

*Paul Stott, First Marine International, Haskoning UK Ltd, Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE*

## **SURVIVING EU ACCESSION: THE SEVEN HABITS OF HIGHLY EFFECTIVE SHIPBUILDERS**

### **Summary**

The Croatian shipbuilding industry is busy with record orderbooks. It is true to say, however, that the only constant in life is change and significant changes are facing the industry in the near future. Not least of these will be Croatia's accession to the EU. Elimination of subsidies and increasing prosperity will inevitably lead to an imperative to improve performance. This paper reviews the changes that may occur and identifies the key tactics that have been used by shipyards in high cost EU countries to cope with life without subsidy and their high cost base.

*Key words: shipbuilding, performance, subsidy, accession, productivity, strategy,*

## Introduction

The current shipbuilding boom has brought with it record orderbooks and record shipbuilding prices, with both more than doubling over the past five years. The market is not without its problems, however, in particular due to the rising cost of raw materials and in particular the cost of steel plate, which in Europe can now exceed \$1,000 per tonne. Not very long ago the rule of thumb price was around \$350 per tonne. These difficulties have affected shipbuilders globally although, notwithstanding this, it is possible to say that shipbuilding has seen improved profitability in recent years. Some commercial shipbuilders are now able to report profit to sales ratios in double figures for the first time in many years.

Where the market will proceed next is impossible to predict. The current boom (or “super-cycle” as it is now regularly termed by commentators) is outside any previous experience. Problems include the global “credit squeeze”, restricting the amount of capital available for building ships and developing shipyards, high energy and raw material prices, the threat of a slowdown in economic growth and the looming spectre of overcapacity. Certainly the rate of generation of new orders has slowed significantly in 2008 and the orderbook, for the moment at least, appears to have peaked.

Croatian yards have managed to take advantage of the boom, at least in terms of the amount of work won. Whilst order volume has increased, however, the industry remains subsidised. Croatia is now alone in Europe, and possibly the world, in openly providing direct contract subsidies to shipbuilding. This is of concern because the implication is that the Croatian industry has (mostly) been unable to achieve profitability even at the peak of the market.

Irrespective of what happens in the market, the situation in Croatia is about to become more complex with accession to the EU. This event alone brings with it an imperative for the industry in Croatia to change and improve if it is to survive.

## 1. Shipbuilding in Europe

It is true to say that when measured by tonnage, European shipbuilding is now a long way behind the Far East in terms of market share and, as a general comment, EU shipbuilders have not been able to take advantage of booming market conditions in terms of the volume of ships on order. However, this does not mean that the industry in the Europe is dead. When measured by value, rather than volume, the European shipbuilding industry ranked first in the global market until recently and still represents a substantial and thriving sector of great importance to the economy of the region. The following table presents CESA’s estimate of the value of completed ships in different regions up to 2005.

**Table 1** Value of tonnage completed (€million, source: CESA)

	2001	2002	2003	2004	2005
Japan	11,257	10,274	9,317	9,766	9,589
South Korea	9,424	10,103	9,433	9,595	11,683
China	-	2,563	3,188	4,970	5,063
CESA	12,197	13,090	14,328	10,463	9,041

The implications of this are that Europe retains a significant shipbuilding industry despite having a high cost base in many countries and despite the phasing out of subsidies that were so essential through the 1980s and 1990s. This does not mean to say that everything in the garden is rosy, as demonstrated by the financial difficulties of some Danish, Polish and Spanish shipyards at the time of writing this paper and the break-up of the Aker group following disappointing results. The strong Euro and very high steel prices are causing problems for many: however, a reasonably robust industry survives within the EU despite the high cost base.

## 2. Accession to the EU

Accession to the European Union will bring with it a number of significant changes. Many of these are positive, such as access to markets and economic developments. Some will present challenges. Chief amongst these may be:

- Skilled labour migration within the EU typically from lower cost to higher cost countries;
- Strengthening currency and increasing labour costs;
- Elimination of subsidies.

The effects of the first of these should be minimised by agreements called “transitional arrangements” whereby existing member states restrict the migration of low cost labour from a new member for up to seven years. It is hoped that the use of such arrangements will minimise the damage to the Croatian labour market on accession. The second will present more difficult issues but the most difficult of all is likely to be the third: the elimination of subsidies.

Direct subsidies to shipbuilding within the EU have now ceased following the end of the series of shipbuilding directives and the so-called “Temporary Defensive Mechanism” (TDM)<sup>1</sup>. The autumn 2006 “State Aid Scoreboard” [1] report indicated that the amount of state aid to shipbuilding in EU countries fell from an average of €332 million per annum for the period 2001 to 2003 to €342 million per annum for the period 2004 to 2006. In 2006 an estimated €13 million was granted to the shipbuilding sector. The effects of the TDM are still being seen in aid figures but these should decrease further as this is eliminated from the orderbook by the end of this year.

Under the prevailing EU framework on state aid to shipbuilding [2], member states are able to grant limited subsidies for research, development and innovation<sup>2</sup>. This provision provides the greatest benefit to those building more sophisticated ship types, which will inherently include a greater degree of innovation. According to the EU’s information resources [3] the following schemes for assistance (“Innovation Aid”) have been granted approval so far.

- In February 2005 the EU approved state aid to German shipbuilders worth up to €27 million over four years,

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<sup>1</sup> The granting of direct operating subsidies to shipbuilding ceased to legal within EU countries on December 31st 2003. The provision was temporarily extended for orders for a limited range of ship types up to 31st March 2005, however, whilst the EU pursued a grievance against the South Korean shipbuilding industry in the WTO, accusing South Korea of suppressing prices of container ships, LNG tankers and chemical/oil products tankers. This provision was referred to as the “Temporary Defensive Mechanism”.

<sup>2</sup> Other subsidies are permissible in specific circumstances, for example relating to closure aid.

- In March 2005 the EU approved state aid to French shipbuilders worth up to €25 million per year for six years.
- In March 2005 the EU approved aid to Spanish shipbuilders worth up to €20 million for two years.
- In 2006 the EU approved aid to Dutch shipbuilders worth up to €20 million per annum for three years.
- In April 2007 the EU approved aid to Italian shipbuilders worth up to €30 million per year for three years, ending on 31st December 2009.

These amounts are what the EU has approved as a maximum for individual governments to provide to their shipyards, if justified. No aid from the EU is implied. In November 2007, CESA indicated that 120 applications had been made within these approved schemes, of which 56, worth a total of around €70 million, have been approved by the national authority granting the aid. As a rough guide the amount of subsidy available could be worth up to around 2.5% on a sophisticated innovative ship although it would be zero for non-innovative ship types. By and large those that have applied for approval for innovation aid, which favours and promotes innovative products (as part of the LeaderShip 2015 strategy [4]), are higher cost countries.

### 3. How have high cost EU shipyards survived without significant subsidy? (The seven habits of highly effective shipbuilders)

One short answer to this question is that many haven't. Over the past ten years the number of active major shipyards in Europe has reduced from about 200 to about 125<sup>3</sup>. Those that have been unable to adapt to the new regime in shipbuilding have closed. Those that have tried to find more "creative" ways around the problem may not have fared much better. The current problems of the bankrupt Polish shipbuilding industry should serve as a warning that the EU does not tolerate breaches of the rules. The EU is seeking to force the industry in Poland to repay €1.6 billion in illegal state aid, along with permanent closure of uneconomic capacity, as it has in the past achieved in Spain and the UK.

Many have survived, however, even though labour costs in Europe can be extremely high. An estimate of comparative costs in 2007 is given in the following table.

**Table 2** Estimated average hourly labour costs in shipbuilding in Europe (source: First Marine International)

	2007 estimate (\$ per hour)	2007 estimate (€per hour)	Level
Norway	43.62	30.53	High
France	41.08	28.76	
Denmark	41.06	28.74	
Germany	39.63	27.74	
Spain	32.21	22.55	Mid
Netherlands	30.97	21.68	
Finland	30.25	21.17	
Italy	27.57	19.30	
Croatia	8.48	5.93	Low
Poland	7.04	4.93	

<sup>3</sup> Based on a count of shipyards reporting deliveries in Lloyd's Register.

It can be seen that labour costs in Europe are divided into three bands: high at around €30 per hour, mid-level at around €20 per hour and low at around €5 per hour.

The means by which very high labour cost builders can remain competitive, even without subsidy, can be summed up under the heading “the seven habits of highly effective shipbuilders”<sup>4</sup>. These are as follows<sup>5</sup>:

1. Investment
2. Performance
3. Use of best practice
4. Continuous improvement
5. Market focus
6. Consolidation
7. Strategy

Although subsidy does not figure in the list this is not to say that it has not been an important element in the strategic development of the industry in Europe in the recent past (the Temporary Defensive Mechanism being a good example) but it has to be used as a short term strategic tool. Long term reliance on subsidy undoubtedly has a detrimental effect on the development of shipyards, shielding them from the imperative to improve. Note also that low labour costs do not appear in this list either. Whilst offering some potential competitive advantage, low labour costs can also act in a similar way to long term subsidies, shielding the shipyard (temporarily) from the imperative to reform. Reforms are needed in advance of cost increases, not after they have happened.

Each of the seven “habits” is discussed briefly below.

### **Investment**

In a recent analysis undertaken by First Marine<sup>6</sup> into the ways that higher cost shipyards in Europe differentiate themselves, investment was not mentioned, nor was performance or continuous improvement. The reason for this is that these are not really differentiating factors. In other words it goes without saying that yards will be engaged in these activities. Those that are not will probably no longer exist.

Investment in research and development is at the core of CESA’s strategy “LeaderShip 2015”. CESA has estimated that investment in R&D in Europe averages around 10% of sales. In addition to this, investment is needed in facilities, technology, training and other areas. Essentially, shipbuilding is no longer the low/mid technology business that it was in the 1980s. Successful shipyards are now technologically advanced enterprises with facilities, technology and personnel to match. Investment is an essential part of achieving this status.

### **Performance**

As indicated above, this is also a “given” rather than a differentiating factor. How good does performance have to be? In short, good enough to ensure profitability. Whilst this is an apparently obvious statement, the implications are far reaching in terms of setting targets for a business. The important point is that targets should be set by looking outwards from the

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<sup>4</sup> Paraphrased from “The seven habits of highly effective people” by Stephen R. Covey, published by Simon and Schuster (1992).

<sup>5</sup> No hierarchy or relative importance is implied in the order of this list, which is random.

<sup>6</sup> Not in the public domain

business to see what the market and economics demand, rather than focusing inwardly to answer the question “what do we feel we are capable of”? The only reliable way of setting targets is through benchmarking against others and against the market. In less successful shipyards, performance targets are often set on the basis of incremental improvement from the current position. For example the target could be to “improve steelwork productivity (manhours per tonne) by 5% per annum”. Without reference to external factors it is impossible to say whether this is enough or not enough. Experience has shown, however, that targets set internally in this way will almost inevitably a) not be enough to achieve competitiveness and b) not reflect what the business is actually capable of. As a very simple rule of thumb, if the shipyard is not progressing towards its profitability goals then the targets are not high enough.

Additionally it must be remembered that competitiveness is an economic issue rather than simply a matter of production man-hours. The cost per unit of output can be lowered not only by reducing the number of direct man-hours used but also by reducing the overhead burden imposed by the organisation. Performance improvement must take the full economic equation into account. All too often targets concentrate on steel production, based on manhours per tonne, ignoring overhead burden and outfit work content.

### Use of best practise

There is a strong correlation between the level of use of best practice and performance. This is demonstrated in the following figure, based on First Marine International’s proprietary benchmarking system.

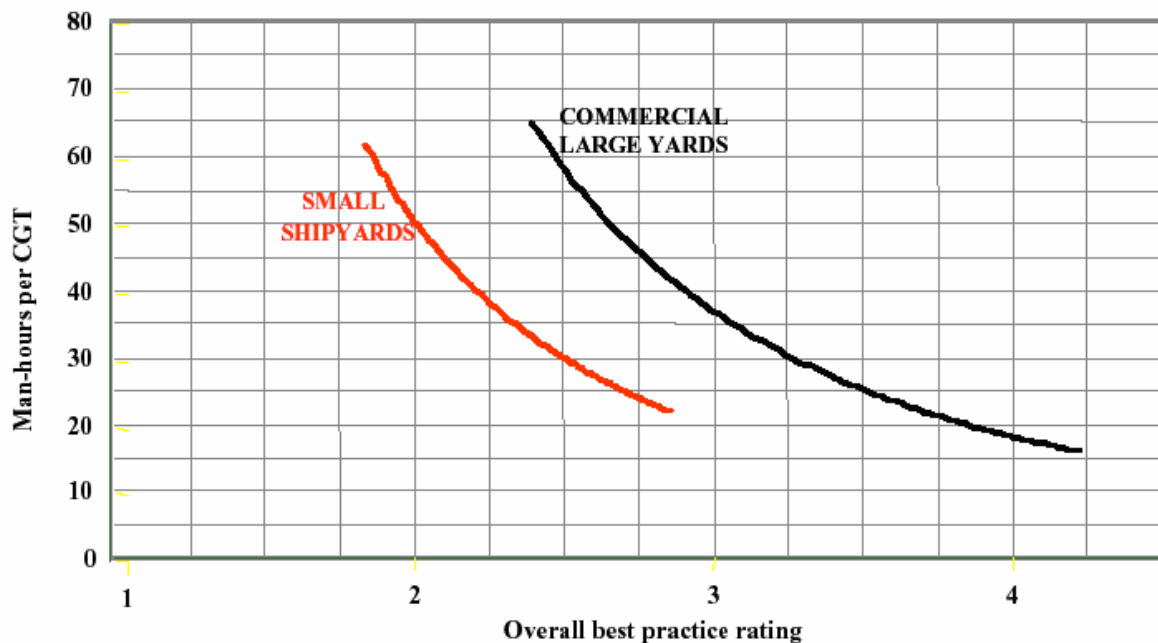


Fig. 1 Performance benchmarking targets (source: First Marine International)

The figure plots performance on the vertical axis, using man-hours spent per compensated gross ton produced, and a rating indicating the level of use of best practise on the horizontal axis. Roughly speaking a best practice rating of 1 represents the technology of the 1960s and 5 represents state-of-the-art. To be competitive a shipyard should lie somewhere close to the benchmark lines plotted on the chart. Movement in the vertical

direction implies a better use of the technology already available in the shipyard whilst a horizontal movement implies an increase in the level of use of best practice and is likely to require capital investment.

The best practice rating takes into account all processes and practices in the shipyard and competitive yards tend to have a reasonable balance across all aspects of the process. Improving a single area, for example installing a panel line, will only improve certain aspects of the process and alone will have a limited effect on the overall performance of the company. Crucially, it is as important to develop the “software” sides of the process as much as the “hardware” and it will be a hallmark of effective high cost shipbuilders that the soft processes, for example planning and material control, will be highly developed.

### Continuous improvement

This is another “given” and recognises that no amount of improvement can ever be enough to constitute a permanent guarantee of competitiveness. As costs increase so productivity has to improve just to stand still. Performance improvement therefore has to be a permanent quest. The job is never finished and must become part of every day routine.

As an illustration of what can be achieved the following figure presents an estimate of the development of productivity of the South Korean shipbuilding industry in the period 1990 to 2004.

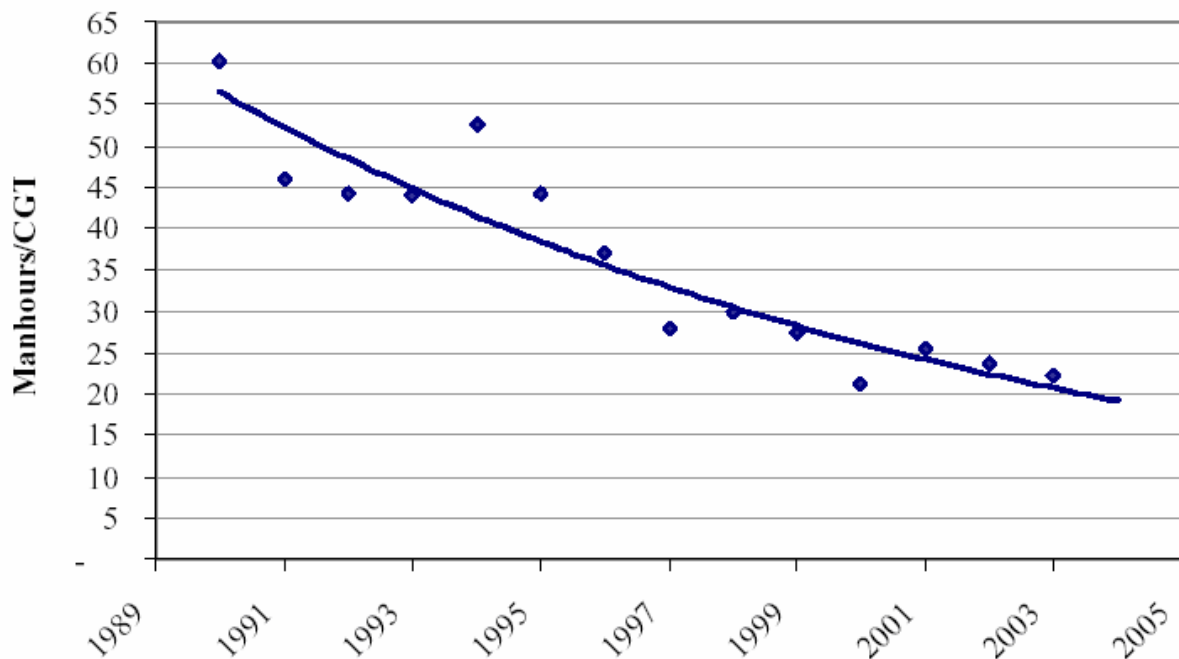


Fig. 2 Estimated productivity development in South Korean shipbuilding (source Marine International)

Performance is represented by the factor “man-hours per CGT”, taking into account all man-hours used in shipbuilding, not only direct production hours – again, bearing in mind that performance relates to the entire organisation, not only direct workers. The trend indicates a long term average improvement of around 7% per annum, although this varies significantly over time and by shipyard. In the early stages of performance improvement, more significant increases can be obtained as the “big-ticket” items relating to investment and performance improvement are tackled. South Korean yards have continued to improve and it is estimated that the large yards can now achieve a performance below 15 man-hours per CGT.

## Market focus

The days when shipyards could build any ship required by any customer are gone and for sound economic reasons shipyards have to tailor their facilities and organisation to targeted products. This can have a profound implication on the economics of the business. The major yards in South Korea, for example, have in the past targeted primarily high volume relatively simple ship types, producing output measured in hundreds of standard ships per annum. This requires huge investment in facilities and also demands a high market share to ensure the economies of scale needed to recover the cost of those facilities. In Europe, the highest cost builders tend to build passenger ships, which, partly by avoiding competition with Far East builders, attract relatively high revenue per unit of output. This is demonstrated in the following table showing the average revenue achieved per CGT produced in the period 2002 to 2006 and the main product focus of the country concerned.

**Table 3** Estimated average revenue per CGT achieved 2002 to 2006 and main product focus (source: First Marine International)

	Average revenue(€per CGT)	Main product focus
Finland	3,642	
France	3,443	Passenger
Italy	3,158	
Germany	2,593	Passenger / Container
Denmark	1,764	
Poland	1,477	Container
Romania	1,428	
Croatia	1,306	Tanker / dry cargo

A strong correlation is seen between the products and the value achieved per unit of output (CGT). It should be noted that with the exception of Denmark, all high labour cost countries are engaged in passenger ship building. At least at the moment this means that competition with Far East shipyards can be largely avoided by many and this explains why the purchase of a significant share of Aker by Korean builder STX has caused so much concern in the European shipbuilding community. Shipyards engaged in the volume sectors that are the main product focus of Far East competitors, in particular container ships and tankers, are likely to find competitive conditions tougher.

## Consolidation

About 40% of the output from European shipyards in the period 2002 to 2006 was produced by group companies and consolidation has been something of a “hot topic” in European shipbuilding. Having said this, consolidation for its own sake is unlikely to confer any significant benefit, as can be seen in the failure of the Spanish state-owned Izar group and the failed groupings of state-owned yards in Poland. Consolidation has to be strategically thought through and has to be seen in the context of “value engineering”. How does the consolidation confer an economic advantage on the business? Put another way, consolidation is easy but consolidation with significant economic benefit has proven to be more difficult.

Gaining economy of scale, as has been achieved in South Korea, is perhaps the most important benefit that could be pursued but this is not the only reason to establish groups of shipyards. Partnering with shipyards in lower cost countries to reduce the overall unit cost of production could also confer a significant economic benefit and has been used by many shipbuilders in Europe. The extent of the benefit depends on the nature of the partnership and, in particular, the way in which the subsidiary is managed. It is relatively easy to overmanage



the lower cost subsidiary and by doing so eliminate much of the economic advantage being pursued.

The largest consolidation in Europe has been the Aker Group, which, at the time of writing this paper, is in process of being dismantled. It is not yet clear how far the process of consolidation actually benefited the group and for the moment, therefore, the benefits of consolidation may, to some degree, be under question.

## Strategy

Whatever tools a shipyard decides to use, its development must be directed according to a coherent strategy. Shipbuilding has to work with a relatively long time horizon. Without a strategy it is not possible to effectively direct investment, performance improvement and research and development. Whilst committing to a specific strategy involves risk, because it will inevitably reduce flexibility, not committing to a strategy really amounts to gambling.

It is not only a strategy for the individual company that is important. CESA has worked to lobby the EU for support for the strategy set out in “LeaderShip 2015”, to help to provide the economic framework needed for the development of the industry. This strategy is centered on a commitment to develop an industry in Europe that is focused on innovative and technologically advanced ships, rather than the standard off-the-peg products that can inevitably be purchased more cheaply from Far East market leaders.

## 4. Conclusions and implications for the industry in Croatia

The shipbuilding industry in Croatia is facing a watershed period related to privatization and accession to the EU. In the face of the changes that will result, doing nothing is not an option; nor is doing more of the same, given the current financial position of most of the industry. To use a cliché, it is revolution that is needed rather than evolution. The industry in Croatia must change and adapt to the market and economic forces it is facing: those forces will not adapt to support the industry’s internal aims. What is it that the industry in Croatia is proposing to do that wasn’t previously done by former state-owned UK, Spanish and Polish shipbuilders, which largely failed to adapt?

Croatian shipbuilders may do well to study the strategies and tactics used by higher cost EU shipbuilders to chart a course for the future. If so the course will inevitably involve investment and performance improvement. It may also involve rationalisation and consolidation to develop a sustainable industry. To be successful the course must also be charted using way points derived from benchmarking and market economics and not from internal examination.

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