



**KSH International is the largest shaped magnet wire and CTC manufacturer in India - with two plants, 210 employees and a \$60 million revenue**



# RAJESH HEGDE

## Joint Managing Director at KSH International

### KSH Group

KSH International is a manufacturing company with 38 years of experience, belonging to the KSH Group. The company is the largest shaped magnet wire and continuously transposed conductor (CTC) manufacturer in India. By shaped, I mean that we do not do any round magnet wire, but are specialized in shaped magnet wire, which is mainly used for transformers, motors and some special applications in electrical and power system segments.

Within the group, there are other businesses as well. For example, we run a distribution and service business in India for a German company Bosch. This is a 55-year-old business in the automotive industry, and we are one of the oldest servicing partners in India, and one of the largest distributors for the aftermarket.

We are also in the infrastructure business, and we have built factories for Kawasaki,

Kimberly Clark, Renault, etc. Our headquarters is in Pune, with all other verticals managed within our family.

### Magnet wire business

We operate two magnet wire production plants, with 210 employees at two locations – one near Mumbai, and the second plant in Chakan, Pune. Pune is an industrial city, also considered an automobile hub for India. Our last year's revenue was about \$40 million, while this year we will be close to \$60 million.

We have an installed capacity of about 20,000 metric tons per year. Our CTC installed capacity is approximately 12,000 tons, i.e. 1,000 tons per month. Our business is based on the make-to-order principle, which means that each production batch is unique, made per customer specification and per specific standards: Japanese, Indian, IEC, or any other existing standards.

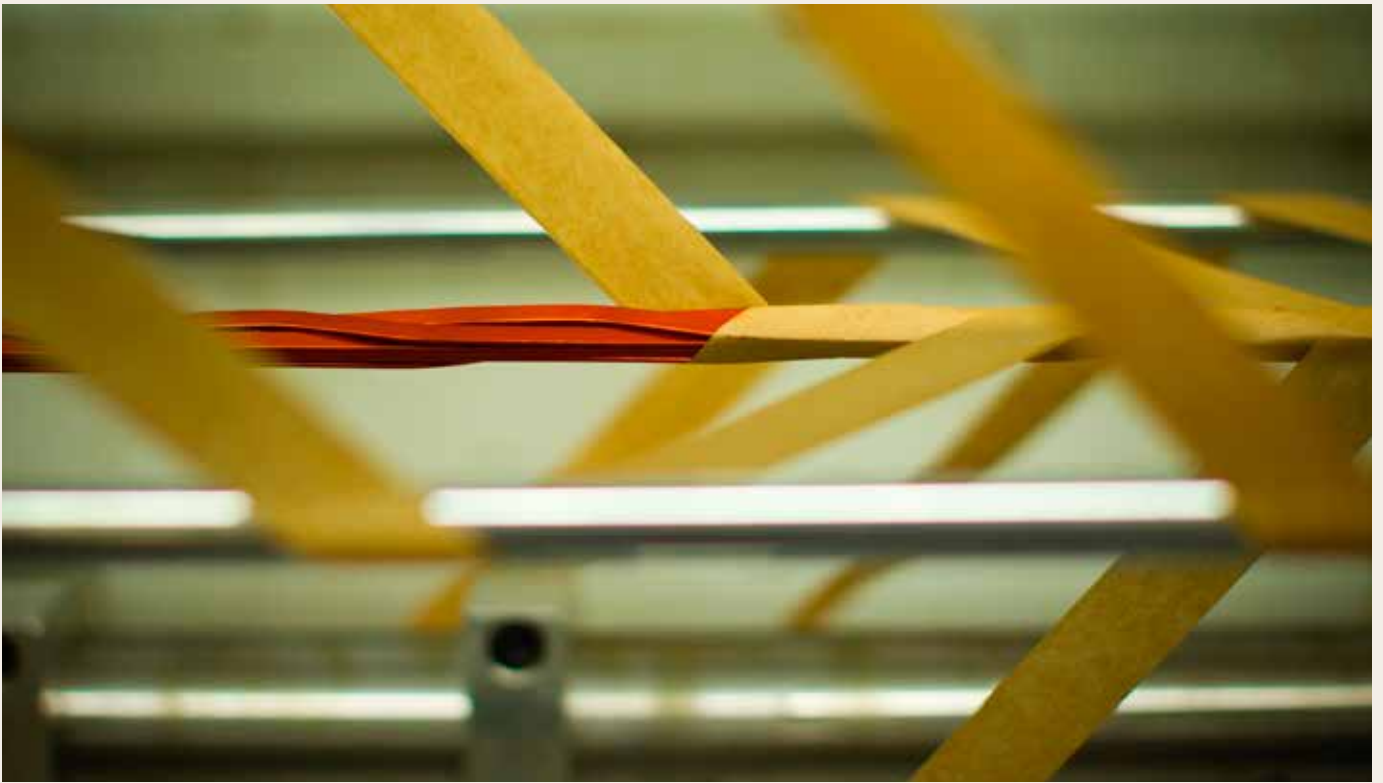
Our products are mainly used for power and distribution transformers, up to the highest AC and DC voltage levels. We have delivered more than 300 sets for 765 kV transformers in India as well as to some customers abroad. We have also supplied for 1200 kV transformers in India, and recently we have been qualified to supply for HVDC projects also in India. We also supply for medium power and small distribution transformers, as well as for the local traction transformer market, which is a big sector now in India considering a lot of investment is going into the strengthening of the railway network. We also serve some wind generator manufacturers in India, as well as large motor, hydro and turbo generator segments. We export about 35 % of our production to more than 15 countries. This includes countries in the North America, Central and Eastern Europe, the Middle East, which is a big market for us, and some of the neighbouring countries like Bangladesh, as well as Japan, Malaysia, etc. Our customers also include large OEMs, such as ABB, Siemens, GE Grid, Toshiba, TBEA, BTW, BHEL, etc.

The fact that we are a medium size company has always been our driver for success – we always listen to our customers, providing them with solutions which enable them to build better products but also reduce their cost of manufacturing. We have achieved this by investing in technology and

**Thus far we have delivered more than 300 sets for 765 kV transformers, sets for 1200 kV transformers and for HVDC projects in India, and we export about 35 % of production to more than 15 countries**







people. We have an internal team of highly motivated and technically competent engineers, managers and operators. And we boast some of the lowest attrition rates in the industry right now. I am the second generation in the business; my father started it, and some of our people have been here since my father's time and are still working with us. This is also one of the keys to success so far in this business.

We have five CTC lines, and we can deliver conductors with up to 79 strands. We obtained European technology and processes to fulfil stringent requirements from any customer in the world, and we also trained our people accordingly. Considering that over the last ten years there might have been only one inquiry from a customer for CTC with more than 79 strands, we are able to cover almost 95 % of the our customer needs.

### Quality assurance built in the process

As we like to put it, quality assurance is really embedded in the type of product that we manufacture because, in the end, the stakes are also very high. One must consider that we supply most of our products for the larger kV segments such as 765 kV, and also for HVDC projects, so mainly for the 400 kV level and above. So, we have invested in imported equipment and we established

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a quality assurance system where we also have ISO-9000 and ISO-14000 certificates. We believe that quality should be built into the manufacturing process. I am also an engineer by training, so I normally try to get a great process, while sampling is only for inspection. In this business, mistakes are very expensive, and we can't afford to have any.

One of the keys to assuring quality is also the source of the material. In our line of business, there are practically three major components/materials that we use: copper, insulating paper and enamels or epoxies.

We use paper from the Nordic countries or the U.S., which are approved by customers worldwide. We import it directly, so we don't need to operate through any traders. All the slitting is performed in-house, so there is no mix-up of materials.

Enamels are sourced from Europe, or from Elantas in India. We don't use any other type of enamels being of belief that

they belong to those few basic things we need to keep and check to make sure that the customers are given the right quality material.

Copper is sourced from two local manufacturers working on a global scale: Hindalco and Vedanta.

### Caring about the environment

When it comes to environmental issues, we run a number of programs to protect the environment. All of our enamelling lines are equipped with catalytic converters to make sure there are zero emissions into the atmosphere. Any pollutants resulting from the process are disposed of to the local recycling centre.

When it comes to the packaging of the reels, we recycle the reels that we supply to the local market. We have established a customer-return policy so we are able to use reels a number of times before they can be disposed of. These are some of the

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programs we have in place, and we are continuously trying to improve on this.

### Future trends

One of the trends that we see is that customers are increasingly making their designs compact, which means they are aiming to save space and reduce losses. This leads to the reduced overall size of individual conductors, so where they would normally use standard paper-insulated copper conductors, they are now switching to using CTC. All of this is done without really compromising the operating parameters. There is some move towards reducing the enamel thickness and the overall conductor size as well, without compromising on the breakdown voltage of the conductor. This is creating a lot of pressure because reduced sizes also reduce your capacity. In order to ensure that our capacity is not lost, we have been upgrading our equipment, as well as running some productivity programs within the company.

The second big change that we find is that the overall tolerance is also reducing for the individual conductor and also for the overall cable size. Our machines are equipped to handle closer tolerances, and I believe this is how it will be in the future.

What some manufacturers do, even for medium power transformers, is trying to use CTC where they traditionally used paper insulated conductors in order to meet the loss criteria specified by the customer.

Another interesting trend in India is the 765 kV reactor market. Normally, reactors traditionally used paper insulated copper conductors in their design. But recently some utilities have changed the loss criteria suppliers are required to meet. We find that most of the designs are now calling for CTC, small cross-sections and a smaller number of strands, without which they are not able to meet the loss criteria.

This will probably be the trend going forward: using smaller number of strands, smaller thickness of the conductors and also reducing the enamel content, but ensuring that the BDV parameters are being kept the same.

### Opportunities to grow

As a company, we are always looking to see how we can diversify and spread out the risk. Our strategy going forward is to get into different market segments in the future. By segments we mean other than power systems group which is our area of concentration at present. Here we are looking to find a partner who is also seeking to establish other complimentary line of products in India and who will help us export more products from India. We are also actively pursuing to buy an existing player in the Indian market.

**Rajesh Hegde** has been the Jt. Managing Director at KSH International since 1997. Before that he was with Lowrance Electronics in the USA for two years. He obtained his Master of Science degree from Oklahoma State University in 1997 and a Bachelor of Science degree in mechanical engineering from Michigan Technological University in 1994.

