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E-Content Description

Name of School / College: M A Rangoonwala Institute of Hotel Management and Research

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| --- | --- |
| Name and Designation of content creator /Producer | Assoc. Prof Imran Sayyed |
| Title of E content  | Operation and Maintenance |
| Theory/practical | Theory |
| Title and No of Module  | Operation and Maintenance |
| Title and code of Paper  | The Science of Hotel EngineeringSubject Code : HS 206 |
| Broad Subject | Hotel Engineering |
| Course | BScHS |
| Class | SY  |
| Semester | Third Semester  |
| University /Board | SPPU |
| Date of Content Creation |  18 Jan 2020 |
| Name of ReviewerHOD/Principal | Imran Sayyed |

Operation and Maintenance

Service Contracts

*An overview of current trends and options, with*

*guidelines for obtaining and managing the best*

*contract for your building* What owners need to know to obtain a good service contract

• Ways to evaluate service providers

• Major service needs

• What the contract should include

• Ways to ensure that the contracted services are correctly performed

This paper focuses on service contracts for heating, ventilating, and air

conditioning systems and equipment. The discussion is limited to contracts

offered by firms whose service personnel work off site (as opposed to

firms providing maintenance *management* services with key technical staff

on site).

***What Is Operation and Maintenance?***

Building O&M is the ongoing process of sustaining the performance of

building systems according to design intent, the owner’s or occupants’ changing

needs, and optimum efficiency levels. The O&M process helps sustain

a building’s overall profitability by addressing tenant comfort, equipment

reliability, and efficient operation.

Efficient operation, in the context of O&M, refers to activities such as scheduling

equipment and optimizing energy and comfort-control strategies so

that equipment operates only to the degree needed to fulfill its intended

function. Maintenance activities involve physically inspecting and caring

for equipment. These O&M tasks, when performed systematically, increase

reliability, reduce equipment degradation, and sustain energy efficiency.

***What Are the Various Types of Service Contracts?***

In the maintenance service industry, there is no standard or set of definitions

for the various kinds of service contracts. Each mechanical or maintenance

service contractor puts together a unique package of contracts. The

package often consists of three or four types of contracts, each presenting

a different level of comprehensiveness.

In this document, four fundamental types of contract are defined: **fullcoverage**,

**full-labor**, **preventive-maintenance**, and **inspection contracts**.

The newer concept of an end-use or end-results contract is also briefly

discussed. The names used are based on industry literature and discussions

with professionals in the field. There can be many variations within a contract

type, depending on owner needs and contractor willingness to modify

or customize service offerings.

Most of the contract types discussed below can encompass either the entire

mechanical system or just one piece of major equipment such as a chiller.

Also, owners may have more than one type of contract in place at any

given time.

**Full-Coverage Service Contract**

A full-coverage service contract provides 100% coverage of labor, parts,

and materials as well as emergency service. Owners may purchase this type

of contract for all of their building equipment or for only the most critical

equipment, depending on their needs. This type of contract should always

include comprehensive preventive maintenance for the covered equipment

and systems.

If it is not already included in the contract, for an additional fee the owner

can purchase repair and replacement coverage (sometimes called a “breakdown”

insurance policy) for the covered equipment. This makes the con-

tractor completely responsible for the equipment. When repair and replacement

coverage is part of the agreement, it is to the contractor’s advantage

to perform rigorous preventive maintenance on schedule, since they must

replace the equipment if it fails prematurely.

Full-coverage contracts are usually the most comprehensive and the most

expensive type of agreement in the short term. In the long term, however,

such a contract may prove to be the most cost-effective, depending on the

owner’s overall O&M objectives. Major advantages of full-coverage contracts

are ease of budgeting and the fact that most if not all of the risk is

carried by the contractor. However, if the contractor is not reputable or

underestimates the requirements of the equipment to be insured, they may

do only enough preventive maintenance to keep the equipment barely

running until the end of the contract period. Also, if a company underbids

the work in order to win the contract, they may attempt to break the contract

early if they foresee a high probability of one or more catastrophic

failures occurring before the end of the contract.

**Full-Labor Service Contract**

A full-labor service contract covers 100% of the labor to repair, replace, and

maintain most mechanical equipment. The owner is required to purchase

all equipment and parts. Although preventive maintenance and operation

may be part of the agreement, actual installation of major plant equipment

such as a centrifugal chillers, boilers, and large air compressors is typically

excluded from the contract. Risk and warranty issues usually preclude anyone

but the manufacturer installing these types of equipment. Methods of

dealing with emergency calls may also vary. The cost of emergency calls

may be factored into the original contract, or the contractor may agree to

respond to an emergency within a set number of hours with the owner

paying for the emergency labor as a separate item. Some preventive maintenance

services are often included in the agreement along with minor

materials such as belts, grease, and filters.

This is the second most expensive contract regarding short-term impact on

the maintenance budget. This type of contract is usually advantageous only

for owners of very large buildings or multiple properties who can buy in

bulk and therefore obtain equipment, parts, and materials at reduced cost.

For owners of small to medium-size buildings, cost control and budgeting

becomes more complicated with this type of contract, in which labor is the

only constant. Because they are responsible only for providing labor, the

contractor’s risk is less with this type of contract than with a full-coverage

contract.

**Preventive-Maintenance Service Contract**

The preventive-maintenance (PM) contract is generally purchased for a

fixed fee and includes a number of scheduled and rigorous activities such

as changing belts and filters, cleaning indoor and outdoor coils, lubricating

motors and bearings, cleaning and maintaining cooling towers, testing control

functions and calibration, and painting for corrosion control. Generally

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the contractor provides the materials as part of the contract. This type contract

is popular with owners and is widely sold. The contract may or may

not include arrangements regarding repairs or emergency calls.

The main advantage of this type of contract is that it is initially less expensive

than either the full-service or full-labor contract and provides the owner

with an agreement that focuses on quality preventive maintenance. However,

budgeting and cost control regarding emergencies, repairs, and replacements

is more difficult because these activities are often done on a

time-and-materials basis. With this type of contract the owner takes on

most of the risk. Without a clear understanding of PM requirements, an

owner could end up with a contract that provides either too much or too

little. For example, if the building is in a particularly dirty environment, the

outdoor cooling coils may need to be cleaned two or three times during the

cooling season instead of just once at the beginning of the season. It is

important to understand how much preventive maintenance is enough to

realize the full benefit of this type of contract.

**Inspection Service Contract**

An inspection contract, also known in the industry as a “fly-by” contract, is

purchased by the owner for a fixed annual fee and includes a fixed number

of periodic inspections. Inspection activities are much less rigorous than

preventive maintenance. Simple tasks such as changing a dirty filter or

replacing a broken belt are performed routinely, but for the most part

inspection means looking to see if anything is broken or is about to break

and reporting it to the owner. The contract may or may not require that a

limited number of materials (belts, grease, filters, etc.) be provided by the

contractor, and it may or may not include an agreement regarding other

service or emergency calls.

In the short-term perspective, this is the least expensive type of contract. It

may also be the least effective—it’s not always a moneymaker for the contractor

but is viewed as a way to maintain a relationship with the customer.

A contractor who has this “foot in the door” arrangement is more likely to

be called when a breakdown or emergency arises. They can then bill on a

time-and-materials basis. Low cost is the main advantage to this contract,

which is most appropriate for smaller buildings with simple mechanical

systems.

**End-Results Contracting**

End-results or end-use contracting is the newest concept in service contracting

and is not yet widely available. The outside contractor takes over

all of the operational risk for a particular end result, such as comfort. In this

case, comfort is the product being bought and sold. The owner and contractor

agree on a definition for comfort and a way to measure the results.

For example, comfort might be defined as maintaining the space temperature

throughout the building from 72o to 74o F for 95% of the annual occupied

hours. The contract payment schedule is based on how well the

contractor achieves the agreed-upon objectives.

This type of contract may be appropriate for owners who have sensitive

customers or critical operational needs that depend on maintaining a certain

level of comfort or environmental quality for optimum productivity.

How risk is shared between the owner and contractor depends on the type

or number of end results purchased. If comfort defined by dry-bulb temperature

is the only end result required, then the owner takes on the risk

for ameliorating other problems such as indoor air quality, humidity, and

energy use issues. Maximum contract price is tied to the amount and complexity

of the end results purchased.

***Who Are the Providers?***

A variety of contractors offer maintenance service agreements to owners of

commercial buildings and retail facilities:

• Mechanical contractors and full-service mechanical contractors

• Maintenance service contractors

• National maintenance service firms (consolidators)

• Specialized service contractors

• Manufacturers

• Maintenance management firms

**Mechanical Contractors**

Mechanical contractors install, repair, and perform O&M on all types of

mechanical equipment, including controls. Firms known as full-service

mechanical contractors design systems as well as installing and servicing

them. Both types of firms may also distribute manufacturers’ HVAC equipment

and control systems. Service contracts generally make up anywhere

from 10% to 25% of their business.

**Maintenance Service Contractors**

Maintenance service contractors offer a broad range of services such as

janitorial activities, lighting maintenance, and preventive HVAC maintenance,

including installation and repair of equipment. Their offerings may also

include infrared scanning, ultrasonic testing and eddy current testing. These

firms generally do not sell equipment. Service makes up the major share of

their business. They are hired primarily by owners who outsource most if

not all of their building services. These firms may have HVAC technicians

who are responsible for several different buildings. Janitorial crews, however,

generally are not responsible for multiple buildings. Profits for these

firms generally depend on the number and size of the janitorial and maintenance

service contracts they sell.

**National Maintenance Service Firms**

There are two types of national maintenance service firms. One type serves

mainly large retail chains and owners of multiple buildings. This type qualifies

mechanical contracting businesses throughout the country as subcontractors.

The qualified subcontractors are then considered part of the firm’s

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national service team. The number of subcontractors in a particular region

or metropolitan area depends on the number of contracts the firm has in

that area. The firm usually does not own any of its mechanical subcontractors.

However, the firm itself may also be a full-service mechanical contractor

with its own designers, installers, and service technicians.

The second type of firm, known in the industry as consolidators, is currently

buying up mechanical contracting firms nationwide. At this time

there are only a small number of consolidators, but each may own several

hundred small to medium-size mechanical contracting firms. Although many

of their current customers are residential, some such firms are beginning

to include light-commercial buildings as part of their market. For the most

part, the responsibility for service contract delivery remains with the local

mechanical contractor. In some cases, the national service firm prefers to

keep a low profile, allowing the acquired mechanical contracting business

to keep its original name and making few changes in how business is

conducted. Most if not all of these consolidators are publicly traded on the

stock market. How beneficial this consolidation effort will be for the commercial

and retail building customers remains to be seen.

**Specialized Service Contractors**

Specialized service contractors provide the narrowest scope of O&M services.

They generally sell, install, repair, and service a particular type of

equipment such as controls, refrigeration, water treatment, or electrical

equipment. Their service is often limited to the specific technology they

sell and may be far less important as a bottom-line moneymaker than sales

of equipment. However, because these firms are very specialized and proficient

in the technology and service they sell, owners and managers often

purchase these service agreements to supplement in-house staff work.

**Manufacturers**

Manufacturers of HVAC equipment such as chillers, boilers, package units,

fan systems, and energy management control systems (EMS or EMCS) often

provide maintenance service contracts or agreements for the equipment

they manufacture. Many of them also have the capability to provide

maintenance for all other systems in the building, including controls. Owners

and managers often use the manufacture’s service contract for a particular

piece of equipment or system such as a large chiller, boiler or EMS to

supplement the work of in-house staff.

**Maintenance Management Firms**

Maintenance management firms usually provide full-time, on-site staff. They

may provide just the key management staff, such as the facility manager

and chief operating engineer, or a complete team of key personnel plus all

technicians, including carpenters and painters. They are capturing the

outsourcing business of owners who determine that such an approach is

less expensive than maintaining an in-house staff. These firms base a large

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portion of their business on O&M management and service. An emerging

motivator for installing this kind of arrangement is the amount of savings

generated from improved O&M practices. The specific type of contract

these firms require is not discussed in this document.

***Screening the Contractors***

Building owners and managers often hire service contractors based on recommendations

by their peers. This approach may save time, but in the long

run it may not reduce risk or save money. A better way to find a contractor

who fits the particular needs of your building is to select several candidates

and rigorously screen them before requesting bids. The screening process

may seem time-consuming, but it greatly reduces the risk of costly problems

after the contract is signed. During the screening processes, ask the

following questions:

• Will the contractor do a thorough assessment of the building systems

before signing the contract?

• Will the contractor modify the basic contract to fit the requirements of

your building systems?

• Does the contractor have supporting documentation showing how various

tasks are performed? For example, the contractor should have a

policy/procedures manual defining each O&M task, such as checking

refrigeration pressures, and describing the methods used for accomplishing

the task. Ask to see the manual.

• Does the contractor have a database of PM tasks recommended either

by manufacturer or other reputable sources?

• Will the contractor provide a detailed service plan as part of the contract,

stating what services will be performed, at what frequency, and

the time it takes to complete the service?

• Will the contractor use only environmentally safe products when servicing

the building?

• Will the contractor provide an itemized list of hourly rates for labor by

skill level, charges for travel, and cost of parts for each service performed?

• Does the contractor have a maximum response time for emergencies

(usually four hours)?

• Will the contractor provide references from a one-year customer, a threeyear

customer and two customers of five or more years? Check the references.

• Does the contractor have several customers who have contracted with

them for five or more years?

**With regard to service technicians (employees), ask:**

• Will the contractor commit the same two or three technicians continuously

to the maintenance of the building?

• What is the level of skill of the service technicians who will perform the

work for the building?

• Will the contractor have capable service technicians available 24 hours

per day, 365 days per year?

• Is the contractor willing to provide resumes for the primary technicians

assigned to the buildings?

• What is the employee turnover rate?

• Are the technicians CFC-certified and do they have all other required

state and local licenses?

• What qualifications and training are they required to have ?

• Are they factory-trained on your building’s brand of equipment and control

system?

• Can they use your building’s brand of EMS to troubleshoot problems?

• Are the technicians able to use the trending capabilities of the building’s

EMS to track data?

• Do they have access to and the ability to use state-of-the-art tools such

as portable dataloggers for measuring variables and troubleshooting operational

problems?

• Are they required to wear clean company uniforms with name tags?