TOTAL COST OF OWNERSHIP (TCO)
The fundamental challenge of effective Supply Chain Management

As the global economy continues to challenge revenue streams, companies are looking for creative ways to reduce costs and expand profit margins. In some cases new and innovative approaches are employed and in others, proven but overlooked techniques are being resurrected and applied. Total Cost of ownership is one such technique which is proven to be effective but typically overlooked.

The impact upon cost reduction and profit elevation among capital intensive industries through the application of Total Cost of Ownership is quite significant, yet this approach has been largely missed by many within the oil and gas production sector who would benefit greatly from the adoption of this concept. There is an immediate opportunity for enterprises within this capital intense sector to further improve their profit picture while simultaneously enhancing their competitive advantage.

Typically capital cost considerations are dealt with at the time of original sourcing; primarily involving the purchasing organization blended with other organizations such as Engineering or IT. Generally what is considered at that time is are the “obvious costs” such as purchase price and maintenance / service agreements. The thought process usually stops at
this point. What is generally missed, entirely, are the so called hidden and “life cycle” costs which are quite significant. These include items such as: acquisition costs, upgrade costs over the life of the item, configuration costs, setup and deployment costs, transport costs, site preparation and installation costs, operating costs, change management costs such as training and user orientation, Infrastructure support costs, Insurance, environmental costs, depreciation, disposal costs, etc., etc. Over its lifetime these costs can meet or even exceed the purchase price of the equipment.

To more fully understand the benefit of adopting the TCO process one needs to look at just a few of the many successes:

- The Solvay Corporation lowered its cost structure by 30% through the application of TCO processes.
- Wartsila Corporation has experienced a 65% reduction in spare parts costs as well as a 50-55% reduction in lifecycle maintenance costs as a result of derivative programs spawned by a major TCO initiative.

Benefits such as this are quite achievable and are within the reach of those enterprises willing to devote a minimum investment of focused time and resources. These benefits can also be realized with no organizational disruption. Typically one can expect significant benefits in the broad P&L areas of CAPEX, OPEX, Cash Flow, NPV, profit and retained earnings.

We believe that the reason for this lack of effective adoption within the oil and gas industry can be attributed to the following:

- Limited awareness of the benefits to be realized
- A misunderstanding of the TCO concept generally and its workings or even a basic knowledge of its existence within the industry, given other priorities.
- A perception that it is an intricate and difficult process.
- A belief that the expertise to accomplish this effort does not reside within the existing enterprise.
- Confusion as to who would be the appropriate Driver / Owner of the effort.
- Viewing TCO as too much of a departure from normal operations and a potentially disruptive process.
• Difficulty in measuring or attributing results specifically to the TCO effort.

Actually none of these perceived obstacles are valid and the fact is that the adoption of a simple TCO process utilizing basic tools can yield significant savings over the life cycle of the asset(s)

Keys to success:

• **Simplicity**: This process doesn’t need to be complicated. Although it is possible to adopt complex costing models, purchase exotic software solutions, etc. none of this is necessary. Complex TCO models, analytics and intricate software programs abound. Although these approaches may be precise and appeal to the more academically oriented within the organization, they create additional costs and are generally not sustainable. For the TCO process to have impact; it must be understandable, repeatable, simply executed and capable of becoming part of organizational ritual. An example of a simple cost matrix, as shown below, is an initial tool to conduct meetings, control the TCO process and report progress to Senior Management.

<table>
<thead>
<tr>
<th>Part: .01 MFD capacitor</th>
<th>Current cost: $67</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part # 10-1610-01</td>
<td>Target cost: $52</td>
</tr>
<tr>
<td>Used on: synchronous transponder</td>
<td>Vendor: United Electronic</td>
</tr>
<tr>
<td></td>
<td>Buyer: Charles Ventura</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Ranking (Pareto)</th>
<th>% of Total</th>
<th>Internal</th>
<th>External</th>
<th>Target</th>
<th>Risk</th>
<th>Owner</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>A</td>
<td>15%</td>
<td>X</td>
<td></td>
<td>12%</td>
<td>High</td>
<td>J.D.</td>
<td>Need MGT. approval</td>
</tr>
<tr>
<td>Inbound Freight</td>
<td>B</td>
<td>7%</td>
<td></td>
<td>X</td>
<td>5%</td>
<td>High</td>
<td>P.L.</td>
<td></td>
</tr>
<tr>
<td>Packaging</td>
<td>B</td>
<td>5%</td>
<td></td>
<td>X</td>
<td>3%</td>
<td>Med.</td>
<td>L.B.</td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>B</td>
<td>3%</td>
<td></td>
<td>X</td>
<td>1.5%</td>
<td>Low</td>
<td>D.M.</td>
<td>Operations cooperation</td>
</tr>
<tr>
<td>Purchase Price</td>
<td>A</td>
<td>63%</td>
<td></td>
<td>X</td>
<td>58%</td>
<td>High</td>
<td>C.V.</td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>A</td>
<td>7%</td>
<td></td>
<td>X</td>
<td>3%</td>
<td>High</td>
<td>R.F.</td>
<td>Quality organization</td>
</tr>
</tbody>
</table>
This basic “Cost Matrix” identifies primary cost drivers, assigns accountability and determines goals. This is a simple but important tool which forms the basis of the TCO process and replaces unnecessarily complex costing models.

- **Involvement:** Individuals located throughout the enterprise who consume the value of or are impacted by the existence of the particular asset need to be involved in the decision making process. This organizational teamwork is an unintended but highly beneficial result of the TCO process. As subordinate goals are identified, leadership across the organization is naturally drawn together to ensure that each department’s outputs are aligned with the overall process objectives. Effectively the TCO process will elevate procurement to an enterprise level function away from an insular activity of the purchasing department. TCO helps to solve a long standing flaw in the procurement of capital equipment by involving those functions/stakeholders who consume the value of the purchased asset or who are in some way affected by its existence. This fact alone almost guarantees the purchase of a more cost effective and value producing item. The TCO process must become an integral part of the strategic sourcing process and a key activity of any commodity team.

- **Measurement:** Measuring results are important to any endeavor such as this. People need to know the impact of their efforts in order to stay motivated and productive. This is a particular problem with TCO programs in that the impact can be dramatic but the results will be diffused over many different reports and documents. Aggregating the numbers and attributing them to the activities of the TCO effort is not always obvious. Traditional accounting methods do not accommodate this sort of data retrieval. Activity Based Accounting held out the promise of being able to accomplish this but, as we know, it never truly materialized. Still it is possible to estimate impact through the application of innovative and pre-emptive tracking techniques that should be in the arsenal of any accomplished financial analyst. Goal setting should be realistic, measurable and achievable.

- **Motivation:** Leadership and team composition is vital to the perpetuation of the process. “C” level sponsorship is key, however it is naïve to think that a Boardroom Executive has the time to run or
participate in meetings. Their contribution needs to be one of motivation and sanctioning participation and results. The active leadership role must come from a “Committed Individual” (most likely from the Purchasing organization or a key functional area such as Engineering, Operations or IT).

• Organization: The complexion of the team must reflect the broad spectrum of functions that are involved with the asset during its lifecycle and have the knowledge base to contribute at a high level. Depending upon the characteristics and application of the asset, a typical team for example might involve: Purchasing, New Product Development, Engineering, Operations, Finance, R&D, Quality, Facilities, IT, etc. TCO meetings should be formal, documented and have a communications protocol. The meetings need not be frequent but must have impact and therefore require significant pre-planning by the leadership.

The Process Steps:

1. Corporate Sponsor
2. Select & Coach Team Leader
3. Form the Team
4. Identify and Rank Cost Drivers
5. Brainstorm and Select Strategies
6. Assign Accountability
7. Record and Report Results
As part of the strategic sourcing process, this TCO approach provides an excellent method for selecting the best equipment and the best supplier to meet the long term profit and reliability needs of the enterprise.

- The process for realizing substantial savings for any capital intensive enterprise is simple and can be easily executed.

- The potential savings from TCO can be dramatic. An easily attainable five percent savings from the published 2013-2017 Petrobras CAPEX budget would result in a cumulative savings almost R$26 BN.

The potential reward versus the required effort mandates the serious pursuit of a “Total Cost of Ownership” process.

If you have any questions on this TCO article feel free to contact the author Frank Wilhelm, President of International Supply Chain Solutions at FWilhelm@iscsglobal.com or Kyle Haroldson at (kyle.haroldson@mopartners.com.br)

Acknowledgements:

Frank Wilhelm is the President and Founder of “International Supply Chain Solutions” (http://www.iscsglobal.com) and recently partnered with IM Supply Chain Located in Rio de Janeiro. ISCS is a successful consultancy with an international reputation for profit elevation with major enterprises within many industrial and business sectors. Frank is a recognized thought leader in supply chain management having authored many articles and is frequently quoted in leading business journals. Frank is in much demand internationally as a speaker on integrated supply chain management and related topics. Frank is on the board of directors of the “Massachusetts Institute of Procurement and Supply Chain” and has consulted with major international enterprises and universities. Having spent the majority of his career in senior operations positions with major international companies such as Siemens and Rockwell Frank brings refreshingly practical and effective solutions to his clients.