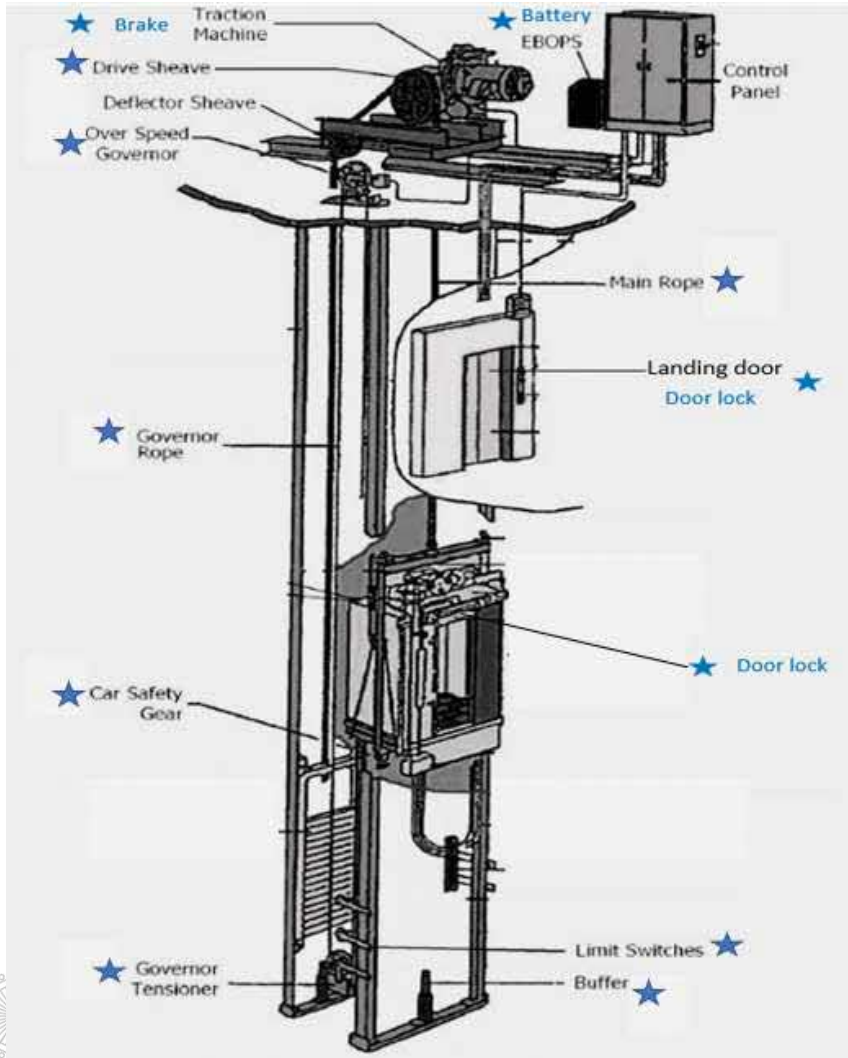
A guide is developed to help contractor to prepare the MCP and owner to review the MCP. It includes:

- Introduction
- Part 1 Replacement Criteria for Major Mechanical Parts
- Part 2 Replacement Criteria for Major Electrical Parts
- Part 3 Recommended Checks by SPE/Contractor for Parts Replacement
- Part 4 Modernization
- Part 5 Major Alteration



Parts Covered in the Guide

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Parts are divided into two main categories, **Mechanical** and **Electrical** parts.

Mechanical Parts:

1. Brake Pad;
2. Ropes;
3. Sheave;
4. Safety Gear and Governor;
5. Buffer (Spring/Hydraulic/PU buffer);
6. Landing door and car door locks;
7. ACOP/UCMP

Electrical Parts:

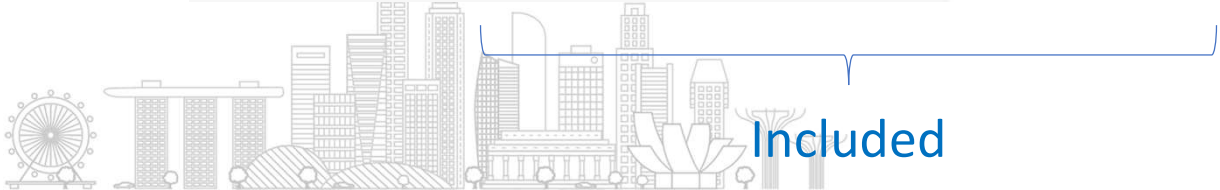
1. UPS batteries;
2. Electrical switches/sensors used in safety circuits;
3. Inverter Drive
4. Printed Circuit Boards (PCB)

Parts Covered in the Guide

Only safety and reliability-critical parts are included

For example:

Door locking devices, car door sensors are included but door panels are not included



What Is Parts Replacement Criteria

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Provide guidance to owners and contractors on **replacement criteria of safety and reliability-critical parts** before failure happens

Two-Stage Monitoring:

Criteria for Replacement

1st Stage Criteria (Hi alarm)

Criteria to start preparation, source for parts and schedule for replacement

2nd Stage Criteria (Hi-Hi alarm)

Criteria for immediate replacement, otherwise shut down the lift



Replacement Criteria - Two Stage Monitoring

Example - Brake pad

Allowable thickness	Actual thickness measured	Date
-Original new pad thickness: 7mm Criteria to start planning and arranging for replacement at 5.5mm (Hi alarm)	Left Pad: 5.5mm Right Pad: 5.7mm	1 June 2022 (parts sourced and quotation sent to owner)
-Immediate Replacement criteria: 5mm (HiHi alarm)	Left Pad: 5mm Right Pad: 5.3mm	30 Nov 2022 (immediate replacement)

To be filled up by installation contractor, and to be used by the maintenance contractor to do the monitoring and condition assessment

To be measured and recorded by Maintenance contractor, and kept in the logbook



Replacement Criteria – Non-measurable Parts

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Example –PU buffers



For PU buffers which can deteriorate abruptly after few years, and some manufacturers therefore indicate the expiry as 5 years in their type testing report.

It is recommended to check with the manufacturer and follow their suggested replacement frequency.



Modernization of older lifts

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Older lifts face more parts replacement issues including parts obsolescence. **Modernization is recommended for older lifts, especially when**

- 1) there is **significant advancement in the technology** used for that part or sub-system (*e.g. AC2 lift*) or
- 2) there is **significant gap between the existing parts (or sub-system) and the latest code requirement** (*e.g. single plunger brake*)



15th Year Assessment

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- Conditional assessment of entire lift to assess need for **replacement of major parts and modernization** is recommended for **lifts that are 15 years or older**
- Owner may engage **SPE** or **independent consultant** to carry out this 15th year assessment
- Subsequently, such assessment is recommended to be carried out **every 5 years** for lifts that are 15 years or older, if no replacement or modernization is carried out



List of Recommended Modernization

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- A list of parts to be modernized is also included in the guide
- Examples of parts that need to be modernized: **AC2 lift, single plunger brake**
- Examples of obsolete or obsolescent part that just need to be replaced by alternative: intercom, car-top fan etc



Major Alteration

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- When it is **not one to one replacement**, the owner and contractor needs to know if such replacement is considered as **major alteration** as the requirement is different;
- Information of major alteration and the associated requirements are also included in the Guide.
- Some examples of major alteration:
 - a) Adding ACOP and UCMP to the existing lift
 - b) Change the controller of lift
 - c) Change the old governor to a new model



Logbook

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- A **logbook** to record the following is recommended:
 - a) fault and breakdown information*
 - b) incident involving technical issues*
 - c) parts repair/replacement details*
 - d) SPE's recommendation for parts replacement if any*
- Contractors are encouraged to **digitalize** their maintenance activities/records
- SPE is recommended to review the logbook and maintenance records before annual certification of the lift



Owners Taking Charge of Parts Replacement and Modernization

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Condition assessment of parts against the replacement criteria in MCP;

Replacement is planned ahead and budget is set aside.

Safety and reliability of lift is increased



Thank you



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