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# Future-Proofing Your Lifts: Lift Modernisation



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# Part 1

## Ageing Lifts and Their Issues



# Issues with Ageing Lifts



## Increased Frequency of Breakdowns

- **System-level deterioration** involving Various component
- Longer service interruptions impacting occupants, especially those with mobility needs



## Escalating Maintenance Costs

- Recurring repairs increase expenses
- Sourcing replacements becomes harder with system age

## Underlying Factors

- Mechanical and Electrical/Electronic (M&E) components are prone to **deterioration**
- Tech advancement also causes **obsolescence** (e.g., printed circuit boards)

# Case Study: Obsolete components not readily available

- **40 years old** condominium
- **The controller and many other parts are obsolete**
- Jerks and excessive mis-levelling are common with **frequent breakdowns**
- Contractor ultimately informed owner they must **terminate the maintenance contract** due to unavailable parts

# Case Study: Frequent breakdowns due to wear and tear

- **Frequent faults** and **prolonged repair times** at 30 years old condominium
- Residents were dissatisfied and felt that the contractor was no longer competent to maintain the lifts
- Funds were spent on two independent lift audits to find out cause of frequent faults
- Lift audits found **that the frequent breakdowns were due to wear and tear but parts replacement was challenging due to obsolescence**



# Part 2

## Prioritise Lift Modernisation



# What is Lift Modernisation

A **system-level** upgrade of the entire lift **with new technology, better safety features**, and aesthetic enhancements to improve overall performance, safety, and appearance.

Modernisation



Repeated Repairs

Why timely modernisation of lifts is preferred over repeated repairs?



Compliance with the latest standards



Improved performance and reliability



Energy efficiency & additional features



lower maintenance cost



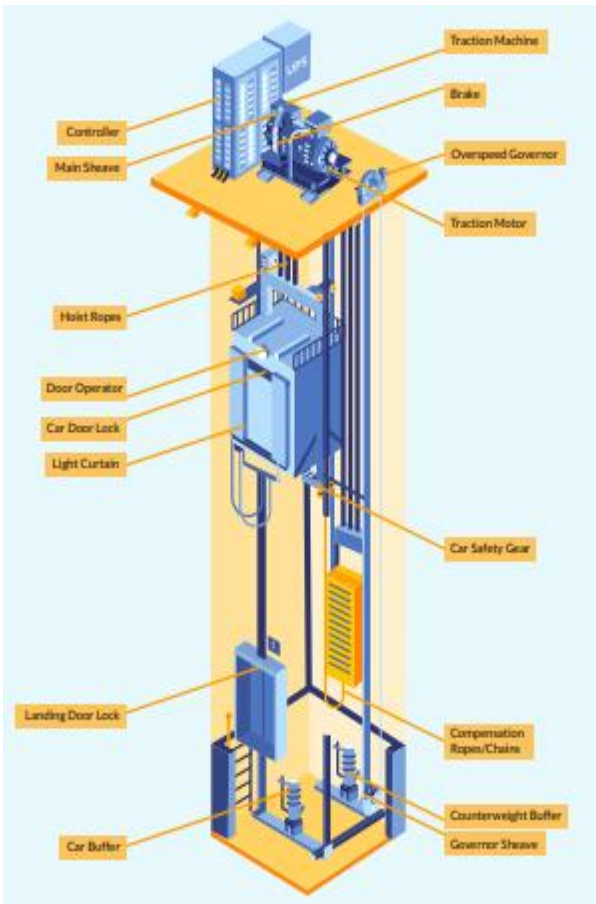
Enhanced Image of the estate

# Case Study: 'Inadequate' Lift Modernisation

- 20 years old condominium with 12 lifts
- MCST spent more than \$800k to upgrade the lifts in 2023 (18<sup>th</sup> year mark)
  - Upgrade of controller and other electronic components;
  - Car interior aesthetic improvement; and
  - Only overhaul of traction machine
- However, **frequent lift breakdowns still occurred**
- **MCST incurred additional \$200+k in subsequent year** to replace the other lift parts and **residents suffered lift disruption twice**

# Recommendations for Lift Modernisation

Modernisation should involve **a comprehensive system-level rejuvenation**, including all major M&E components, to meet current design standards.



## Mechanical Parts: ✓

Examples:

- 1 Traction machine and Brakes;
- 2 Ropes/belts; 3. Sheave; 4 Buffers
- 5 Safety Gear and Governor;
- 6 Landing/car door locks etc;

## Elect/Electronic Parts: ✓

Examples:

- 1 UPS batteries; 2 Motor drive; 3 Car door drive; 4 Switches/sensors used in safety circuits; 5. Main Controllers /Car door controller and PCBs\* etc

## Structural Parts:

*(subject to Condition Assessment)*

Examples:

- 1 Guide rail; 2 Landing door; 3 car frame;
- 5 Car top handrail; 6 Cat ladder etc

## Additional Features: ✓

Examples:

- ACOP and UCMP\*\***, Remote Monitoring and Diagnostics (RM&D), Regenerative Drive, etc



# Part 3

## Plan Early and Budget Well



# Modernisation Plan – Fund Preparation

## Plan Ahead and Build Reserves



- Lift modernisation is a significant expense
- Recommended to budget min. **\$120k** per lift
- Increase sinking fund contribution or special levy if inadequate funds
- Regularly obtain cost updates from contractor to ensure that the budget planned is sufficient
  
- Modernisation cost depends on factors such as number of floors, speed, capacity, and brand.
- Obtain quotations from **lift contractors** for budgeting
- Consider engaging a lift consultant to advise and manage the lift modernisation exercise



### LIFT MODERNISATION

STRATA  
INSIGHTS

AND WHY MANAGEMENT CORPORATIONS (MCST) SHOULD PRIORITISE IT

#### BETTER PERFORMANCE - REDUCE BREAKDOWNS; IMPROVE UPTIME



Older lifts, especially those over 20 years old, face parts obsolescence and frequent breakdowns, leading to increasing repair costs and longer downtimes.

Rejuvenating ageing lifts through modernisation could improve performance with improved uptime and reduced downtime, as breakdown rate decreases and replacement parts are readily available.

#### EQUIPPED WITH LATEST TECHNOLOGY AND SAFETY FEATURES



Modernisation enhances overall performance – safer and more reliable. Modernised lifts could be fitted with Remote Monitoring and Diagnostics (RM&D) solutions for 24/7 performance monitoring, enabling predictive maintenance for better lift performance. In addition, the older lifts could be enhanced with safety features in the latest lift standards required for new lifts.

#### LOWER OPERATING COSTS



Modernised lifts would also be equipped with efficient green features to reduce energy consumption and operating costs.

#### IMPROVED RESIDENT SATISFACTION AND PROPERTY VALUE



Modernised lifts enhance overall living experience and add to property value. Clear communication about the process can boost resident support and satisfaction.

#### TAKE ACTION



- ✓ **Start building sinking funds** now to avoid potential hefty special levies downstream;
- ✓ **Consult your Management Council or Managing Agent** about existing plans to modernise the lifts or initiate discussions;
- ✓ **Discuss and support the lift modernisation proposal** at the General Meeting.



For detailed recommendations on modernisation items and planning, refer to the BCA's Guide on Implementing a Maintenance Control Plan (MCP)

[go.gov.sg/bca-mcp-guide](https://go.gov.sg/bca-mcp-guide)



Strata Insights is a series of bite-size information for all MCST stakeholders on various aspects of living in a strata property.

Building and Construction Authority

# Case Study: Well-planned Lift Modernisation

- 33 years old condominium in Bukit Timah
- Discussed with lift contractor in 2016 for lift modernisation and executed in 2023
- Collected \$120k per lift set aside in Sinking Fund (no Special Levy required)
  - ✓ Modern design enhances the estate's image
  - ✓ Smooth rides during operation
  - ✓ Precise leveling eliminates tripping risks
  - ✓ Substantial savings in electricity consumption

**Early planning = Better outcome**



## **Part 4**

# **Ensure lifts continue to function well**

Maintenance Control Plan (MCP)

Remote Monitoring and Diagnostic (RM&D)

Outcome-Based Contracting (OBC)



# Maintenance Control Plan (MCP)

A set of **maintenance details** prepared by the contractor/supplier for the owner's **lifecycle management** of their lifts. This includes information on part replacement criteria for safety-critical components for planning and ensuring lifts can operate safely.

## Objective of MCP



Fund set aside for parts replacement



Easy to review and decide parts replacement proposal



Reduced downtime due to early parts procurement



Detailed repair and replacement records

## Key Components of MCP



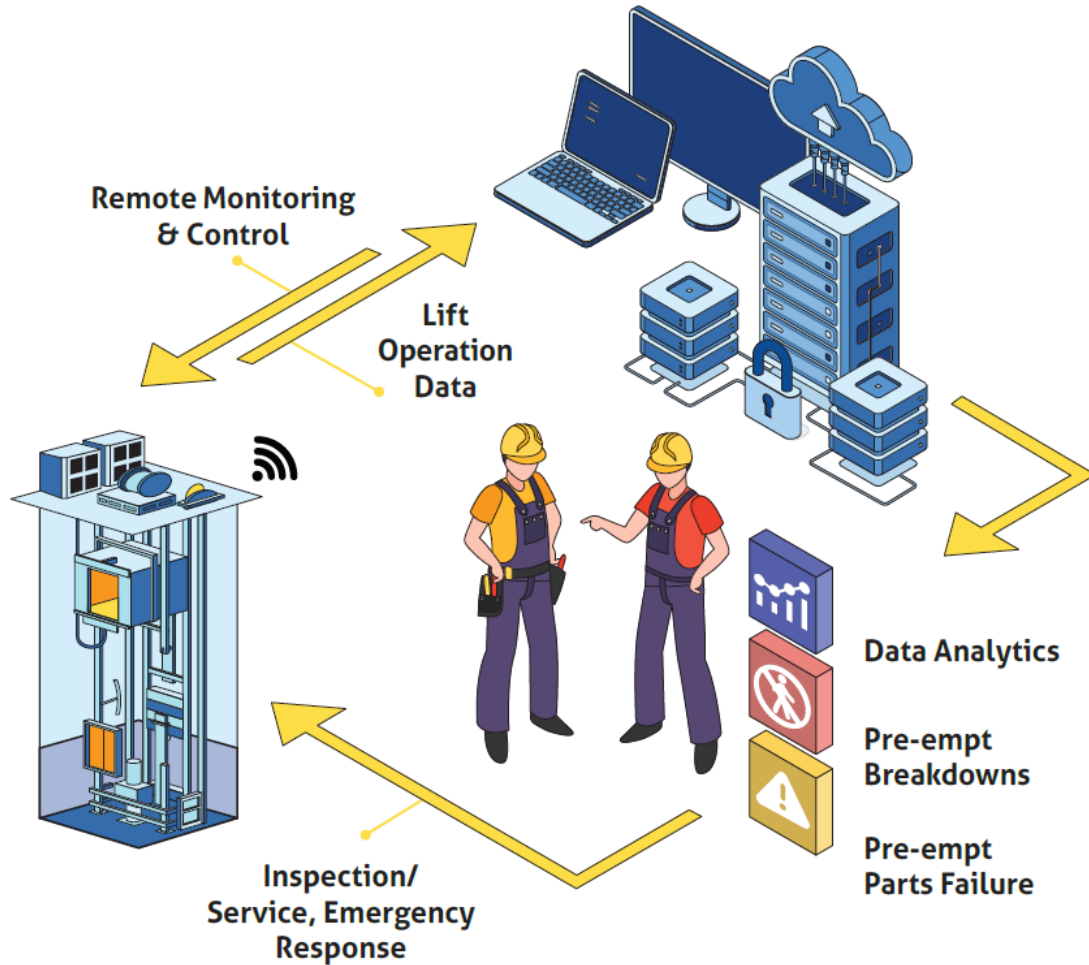
Replacement Criteria of Parts with Indicative Cost and Lead Time



Condition Assessment of Safety Critical Parts for Ageing Lifts



# Remote Monitoring & Diagnostics (RM&D)



- A technology that uses **IoT** to **continuously monitor** lift operations and **provides diagnosis with Artificial Intelligence (AI)**



**24/7 monitoring** of safety-critical and reliability aspects



- Predictive maintenance
- Targeted and efficient rectifications
- Increase lift uptime



Effective life cycle management driven by usage and performance data

# Outcome-based Contracting (OBC)

Lift owners specifying contract requirements in terms of expected **performance** levels, rather than fixed amounts of resources (e.g. manpower)



- Clear set of contract terms based on **service standards** and **performance** for transparent exchange between stakeholders
- Encourage accountability and reward reliability



- **Collaborative partnership** between owners and contractors (win-win situation)

# Start planning for lift modernisation

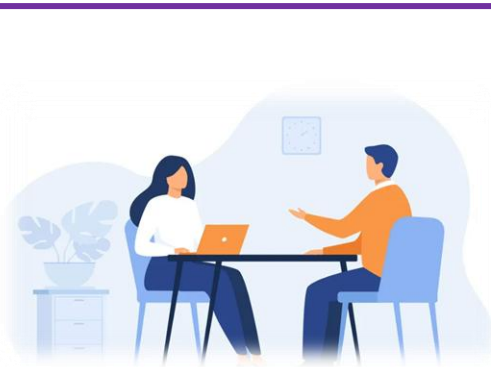


## Over 20 years: plan and act soon

- Conduct an assessment of the lifts
- Ensure that you have sufficient sinking funds
- Seek mandate through AGM or EOGM



## Newer lifts: start early to prepare smoothly



For more information on lift modernisation:

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# Available Resources



<https://go.gov.sg/guide-for-lift-owner>

Good Practices Guide for  
Lift Owners



<https://go.gov.sg/bca-mcp-guide>

Guide to Implement  
Maintenance Control Plan  
(MCP)



<https://go.gov.sg/obc-guide>

Guide on Specifications for  
Outcome-Based Lift  
Maintenance Contracts



**Thank You**



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