CBM PTE LTD:
DRIVING COST SAVINGS WITH ISO 41001 CERTIFICATION THROUGH SMART TECHNOLOGIES INTEGRATION

by IES-Standards Development Organisation (IES-SDO) x CBM Pte Ltd

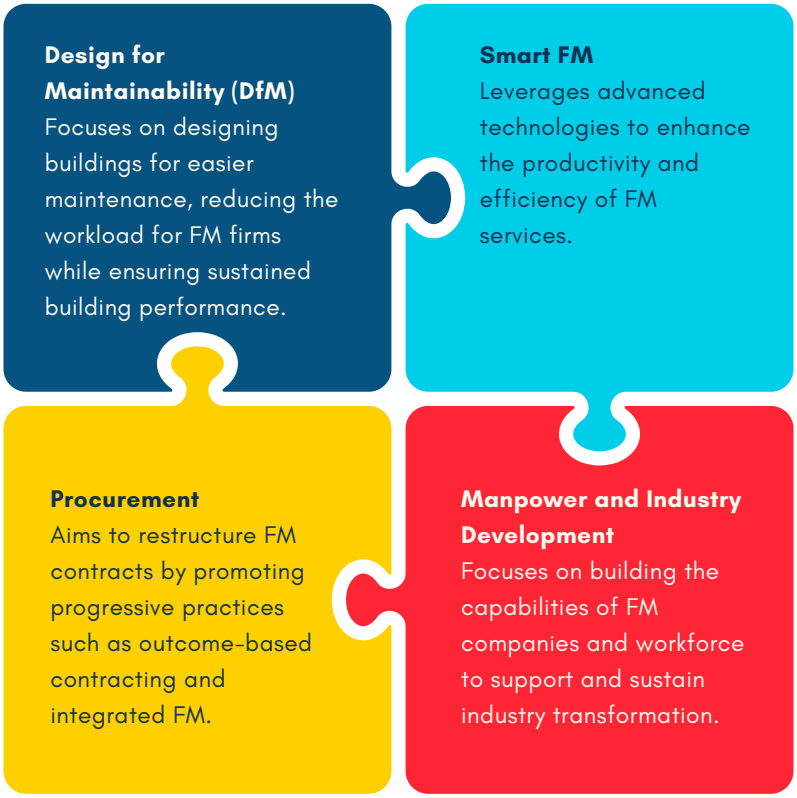
Standards Development Organisation

CBM

With an ageing local workforce and building infrastructure, the Facilities Management (FM) industry faces increasing manpower challenges and a rising demand for building maintenance. This makes it essential to transform the industry into one that is more manpower-efficient and productive.

To address the challenges faced by the FM industry, the Building and Construction Authority (BCA) was tasked with coordinating its development as part of the Real Estate Industry Transformation Map (ITM) launched in February 2018. A tripartite Facilities Management Implementation Committee (FMIC) was subsequently established, bringing together public and private building owners, FM service and solution providers, trade associations and chambers (TACs), and unions. The FMIC spearheads efforts to develop detailed action plans and implement key transformation initiatives.

THE FOUR KEY INITIATIVES ROLLED OUT UNDER THIS FRAMEWORK INCLUDE:



These initiatives collectively aim to address key industry challenges and drive the transformation towards a more innovative and sustainable FM sector.

In today's context, Singapore companies are increasing their competitiveness in the market and show their dedication to quality through the adoption of recognised global standards and certification. One recognised standard is the 'ISO 41001 Facility management — Management systems — Requirements with guidance for use', which is the world's first management systems standard specifically for FM.

ISO 41001 integrates various disciplines to influence how people interact with the physical environment while enhancing productivity and efficiency across societies, communities, and organisations. Through its services, a FM System significantly impacts the health, well-being, and quality of life of a substantial portion of the global population.

The primary objective of ISO 41001 is to improve productivity and well-being by harmonising 'People, Places, and Processes' within the built environment. This standard is particularly valuable for organisations utilising FM systems, providing a framework for integrating and aligning operations with the new compliance requirements.

One such company that embraced ISO 41001 was CBM Pte Ltd. A wholly owned subsidiary of Singapore's leading private developers - City Developments Limited (CDL), CBM was established in 1971. Recognised as Singapore's only "Truly" Integrated Facility Management Company, CBM offers a comprehensive range of in-house services which includes Managing Agents, Engineering, Environmental Services, Project Management, Security, Car Park Management, System Integration, Sustainability Operations & Consultancy, and Commercial & Retail Laundry Services. Their unique approach enables them to provide a single point of contact for clients, ensuring better control and coordination of the services they deliver.

CBM was the first FM company in Singapore to be presented with the ISO 41001 certification in 2019 where no other FM companies had done so at the time. CBM shared that there has been a lack of a unified interpretation and understanding of FM globally. This challenge became particularly evident as CBM expanded its operations into the Middle East, Taiwan, and Thailand, leading to discrepancies in service quality, client expectations, and, some cases, contractual conflicts.

As FM has grown increasingly complex and integrated in recent years, the ISO 41001 standard has provided a systematic approach to ensure continuous improvement in service delivery. It mandates regular reviews to optimise operational effectiveness and efficiency. Furthermore, the standard offers a common framework for assessing and measuring FM, addressing a long-standing gap in the industry.

BRIDGING STANDARDS AND SUCCESS

Recognising the significance when ISO 41001 was first introduced in 2018, the CBM management team swiftly decided to pursue certification.

The initial phase of implementing ISO 41001 within a Demand Organisation involved a comprehensive understanding of its unique needs and expectations. This process proved to be particularly challenging for FM service providers compared to internal FM teams within an organisation.

> **We firmly believe that embracing this standard is essential for a true FM company**

CBM Pte Ltd Chief Executive Officer, Mr Roy Chiang receiving the ISO 41001 certificate from Bureau Veritas in 2019.

One of the key challenges is that the requirements and expectations for contracted FM services often vary significantly from client to client. In addition, many Demand Organisations were unfamiliar with the ISO 41001 standard and were initially sceptical about endorsing the FM policy and systems - both of which are critical to the certification process.

As a result, the time invested in effectively communicating the system to the Demand Organisation became an essential part of the process. For CBM, it took approximately one month of consistent briefings and discussions before the senior management of the Demand Organisation formally endorsed the FM policy and the associated documents.

A key takeaway from this experience is the importance of clear, ongoing communication between the Demand Organisation and the FM service provider. This mutual understanding of each party's requirements is crucial to ensure successful implementation; without it, the project can quickly become unmanageable or stalled.

ADVANCING SUSTAINABILITY WITH ISO 41001

With 2,100 in-house professionals playing key roles in delivering its diverse range of services across Singapore, Thailand, Taiwan, and Qatar, the adoption of ISO 41001 certification has proven invaluable for FM companies like CBM Pte Ltd, driving tangible improvements in efficiency, service quality, and sustainability. CBM has realised an approximate 15% cost savings through the strategic adoption of technology in its FM, Security, and Cleaning operations in recent years. This technological integration has not only significantly enhanced operational efficiency but also contributed to substantial cost reductions. In alignment with the Singapore Green Plan 2030, a national initiative guiding the country's transition to a more sustainable future, CBM's efforts mirror key aspects of the plan, particularly in promoting environmental sustainability, resource efficiency, and improving the overall quality of life.

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CASE STUDY ON

REPUBLIC PLAZA

In 2019, CDL had engaged CBM Solutions (CBMS) to identify energy-saving opportunities for the air-side air conditioning system at Republic Plaza, one of the tallest skyscrapers in Singapore. The goal was to minimise Capital Expenditure (CAPEX), improve Mechanical & Electrical (M&E) system efficiency, and reduce Operating Expenditure (OPEX) through a Life Cycle approach. With 148 Air-Handling Units (AHUs) in a live building, upgrades had to be completed within a 12-hour shutdown during non-office hour to prevent business disruption.

As an accredited Energy Service Company (ESCO) and green and sustainability FM provider, CBMS application of ISO 41001 played a pivotal role in driving the initiative's success. Taping on the guiding principles of ISO 41001, CBMS proposed cutting-edge technologies and innovative approaches to energy savings in facility management. This collaborative effort between CDL and CBMS underscores a mutually beneficial partnership, enhancing operational efficiencies and service delivery standards.

To ensure effective communication and stakeholder engagement through the initiative:

STAKEHOLDER ALIGNMENT MEETINGS

Meetings were conducted to align stakeholders, including senior leadership from CDL Asset Management (AM) and key decision-makers from CBMS. The sessions clarified goals, discussed implementation strategies, and addressed any concerns upfront.

REGULAR PROGRESS UPDATES

Quarterly and milestone-based progress updates were provided to CDL AM leadership and other stakeholders. These updates highlighted achievements, challenges, and upcoming milestones, fostering transparency and accountability.

PERFORMANCE METRICS AND REPORTS

Detailed performance metrics, including operational and maintenance cost savings, sustainability and CO2 reduction reporting for CDL Green Building, Decarbonisation and Safety (GBDS), as well as system efficiency improvements aimed at achieving a higher Green Mark 2021 Platinum and Super Low Energy Building rating, were regularly reported to highlight tangible and intangible benefits and ensure continued leadership support.

STRATEGIC ALIGNMENT WITH ORGANISATIONAL GOALS

Continuous emphasis was placed on how the initiative aligns with CDL's broader strategic objectives, such as sustainability leadership and operational excellence. This alignment ensured sustained leadership engagement and commitment over the initiative's lifecycle.

CASE STUDY ON REPUBLIC PLAZA

STRATEGY

Instead of a total replacement of the 148 sets of AHUs, which would cost approximately SGD$ 9.0 million, an alternative solution was implemented by only replacing and upgrading the moving parts of these 25-year-old assets. This approach cost about SGD$4.0 million and included replacing the air blower, pulley and belt assembly, variable speed drive, with an axial fan that comes with an IE5 permanent magnet motor. The non-moving parts (i.e., the existing coils, pipe insulation, AHU structure, and accessories) were reconditioned and restored.

This not only improved the power-to-air operating efficiency of the AHUs from about 60% to 85% but also eliminated the need for regular belt adjustments and replacements. The adjustments resulted in total annual energy cost savings of SGD$600,000 (@ tariff $0.32/kWh), and maintenance cost savings of about SGD$15,000 per year.

ACHIEVEMENT

The upgrade was completed in 2023, and after a year of performance monitoring, it was proven that the intended purpose was achieved as planned.

The return on investment (ROI) was verified to be approximately 6.5 years. The quieter working environment has received positive feedback from tenants. Also, maintenance to the AHU is less frequent, because an additional technology solution leverage on the IoT sensors for demand-based maintenance regime, i.e. the digiHUB, coupled with a stretch half-yearly compulsory maintenance, was implemented. Regular lubrication of the moving parts, such as the pulley and belt assembly, as well as the disposal of broken belts and pulleys, is no longer required, thus minimising waste disposal.

SITE IMPACT

Some of the key site impacts and achievements can be found below.

- CAPEX saving, from SGD$9.0 million reduced to SGD$4.0 million.
- Less disruption to business operations. Upgrading was completed in 4 hours instead of 3 days per AHU.
- A quieter environment and more comfortable ambience/space.
- Re-condition existing useful provisions, such as non-moving parts - cooling coil, AHU casing, the steel support structure of AHU, etc. This translates into disposing of less waste.
- A reduction of 380 tonnes of CO_2 annually because of a more efficient system.
- Leverage on technology and the digiHUB, for demand-based maintenance regime. It is less reliant on labour work because maintenance effort is stretched from monthly to demand-based, with threshold limit of at least half-yearly once maintenance regime. This translates into 740 man-hours savings yearly.

CASE STUDY ON REPUBLIC PLAZA

The sustainability initiatives at Republic Plaza, arising from the application of ISO 41001, have led to significant cost savings, improved efficiency, and strengthened the organisation's commitment to financial prudence, environmental responsibility, and operational excellence. These efforts also enhance its leadership in sustainability and ensure long-term resilience.

FINANCIAL AND OPERATIONAL EFFICIENCY

The sustainability initiative generates significant financial and operational benefits by reducing CAPEX from SGD$9.0 million to SGD$4.0 million predictive maintenance feature from the digiHUB, saved 740 man-hours annually. These cost-saving measures, combined with the minimisation of business disruption through faster upgrades, enhance overall operational efficiency and continuity.

ENVIRONMENTAL SUSTAINABILITY

Environmentally, the initiative achieves a notable reduction of 380 tonnes of CO2 annually, thanks to the implementation of a more efficient system. By reconditioning existing provisions and reducing waste, the organisation supports a circular economy and minimises its environmental footprint. The optimisation efforts have also led to Republic Plaza earning the Green Mark Super Low Energy Building status in 2023, reflecting high energy efficiency with a Total System Efficiency (TSE) of Air Conditioning at 0.67 kW/RT.

ENHANCED REPUTATION AND LONG-TERM VIABILITY

The initiative enhances the organisation's reputation as a leader in sustainable practices. Achieving recognised sustainability certifications boosts its image, attracting environmentally-conscious tenants, investors, and customers. This positive perception, coupled with sustainable practices, ensures long-term viability and resilience against environmental and regulatory risks, positioning the organisation for future success in an increasingly eco-conscious market. Leverage on technology and the digiHUB, for demand-based maintenance regime. It is less reliant on labour work because maintenance effort is stretched from monthly to demand-based, with threshold limit of at least half-yearly once maintenance regime. CBM achieved 740 man-hours savings in year 2024.

The initiative aligns seamlessly with the overall organisational strategy by:

ENHANCING FINANCIAL PERFORMANCE

The significant reduction in CAPEX and operational costs aligns with the organisation's goal of maximising financial efficiency and profitability.

PROMOTING SUSTAINABILITY

Achieving the Green Mark Super Low Energy Building status and reducing CO2 emissions underscores the organisation's commitment to sustainability and environmental stewardship.

BOOSTING OPERATIONAL EFFICIENCY

Minimising business disruption and extending maintenance intervals align with the organisation's strategy to optimise operations and ensure business continuity.

RESOURCE OPTIMISATION

Reconditioning existing resources and reducing waste reflect the organisation's focus on resource efficiency and sustainable practices.

LABOUR OPTIMISATION

Reducing labour dependency and saving man-hours align with the organisation's strategic goal to streamline operations and enhance productivity resulting from the implementation of digiHUB for demand-based maintenance regime.

CASE STUDY ON REPUBLIC PLAZA

SCALABILITY

Overall, the initiative supports the organisation's strategic objectives of cost efficiency, sustainability, operational excellence, and resource optimisation.

The sustainability initiative at Republic Plaza has successfully expanded to other buildings managed by CBMS, showcasing its potential for scalability and widespread impact. For instance, at City Square Mall, the Pre-AHU system underwent upgrades that significantly improved air-side efficiency from 0.31 kW/RT to 0.15 kW/RT. This enhancement resulted in an annual reduction of approximately 28 tonnes of CO_2 emissions, demonstrating tangible environmental benefits similar to those achieved at Republic Plaza.

Similarly, Palais Renaissance, another property managed by CBMS, adopted the initiative by upgrading their AHUs. The projected savings at Palais Renaissance are estimated to reduce CO_2 emissions by about 18 tonnes annually, aligning with the sustainability goals pursued at Republic Plaza.

The successful replication of these initiatives underscores the effectiveness of the approach taken at Republic Plaza. Key success factors include proactive stakeholder engagement, thorough assessment of technological solutions, and strategic implementation planning tailored to each building's operational needs.

As the initiative continues to scale, ongoing monitoring and evaluation as required in ISO 41001 will be crucial to fine-tune strategies and optimise outcomes. Regular performance assessments, feedback mechanisms, and knowledge sharing among properties will ensure continuous improvement and innovation in sustainable facility management practices.

The successful scaling of the sustainability initiative across multiple properties managed by CBMS highlights its replicability, effectiveness, and potential for achieving substantial environmental and operational benefits.

FROM CHALLENGES TO OPPORTUNITIES FOR SMES

CBM shared that the main challenges faced by small and medium-sized enterprise (SME) FM companies often stem from limited expertise and resources.

To address these challenges, regulators could play a pivotal role[1] by offering grants and/or appointing dedicated accreditation bodies to support SMEs in their adoption of international standards[2]. One such initiative that was rolled out in July 2024 was the adoption of ISO 41001 as a Singapore Standard. SS ISO 41001 hopes to benefit these companies by making the standard more accessible at affordable prices in providing a structured framework and resources to help them enhance their capabilities and achieve certification.

LEADING THE WAY IN INTEGRATED FACILITY MANAGEMENT (IFM)

By adopting ISO 41001, CBM ensures its FM practices align with the highest levels of operational efficiency, sustainability, and industry standards. Through a structured framework, CBM optimises resource management, reduces operational risks, and continuously adapts to client needs, reinforcing its commitment to excellence. This dedication to integrating best practices across all aspects of its operations — whether maintenance, engineering, security, or sustainability — ensures CBM delivers high-quality, reliable services that remain flexible and future-ready.

ISO 41001 certification not only strengthens CBM's position as an industry leader but also provides clients with the confidence that their operations are managed in a sustainable, cost-effective, and systematic manner, securing a path toward ongoing success.

This approach not only elevates CBM's service offerings but also underpins its role in advancing the future of FM.

CBM was the first FM company in Singapore to be ISO 41001 certified in 2019.

[1] For more information on how you can contribute to standards development, visit: https://www.enterprisesg.gov.sg/grow-your- business/boost-capabilities/quality-and-standards/participate-in-standards-development.
[2] Other adoption on international standards on facility management includes SS ISO 41011, SS ISO 41012, SS ISO 41014, SS ISO 41015, SS ISO 41017, SS ISO 41018, TR ISO/TR 41013 and TR ISO/TR 41016. To purchase International and Singapore standards online, visit: www. singaporestandardseshop.sg.