

Making the most of assets

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With companies keen to cut costs and raise plant efficiency, there is an increasing role for asset management to deliver these gains. Typical benefits include longer plant and resource life as well as significant cost savings and higher revenues. Holtec considers some of the issues involved as the cement industry becomes increasingly familiar with the asset management concept.

Asset management refers to the process through which the utilisation of various asset classes is effectively addressed to ensure the optimum return on any investments made in them. Alternatively, it can be viewed as a systematic process for cost-effectively operating, maintaining, utilising and upgrading assets.

Assets can be broadly divided into the following categories:

- raw material assets (captive reserves of limestone/other raw materials/fuel, including long-term supply contracts)
- equipment and in-plant storage assets
- utility assets (captive power, water sources, etc)
- market assets (market shares, distribution channels, brand image, etc)
- logistical assets (railway sidings, self-owned roads, transport modes and fleet, jetty, warehouses, etc)
- space assets (land)
- human assets (headcount, knowledge-skill inventory)
- potential assets (heat and dust emissions, revenue and cost leakages)
- intangibles (information, permits, clearances, licences, etc)
- financial assets
- working capital assets

Successful firms the world over seek to enhance business sustainability by addressing the following concerns:

- Are the assets adequate and healthy?
- Are they being operated and maintained properly vis-à-vis established benchmarks?
- Are they being utilised to their full potential?
- Is there any scope of enhancing the return on investment (ROI)? And how?

This article only examines assets that are technically highly inter-dependent. It excludes financial and working capital assets, which may be better addressed by accountants.

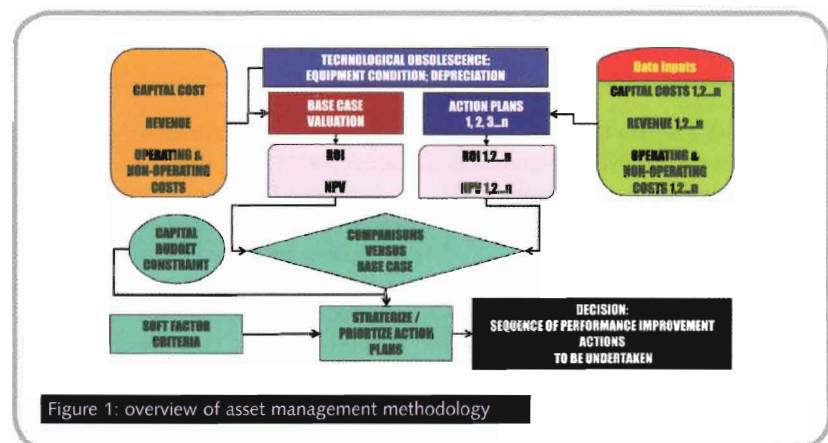


Figure 1: overview of asset management methodology

Methodology

The methodology begins with the creation of a cross-functional team comprising specialists from different areas. An audit of assets as well as data assimilation and analyses follows, enabling the company to identify areas of weakness and subsequently construct models to help address these.

This is followed by the formulation of a solution, model validation and the enumeration of strategic findings. The formulation of action plans is next with the development of a customised

management information system (MIS) to track these plans and measure progress/outcomes, etc. The broad methodology adopted is shown in Figure 1.

To ensure the successful realisation of returns, each strategy is followed by action plans that include the broad steps required to implement the recommendations, the inter-linkages with other strategies, key milestones, responsibility centre(s) for implementation, incremental investment requirements and estimation of benefits in monetary terms. Figure 2 shows the execution framework.

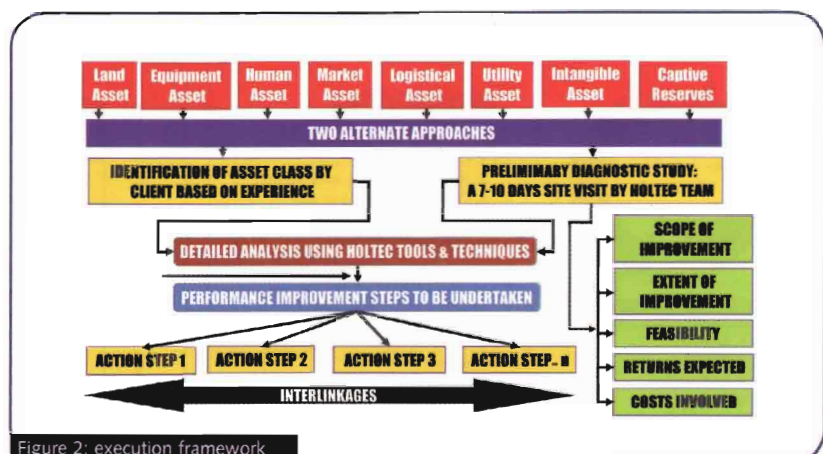
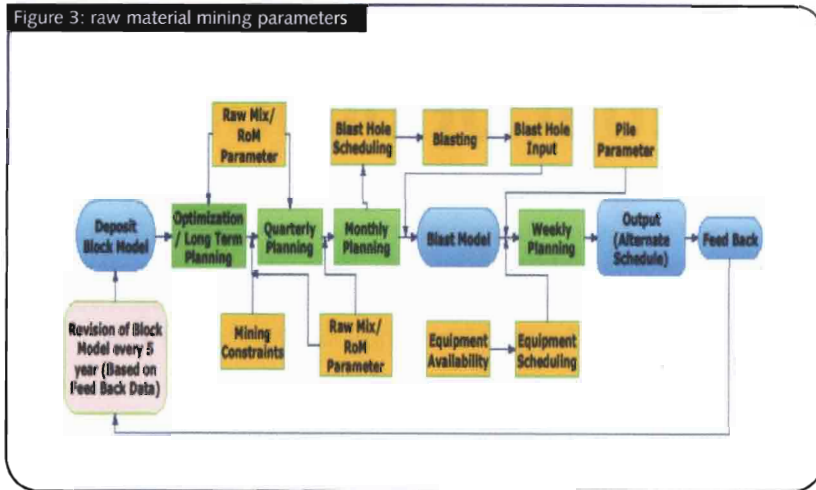


Figure 2: execution framework

Figure 3: raw material mining parameters



The following section highlights the challenges of different types of assets and how their effectiveness may be enhanced.

Raw material assets

Raw materials assets include limestone, captive additives and correctives, bought-out raw materials (blending materials, gypsum, correctives, etc) and fuel. The key objective is the effective usage of raw materials, including limestone, to ensure higher longevity, adequate quality and lower unit costs. The concerns that often arise include:

- Our cement-grade limestone is depleting – what is the balance of the plant life based on the balance of the limestone?
- Can I use a ‘sweetener’ to enhance my plant life? Where will I source it from?
- We have the best limestone in the area. However, our limestone raising cost is higher than the competition. Can we reduce our raising cost?
- The quarry is subcontracted. Is the limestone being effectively exploited?
- Fuel availability and rising cost are a concern. Can we use alternative fuels

to bring down our dependence on conventional fuels?

To increase the limestone longevity and retain the desired raw-mix quality, the options are to monitor the mine operations remotely and/or by deputising qualified personnel to the site. Under remote monitoring, mine operations are monitored on a weekly basis with guidance and suggestions given on optimum extraction techniques. It provides flexibility in mining operations, guarantees the steady supply of homogenised material, ensures minimum dependencies and biases, provides savings in mining costs and extends deposit life, etc (see Figure 3).

Tools such as CADE, QSO, Surpac, Borehole Logger Datamine, Autocad, Downhole Explorer, Drillhole Database, Geostat Software and Design Mix are used to optimise limestone exploitation and to ensure consistent run-of-mine quality and to bring down the raising cost.

The broad approach towards optimising limestone reserves and reducing the raising cost is depicted in Figures 4 and

5. The above approach was undertaken for some of Holtec’s clients and in one instance increased the plant life by 11-12 years and raised usable reserves by 30 per cent. In another case, limestone raising cost fell by US\$0.70/t.

Equipment and in-plant storage assets

The concerns under this asset class include:

- overall plant condition
- operating efficiency
- capacity utilisation of main equipment
- key performance indicators, including cost of production
- plant mass balance
- maintenance practices: predictive, preventive and condition monitoring
- operating practices
- environment implications
- quality measurement at every stage
- breakdown and stoppages review
- housekeeping
- consumption patterns and inventory of spare parts and consumables.

Apart from these concerns, issues relating to deriving the benefit realisation potential available, for instance, in product mix and not-fully exploited equipment capacity, are also examined.

The plant review requires a multi-disciplinary team to examine all aspects of the equipment, meet with personnel, collect and analyse first-hand data and derive possible solution alternatives. At times plant performance is remotely monitored (access is granted to the plant’s control panel). Based on 24-7 monitoring, recommendations are given to the plant operators to change key parameters to increase the plant efficiency.

Under remote monitoring, a specialised back office team has access to the works control system and monitors the plant’s

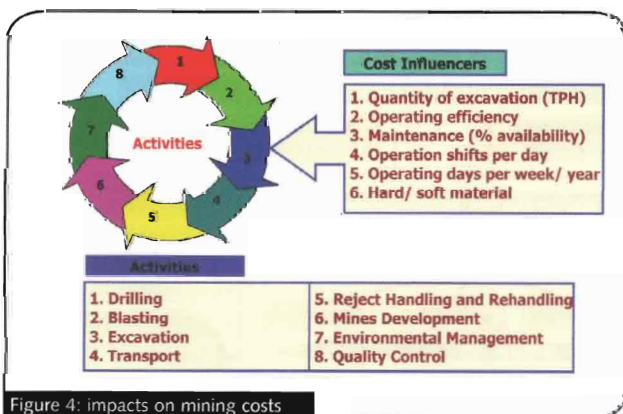


Figure 4: impacts on mining costs

Cost Heads	Stores & Spares	Consumables	Fuel	Power	Total Cost
Drilling					
Blasting					
Excavation					
Transport					
Total Cost					

Figure 5: matrix to assist in reducing mining costs

assets on a real-time basis. Changes suggested in any of the efficiency parameters are communicated to the plant operators, who then are responsible for their implementation.

An alternative is to deputise personnel at the plant who, in conjunction with the plant operators, work towards a higher plant efficiency. In a recent client study, power and fuel consumption was reduced, as well as the inventory. In addition, throughput was increased from 5150tpd to 5860tpd by exploiting the design margins inherently available in the system.

In another case, in the Middle East, kiln output improved from around 1600tpd to 1950tpd and specific heat consumption decreased from 1090kcal/kg to 820kcal/kg of clinker, creating predictive maintenance practices which lead to plant uptime rising from 60 to 80 per cent. Inventory values were reduced from US\$12.5m to US\$8.2m and false air intake points were plugged, leading to a reduction of false air ingress in the system.

Utility assets

Utility assets include captive power plant (CPP), captive water source and compressed air. The typical issues in this category include:

- How is the CPP maintained?
- Is the CPP achieving the desired load factor?
- Is the CPP's operating cost as per norms?
- Can the CPP be used to generate additional income, etc?
- Is water adequate to meet the plant needs in the long term?
- Being a critical resource, can the water usage be reduced?
- Is the compressed air usage as per norms and used efficiently?

During one of its asset management audits, the efficiency of the CPP involved was enhanced to generate an additional five per cent of electric power. In yet another exercise, the revenue generated by selling excess CPP power to a national grid (after adequate synchronisation) resulted in a payback period of about two years for the incremental investment in excess CPP capacity.

Market assets

A company also has assets in its markets: brand image, distribution channels, market share, market reach, sales manpower, product range, product quality, etc. The

issues confronting a marketing manager could include:

- Do we need to increase our capacity to retain our market share in the future business environment?
- Is our cement commanding an adequate premium in the market?
- Do we need to increase the number and quality of distribution partners to increase market penetration?
- Does my cement have the desired brand image and recall?
- Our market share is stagnant. Can we raise our market or capacity share?
- Can we increase our channel sales to earn a higher sales realisation?
- Do we need to up our service levels (technical assistance, delivery times, etc)?
- Does my cement (product mix and quality) meet the users' needs?

To increase the ROI in market assets, there is a need to gain total transparency on the value chain and map the organisation's market-related processes, find weak links, plug them and further consolidate its strengths. Inter-linkages and inter-dependencies between the market assets need to be strengthened and further leveraged. An example of this was observed in one of Holtec's assignments. By increasing the brand value proposition, the market share increased by three per cent and sales realisation increased by nearly US\$2/t. In another project, by educating and realigning the sales manpower and improving the service levels, the sales volumes advanced by 4-5 per cent and brand recall increased by seven per cent.

Logistical assets

Logistics, both inwards and outwards, is a major challenge for most organisations.

Specific challenges include:

- Is the current dispatch mix optimum?
- Is the inwards logistics cost optimised?
- Are our warehouses strategically located?
- Is the existing freight cost to markets a competitive advantage?
- Would setting up a terminal increase market reach and reduce freight?
- Can we optimise the dispatch pattern to increase sales volumes yet reduce costs?
- Do we need a captive transport fleet?

These concerns are addressed by evaluating the cost benefit of:

- optimum routes vs freight
- direct dispatches vs through warehouses/terminals, including evaluating the costs involved in storage vs stock outs, etc
- estimating competitive indices for core markets and realigning dispatches to ensure higher sales realisation and sales revenue vs higher sales volumes only.

One of Holtec's Asia-based clients increased its sales realisation by US\$6/t by realigned its warehouses and dispensing of the services of sales promoters. Another client raised its bulk dispatches by 1Mta and increased sales revenue by almost US\$85m annually by setting up a terminal near a major market centre.

Space assets (land)

Often land is an under-utilised asset. Surplus land may be put to alternative uses to yield a higher return on investment. This could include the set-up of a downstream facility such as a ready-mix concrete or pre-fabricated concrete products unit. Alternatively, depending upon the market scenario and dynamics, the plant could expand its capacity to meet the growing cement demand and/or

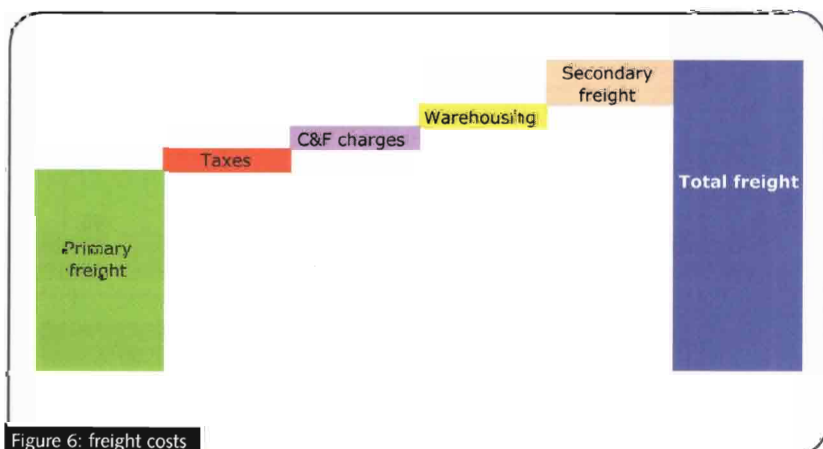


Figure 6: freight costs

decreasing market share. One of Holtec's clients leased out its surplus land to a non-cement-related industry and increased its ROI by way of lease income, while another client set up a brownfield works which increased its revenue two-fold.

Human assets

Having the right number of people, at the right place, with the right knowledge and skills is one of the biggest challenges for an organisation. Typical concerns include:

- Does the organisation structure meet the current business needs?
- Are the manpower numbers adequate?
- Is the manpower adequately equipped to meet the challenges?
- Is the right personnel deployed at the right job at the right time?
- How can I further increase the delivery competence of my people?
- Can the current skills be used to generate a higher ROI?

The broad process followed to evaluate the effectiveness and efficiency of the human resource function is depicted in Figure 7. By using the process facilitation model (to determine the right organisation structure), attitude, knowledge and skill assessment (to assess and carry out the correct personnel deployment) and leadership model (to increase the delivery competence), Holtec has increased the impact of manpower in many organisations. A client recently raised its

In one of Holtec's numerous waste heat recovery assignments, the client was able to save 10-11MW in power generation in a 10,000tpd plant

throughput by 1.4 times with a smaller number of people (23 per cent) and increased its ROI by nearly 13 per cent.

Potential assets

These assets can be categorised as those within and outside the plant. Potential assets within the plant may include dust from raw meal, clinker, cement and solid fuel. The dust from these sources can be as high as 4-5 per cent of the total outputs. Apart from this, excess power that can be sold to the grid/other parties may also constitute a part of potential assets. Potential assets from outside the plant, and not directly under the organisation's control, include alternative fuels, better corrective materials and natural materials (rice husks, sugar cane bagasse, volcanic material like pumice, etc).

- Issues that can arise are:
- the use of heat loss for energy generation
 - the use of waste to convert into a by-product
 - increase in life/output of any plant

- equipment and/or captive input material
- redeployment of assets to improve effectiveness/lower costs/increase revenue
 - availability of alternative fuel, corrective and blending materials that can lead to savings/better cement.

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Intangible assets

Assets like unutilised permits/licences and clearances, information repositories and processes/practices to plug costs and revenue leakages/losses are considered as part of this asset class. Trading unutilised permits, creating a revenue stream from unique processes to plug leaks or commercialising information databases can be another approach to increase ROI. The key lies in identifying these intangible assets and ascertaining if some of these can be commercialised to generate a new revenue stream for the company.

In many parts of the world, unutilised permits/licences are sold to another party who then uses them to set up a cement plant, etc. In a recent case, a cement brand that enjoyed a high-profile image, bought high-quality cement from another player who was positioned as a low brand image player and marketed the cement under his brand name.

Similarly, a cement unit was subcontracted to a high brand image player who manufactured and sold cement under his brand name, thereby creating a win-win situation for both the parties.

Conclusion

Holtec has executed over 60 asset management assignments. The typical benefits of asset management include a periodic evaluation of asset utilisation and a timely intervention to improve the efficiency and effectiveness of assets deployed.

It also leads to an increased life of the plants and resources as well as cost savings and increasing revenue, leading to a higher ROI.

Figure 7: Holtec's asset management process

