



ABSTRACT

The global transformer market is changing rapidly with new players entering the market. In this article, the Five Forces Analysis Model is used to see what we can expect from the transformers market. Market drivers are changing and more focus is on the renewable energy generation as well as smart grid. Finally, an estimate of the transformer market growth is made.

Keywords

transformer market, market changes, market drivers, growth, competition

Power Transformer Market Review

Transformers move slowly, but the market does not!

2014 is the year of the Horse according to the lunar calendar, and I think it is very symbolic for the transformer market right now. We can see quick, dynamic movements where the market conditions change rapidly and players reposition themselves quicker than what we have seen in the past.

We can see that the “Management Center of Gravity” is moving, and while Eu-

rope has been much of the management centre from manufacturing capacity and capabilities perspectives, we can now expect to have more of management balance between Europe, North America and Asia driven by M&A (mergers and acquisitions) and capital expenditure (CAPEX) activities.

As this article is written for the audience that has both knowledge and interest in



that will define the transformer market for years to come.

Given that the competitiveness of the power transformer market is high, it is important to keep a close watch on market prices and trends in order to be able to manage the risk portfolio in an optimal way. The profit pool is tight looking at the majority of power transformer product lines and therefore any risky tendering behavior may have negative consequences as projects are delivered. Nothing new, but we have seen proof of eroding profits, reflected in financial reporting lately. There will, however, always be a drive to capture specific markets, or niche segments, also going forward. A classic way to predict these market battlefields is by looking at CAGR (compound annual growth rate) data.

One addition during the recent years is that the globalisation is also driven by the free flow of information on the Internet, which basically enables everybody to access the information in real time. With this, strategies, tactics, organisational structures and processes have to be revisited more frequently. This trend is expected to continue and most likely intensify. As an addition to the flow of information, we now have the Transformers Magazine that provides focused news to all of us that are interested in the transformer market and technology development. Much of the information that I have gathered here is available in the Transformers Magazine in some form. By connecting the dots of information, we can all stay up-to-date with the events.

Accessing information about the transformer market is easier today compared to before, but when predicting it, we still have to do the analysis. The results from such analysis can naturally differ, depending on the position we observe the events from. We can however see a

number of trends that are pointing in the same direction; the competition is hardening and the new technologies like smart grid and renewable energy generation will also have an impact on the transformer business. In addition, I would expect that the management changes due to M&A activities will introduce new rules to the game. We all have to learn from it, and mostly, it is a healthy development for the overall business, driving innovation both in terms of ways-to-market as well as technology.

Below I use Porter's [1] classical "Five Forces Analysis" method to take a structured look at expected strategic time-frame predictions. Here I combine it with a "Market Trends Analysis" in order to strengthen the market view. This forms what I call "The Sixth Sense Transformer Market Analysis".

The Five Forces Analysis is designed to look at an industry's profitability and to serve as a strategic decisions tool. As the profitability is a result of a number of parameters, it will vary between competitors, therefore I will focus more on the trends. You have all made your predictions, so you can see this as a side view and decide if there is reason to revisit any of the assumptions.

With the rapid movements on the market, we need to establish our own "sixth sense" and if we want to remain active in a rapidly changing business, this is of fundamental importance. In my opinion, this applies to both business managers as well as technology managers in the business. Transformers may be moving slowly, but the market is certainly not! The analysis below is made on a global scale, and for niche players in limited market segments, the scenario may look different.

As with all analyses, it is a snapshot of what can be seen today:

the transformer market and technologies, I will not spell out all the details but leave things open for your own analysis. Out of respect towards the integrity of players in the market, I will not mention companies or individuals.

The transformer market is becoming truly global and we can see that more players in the market are heading in the global direction as well. This is natural as the competition is strong and few markets can sustainably support a transformer manufacturer for its national purpose. In the early days, transformer manufacturing was considered to be of national interest, but those days are long gone. After the financial crisis, we see that when the financial strength is recovering, it is doing so unevenly. As a result, the market is attracting strong M&A activities

The market is attracting strong M&A activities that will define the transformer market for years to come.



1. Rivalry among existing competitors

The global rivalry remains strong with installed overcapacity. Specifically the large investments in Asia, in combination with a weaker demand, has driven up the installed and underutilised capacity over the past years. Just to clarify the differences, installed capacity is related to investments in machinery needed for transformer manufacturing (CAPEX), not manned capacity.

Changes within the rivalry field are mostly related to the larger M&A activities we have seen. These M&A activities are introducing new owner behaviour to the market. The result of any changed behaviour will have to be followed closely going forward. However, it is clear that new players will expect to see quick re-

sults in order to show the market that they have made the right decisions. We have also seen organisational changes that are focused on streamlining as well as closing the organisational gaps when it comes to transmission-medium voltage-smart grid. This is effectively reflecting the direction the grid business is heading in, driven by smart grid and renewable energy generation market growth, which will eventually result in changes to the legacy grid.

As a result of the above mentioned, we can expect that the rivalry push will get considerably stronger during the strategic period. The establishment of new JVs in India is also expected to step up the rivalry within the Indian market, as well as outside the country. The new players have financial strength to also make an impact outside India. As the established

capacity is larger than the national need, it will follow the trend we have seen earlier in China, but different to the Korean expansion.

One main difference between China and India is the impact of government policies. The Indian companies and JVs have to compete without much government policy support, except for the existing import policies. Capabilities within the technology frontier (UHVAC and UHVDC) will also add to the competition scenario. Even though we have not seen a real commoditisation of UHV transformers yet, there is a risk that even UHVAC transformers will fall into the commodity slot. This would constitute a high risk as UHV transformers are not to be taken lightly from all aspects including design, workmanship and material choices. Buyer's evaluation criteria will drive this, and it remains to be seen where it will head to.

By connecting the dots of information, we can all stay up-to-date with market events.

HVDC transformers are much more integrated into the system performance evaluation, which results in other evaluation criteria compared to UHVAC transformers. With time, this may also change but will not have much effect on the general price performance yet.

I predict that the rivalry among competitors will continue to have a constant downward pressure on prices in the market. The rivalry in selected markets will increase further and these markets can be expected in high CAGR regions.

Changes within the rivalry field are mostly related to larger M&A activities.

2. Threat of new entrants

On the global scale there are few new entrants apart from the new ownership/management changes due to M&A activities. There are, of course, new entrants on the local scale within niche areas, as factories are being set up in new territories. I do not expect that these will have any global impact on prices or business dynamics.

However, here we have to mention the development within HVDC as new entrants on the system level (read China) may also result in “new” suppliers for transformers. The HVDC market is growing at a far greater rate compared to mainstream power transformers globally, so it will continue to attract new entrants. One of the main drivers for the HVDC market growth will continue to be offshore wind connections. New entrants may apply other risk behaviour to the market. This will, however, have no effect on prices in the short term.

I predict that the threat of new entrants will have a neutral effect on prices during the strategic time frame.

3. Bargaining power of buyers

The bargaining power of buyers remains strong, and with an intense competition, I expect that the pressure will remain strong and unchanged during the strategic period.

4. Bargaining power of suppliers

Copper continues to remain volatile. The high stock levels in China, in combination with lower demand for copper, will have a downwards pressure on the copper price. During the first quarters of the year, we have seen that the commodity price has eroded and my prediction is that the copper price will be lower by the

end of 2014 compared to last year.

There is a tendency towards sourcing from low cost countries (LCC), not only for complete transformers, but also for components and semi-finished parts like windings. The drive for energy efficiency is driving up the demand for low loss core steel. The limited capacity for lower loss core steel will keep the prices up on these qualities. The US dumping tariffs, implemented preliminary on core steel against seven countries, are also interesting outside the US. This case may have a defining impact on the industry in North America. Who will benefit at the end of the day is difficult to say, but if I had to comment, I would say that energy efficient transformers, imported to the US, will benefit from it.

Transportation is one of the cost components often forgotten about when analysis is done, despite being one of the



The classical market drivers remain, while newer drivers coming from renewable energy generation and smart grid, are expected to increase.

largest cost portions for LPTs. The bargaining power of transporters remains high in many countries due to oligopoly, and sometimes monopoly.

In summary, my estimate is that the supply side of transformer business will have a downward pressure on prices, mainly driven by the expected copper price trend. The upside from a profitability perspective, is how the LCC sourcing strategy and transportation (LPT) matter is handled. The transportation aspect also has the highest risk within the transformer value chain and therefore requires further attention.

5. Threat of substitutes

I consider the threat of substitutes to be low for the time being, which will have a neutral effect on the market. One of few threats to the existing technologies are the solid state transformers for rolling stock traction purposes. Threat of substitutes overall will have a neutral effect on prices.

6. Market drivers

There are plenty of market drivers including the classic drivers like the increase of electricity need in developing countries and replacement of old transformers in mature economies. Not much new there, maybe just that old transformers get even older with time!

Newer drivers are directed by; 1. energy efficiency demand from both mature and developing economies, and 2. rapid growth of clean energy generation such as solar and wind power. The development of the smart grid will require suppliers to be able to deliver transformer monitoring (TM) equipment. The TM market is expected to outgrow the transformer market dramatically, in some markets up to 40-50% CAGR. Having in-house access to transformer monitoring will be a mar-

ket enabler going forward. I expect more M&A activities and organisational changes to reflect this, as with more clean energy generation, the integration of transmission and medium voltage levels will come to a new level. The double-sided voltage regulation will simply require more of smart grids, and therefore the transformer and smart grid market segments will be further integrated.

The market drivers will have a positive push on prices, and a lot of focus will remain on the low losses and efficiency of transformers. The development of environmentally friendly transformers will continue with focus on losses, environmentally friendly oils and sound (noise) requirements. All this in combination will keep the pressure up for innovation, when it comes to both technologies and ways-to-market through strong optimisation on customer valued parameters.

7. Sixth Sense Transformer Business Analysis

All the above is pointing in the direction of lower prices on the global mar-

ket. The phrase “design to cost” has never had higher relevance, and will remain so in the foreseeable future. Needless to say that “design to cost” covers both the chosen platform solutions as well as focused design activities within the specific delivery projects. With low margins, there is no other way than to streamline solutions that will result in win-win solutions for both transformer suppliers as well as customers. The renewable energy segment is here to stay and will keep driving the transformer market forward.

Looking at the available data, there seems to be a consensus that the global transformer market is expected to grow at a rate of 7-8% in the coming 5-year period. Predictions made by transformer oil market analysts conclude that they are expecting a CAGR of 9,2% for transformer oils, which would confirm the transformer level prediction from another perspective. As always, we have to be careful when using strategic time-frame growth numbers as they are a prediction.

In the next transformer market review, we will be looking at regions and markets. Take a look at CAGR data and draw some conclusions from that. I hope you look forward to it as much as I do!

Reference

[1] Porter, M.E. *The Five Competitive Forces That Shape Strategy*

Author



Matti STOOR has 30 years of global experience from working with transformers as well as HVDC. During more than 17 years within HVDC, he was involved in design and development of HVDC control systems and later managed the HVDC control systems department and finally was General Manager of the Converter Technologies operation, covering LCC and VSC HVDC technologies in Ludvika, Sweden. Within transformers Matti has had many roles, where the later included heading ABB's overall Chinese Transformer operations, as well as Global Business Development for Power Transformers. Matti is now running a business with focus on supporting clients in improving their holistic performance within the power industry. Matti holds an engineering degree in Control Systems, a Bachelor's degree in Business Administration and an MBA in International Business from Uppsala University, Sweden.