

Beating the blues

The blue ocean imperative for alloy steel makers

November 2020

Pandemic has forced a rethink of alloy steel strategies

The Covid-19 pandemic has forced alloy^[1] and stainless steel players to explore newer ways of increasing their share of value-added and sophisticated products in the short term, and diversifying to mitigate long-term challenges.

The sector was already grappling with a slump in demand from key end-user segments such as auto and construction when the pandemic hit.

In such times, the natural strategic orientation of many companies is typically towards retaining existing customers and seeking segmentation opportunities – a proven way of gaining a focussed competitive advantage and increasing share in the existing market space.

The need of the hour, however, is a blue ocean strategy, which involves venturing into an untapped market space, creating demand, and demonstrating highly profitable growth by creating unprecedented value for customers.

The time is ripe, too, given the policy thrust through the Atmanirbhar Bharat Abhiyan, which encourages players to create new demand markets through value innovation. While the auto sector will remain the key consumer of alloy steel, government support in developing an alloy policy to augment special steel output can open up opportunities for steel players in non-auto sectors such as oil and gas, power, railways and defence as well.

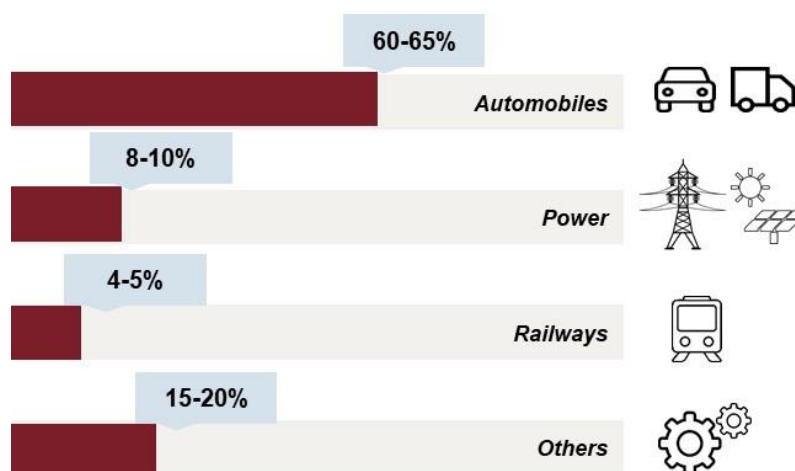
In the milieu, some leading alloy steel manufacturers have already started looking at risk mitigation through diversification into non-auto sectors, and it is imperative that others follow.

Over-dependence on auto sector has cost manufacturers dear...

Between fiscals 2016 and 2019, alloy steel demand grew at a frenetic CAGR of 11-12% a year to 6.3 million tonne. Growth rode on increasing demand from power, oil and gas, and railways, even as the auto sector, which accounts for as much as 65% of alloy steel demand, logged 9-10%.

The tide turned in fiscal 2020, when a decline of over 15% in automobile production, together with slowdown in other key consuming sectors such as machinery, power, and construction equipment, translated into a 17-19% drop in alloy steel consumption to 5.1-5.4 million tonne. Slowdown in the construction sector also impacted demand from capital goods.

This fiscal, with the Covid-19 pandemic set to dampen demand from the automobile, infrastructure and construction segments further, we expect alloy steel demand to slacken by over 20%.



^[1] In this article alloy steel refers to special alloy steel (SBQ grade steel); excluding stainless steel

As things stand, we believe demand for alloy steel could take 2-3 years to catch up to fiscal 2019 level, given a recovery in demand from the automobile industry, increasing government focus on the oil and gas, railways and defence segments, and impetus to the 'Make in India' programme.

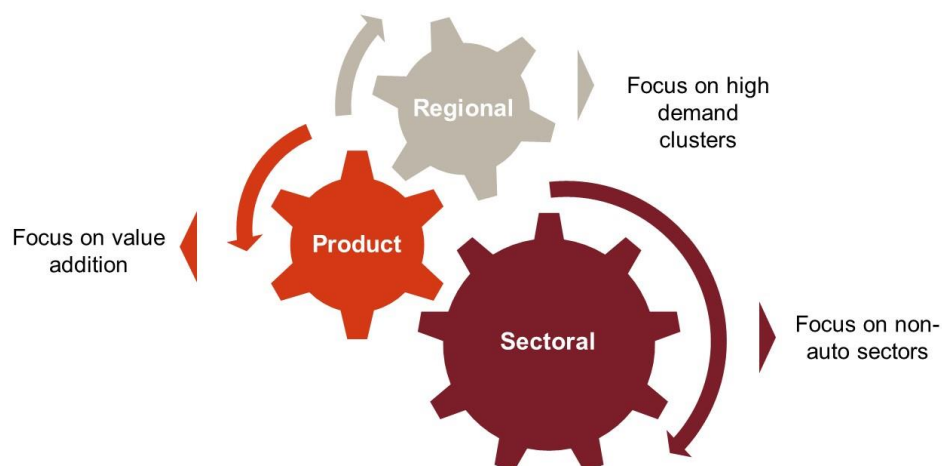
...but share of non-auto on the rise

India's aim to become a \$5 trillion economy and the thrust to Atmanirbhar Bharat has opened up new avenues for alloy steel manufacturers, which can realign their segment focus and reduce their reliance on the automobile industry.

Alloy steel demand is expected to grow at a double-digit rate in the next five years, led by better business opportunities from non-auto sectors, which offer wider scope for value creation.

In fact, non-auto sectors are pegged to account for 4-6 lakh tonne of alloy steel in the next 2-3 years, supported by growing need for infrastructure development. The National Infrastructure Pipeline (NIP) alone offers 3,476¹ opportunities worth \$747.69 billion across roads and highways, railways, urban public transport, aviation, airports, ports, etc.

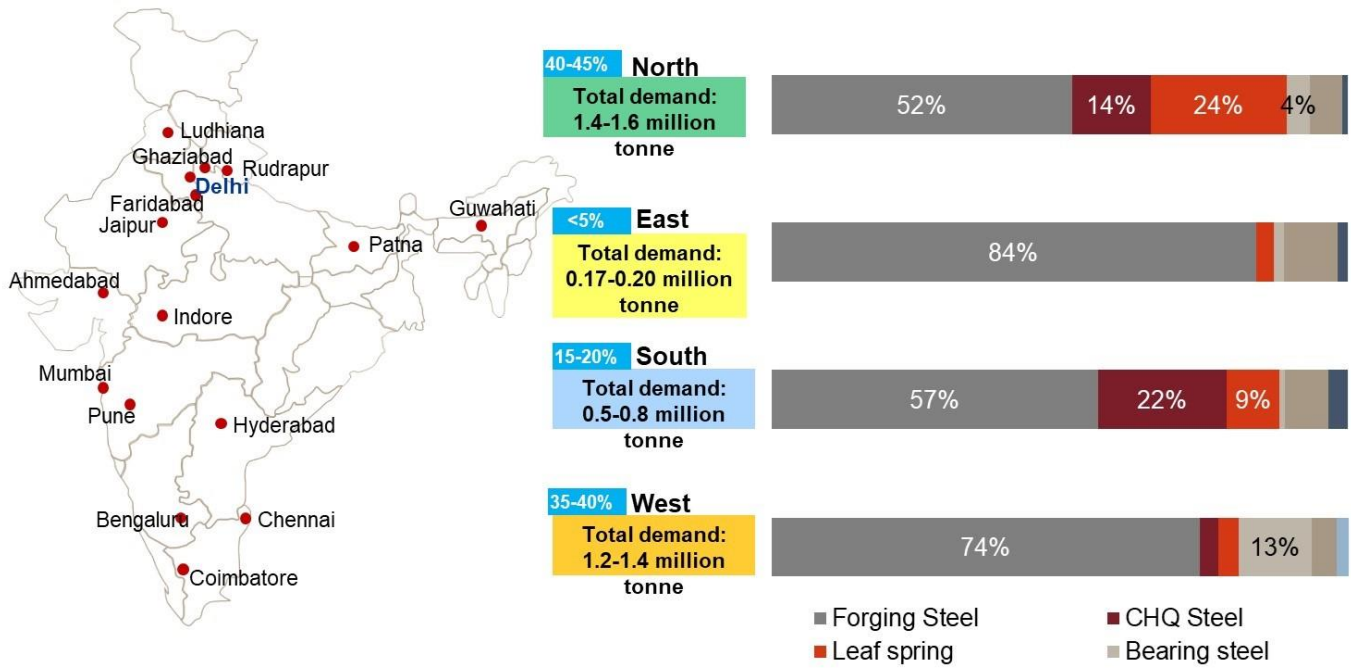
The focus on infrastructure development and an alloy policy to augment special steel output will not only enhance demand potential, but also improve India's supply capabilities. This will open up opportunities for steel players across the regional, product and sectoral levels.



¹ As per data published by India Investment Grid

Regional opportunities – focus on key demand clusters

High demand concentration in west and north...



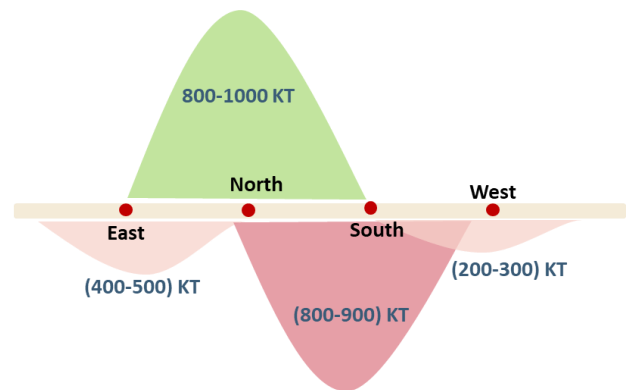
Around 80% of demand (~3.3 million tonne) for alloy steel is focussed in the northern and western regions, which have a significant number of automobile clusters.

Maharashtra is the key consumer state with 25% (~1.3 million tonne) share in alloy steel consumption, followed by Gujarat, Punjab and Delhi NCR. While Maharashtra and Gujarat see considerable demand for forged components, bearings and seamless tubes, the northern states are bigger consumers of leaf spring and fasteners owing to higher presence of commercial vehicles and agricultural equipment manufacturing plants in the region.

...lays out expansion opportunity for alloy steel suppliers in the region

Alloy steel manufacturing plants are concentrated in the southern and western regions. However, given the demand dynamics, the northern region provides ample scope to manufacturers looking to expand their presence in the alloy steel business.

Players in the western region offer leverage in terms of reduced freight charges (Rs 700-900 less) to supply to demand clusters in other regions vis-à-vis the southern or eastern region. That said, demand abundance in the North makes it the most preferable supply destination.



Figures indicate demand supply gap in the region for the last few years

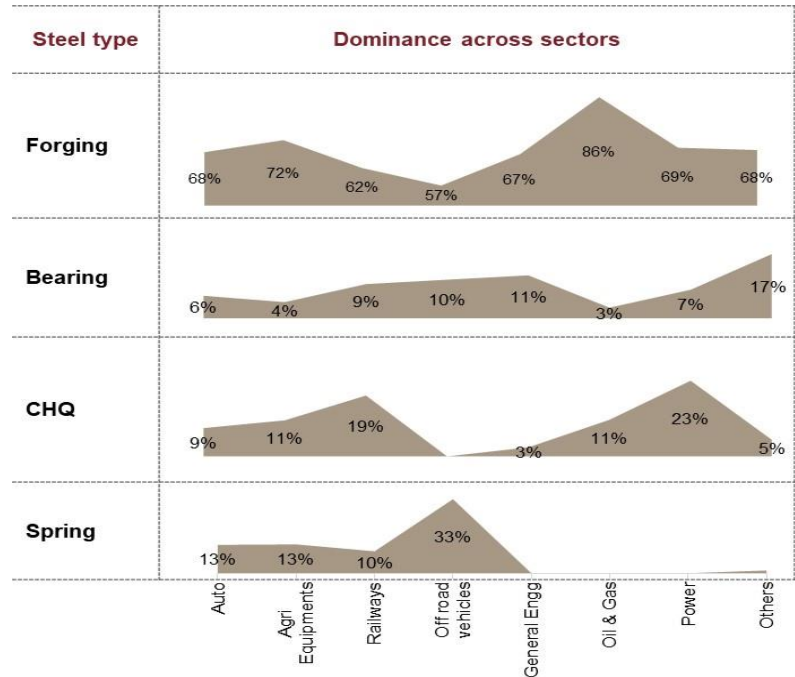
Product opportunities – expansion of product basket

Value creation and value innovation form the foundation of product opportunities in the alloy steel sector. A dominant portion of alloy steel undergoes value addition in the form of either surface treatment or further processing before being fit for consumption by the end-user segments. Further, focus on product development with respect to high-strength steel would also enable alloy steel suppliers to cater to demand from high-end applications.

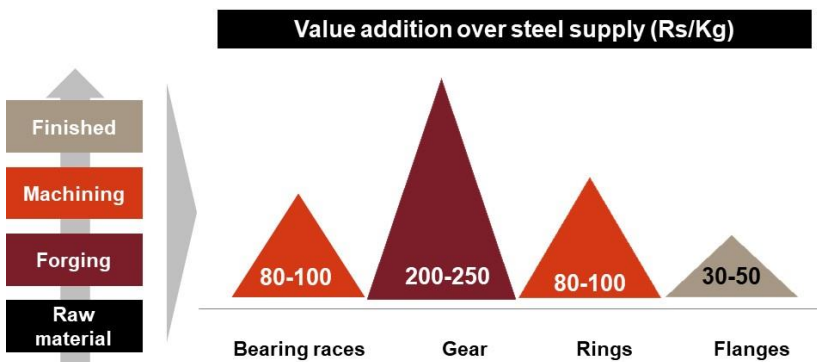
Array of applications, focussed sales, offer huge growth opportunities

Forging steel would continue to be the most popular type of alloy steel, given its array of applications across sectors. There are very limited forging companies, and these focus on either auto or non-auto applications. They primarily specialise in a component, manufacturing process and technology, which can be used across applications.

Given the changing industry and demand dynamics, however, bearing and cold heading quality (CHQ) steel would also offer high growth potential from agricultural equipment, railways and other industrial sectors.



Focus on forward integration can improve realisations



All bearing and CHQ steel undergoes some form of processing before it is consumed.

With changing demand-supply logistics dynamics post the pandemic, forward integration into product manufacturing can enable suppliers to enhance their presence.

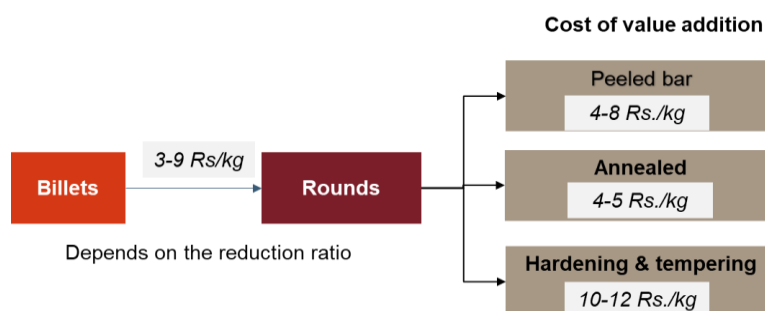
Value-added steel fetches better realisations

More than 50% of rolled products (~1 million tonne) are consumed in value-added form, such as peeled, annealed or heat-treated bars.

Value-added bars fetch 10-30% better realisations over round bars depending upon the value addition, grade and application.

Also, value-added alloy steel offers demand opportunity for specific products such as automobile components, gears and bearing components.

And with only 6-8 suppliers offering value-added products in the current market, this area holds potential and can be explored by more players.



Opportunities abound for high-value grades of stainless steel in non-consumables

- Consumption of stainless steel has been rising due to strong demand from end-user segments
- Initially used primarily for kitchenware and some industrial goods, stainless steel has over the years found application in automobiles, railways, process industries, and building and construction, too
- Domestically, the 200 series is widely used due to the associated low production cost. Today, India consumes around 2.7 million tonne of stainless steel, of which only 30% belongs to the 300 series. However, the consumption mix is shifting towards 300S and 400S, which are extensively used globally
- In India, the 200 series accounts for ~55% of overall consumption. That's 2.5 times the global share of 21%. The main reason for high consumption of the 200 series in the domestic market is high dependency on consumer goods, which account for almost two-thirds of the stainless steel demand
- Increasing stainless steel usage in the automobile, railway and transportation (ART) and ABC segments will support demand and profitability of the industry

Micro alloy steel instrumental for product development in auto segment

More performant and environment-friendly steels and forging processes can ease costs, reducing the need for machining and heat treatments in the auto segment.

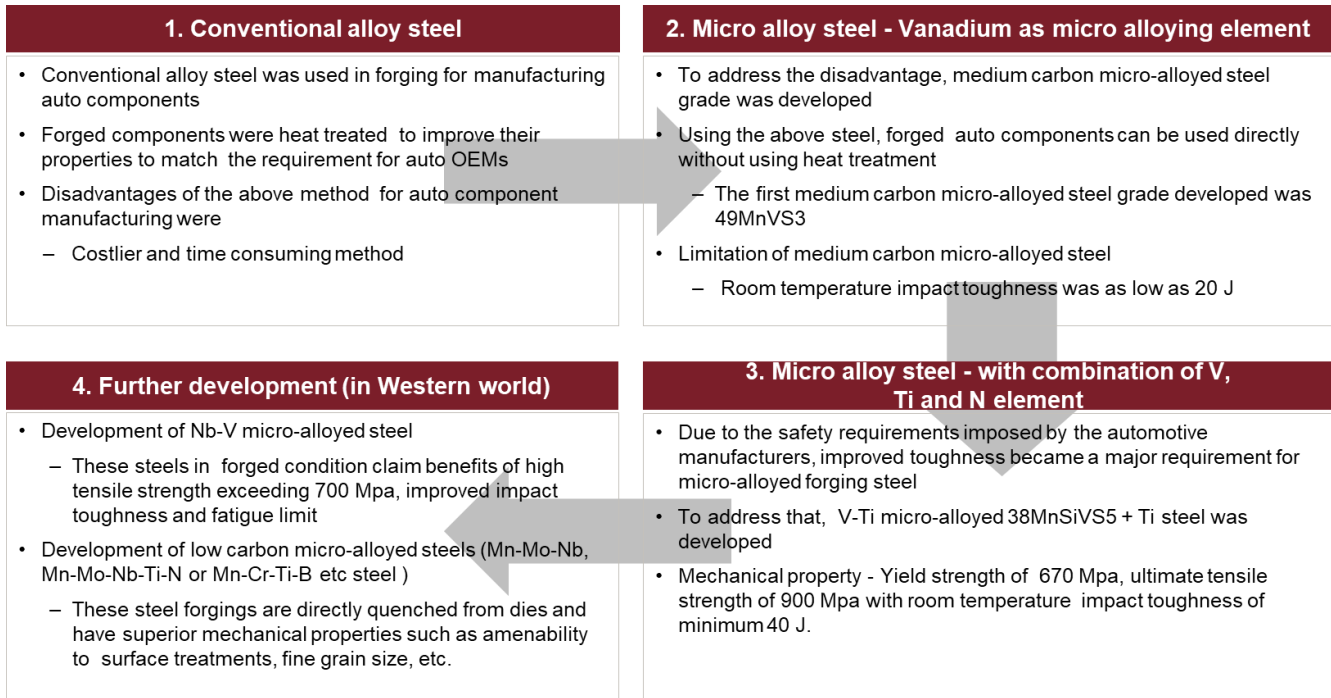
Micro alloy steel, for one, offers a host of benefits and has been substituting other alloy steel grades such as chrome moly, and carbon manganese steel (high manganese).

Micro alloy steel is used to manufacture different auto components such as crankshafts, camshafts, connecting rods, axles, levers, beams, steering knuckles, etc. The components use 38MnSiV6, 38MnSiV5, AISI 1141, etc., which are third-generation grades.

Use of micro alloy steel reduces the cost of the finished product by 25-30%

- No heat treatment required with micro alloy steel
- No cost involved in correcting the distortions caused due to heat treatment
- Higher throughput time/ reduced cycle time

Product development transition



Sectoral opportunities: Focus on non-auto sectors

In fiscal 2020, non-auto sectors consumed less than 35% of alloy steel in India. With alloy steel players seeking to diversify and explore segments outside the auto sector, this number is expected to go up. Players are expected to capitalise on the increasing demand from the oil and gas, power, defence, railways and off-road vehicle segments that offer attractive opportunities in alloy steel. Over the next five years, we foresee demand from non-auto sectors doubling to 0.8-0.9 million tonne from 0.4-0.6 million tonne at present.

Railways

Over the next two fiscals, we expect about 1,042 km of rail lines to be constructed under the Dedicated Freight Corridor (DFC) initiative as the government targets completion next fiscal. Several warehouses, stations, loading and unloading infrastructure, too, will come up as and when the tracks are laid. We expect rail investment growth to remain strong over the next 2-3 fiscals, driven by the DFC project, offering huge potential for alloy steel manufacturers. We foresee the share of railways in alloy steel consumption increasing from 4-5% currently to 6-8% by 2025.

Rolling stocks (coaches, wagons, and locomotives) and hard stock (track accessories) are the main components where alloy steel is used in the railways sector in India. Axles, wheels, coach



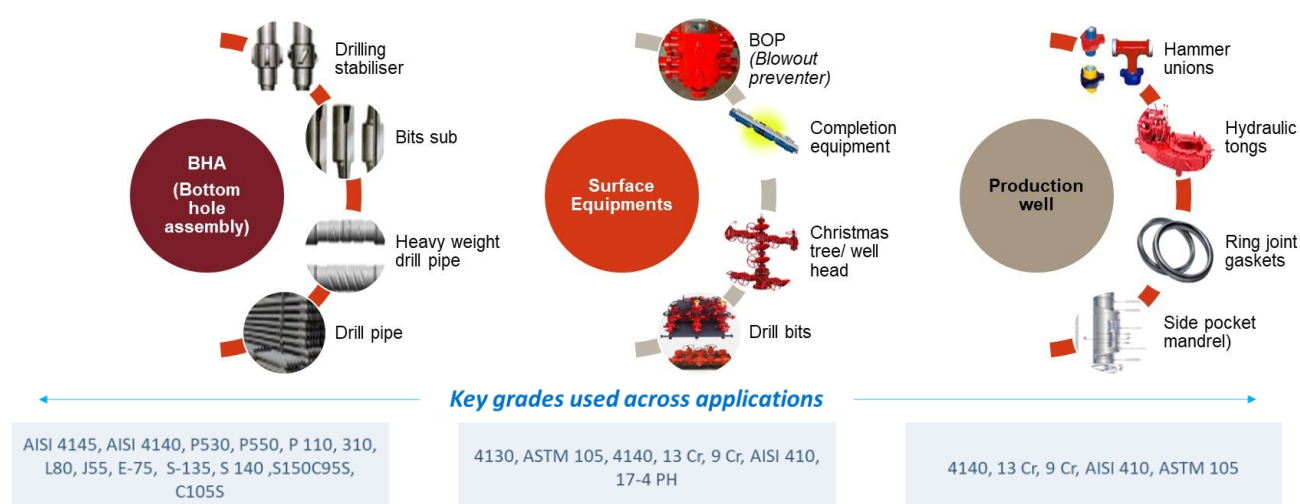
couplers, under frames, crankshaft, connecting rods and others like gear and bearings are the main alloy steel components.

Components	Railways Grade
Axles	R - 43
Wheels	R - 34
Coach Couplers	IS 5517
Under frame	E-250
Bearings	SAE52100, 100Cr6
Axle Beam	C40
Crank Shaft	42CrMo4, SCM 435H
Connecting Rod	EN-8D, 42CrMo4
Cam Shaft	16MnCr5, EN 8 D

Oil and gas

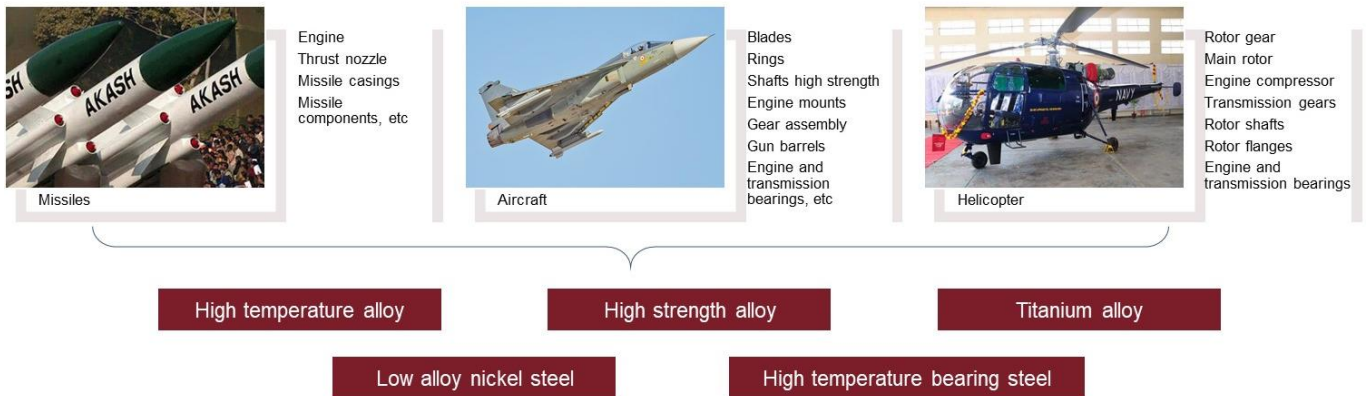
India’s oilfield services market was around \$1.35 billion in 2017 and is forecast to log a CAGR of over 7% to surpass \$2.84 billion by 2027. Growth in the market is anticipated on account of growing demand for oil and gas, rising on-site demand and evolving technologies being used in oilfields. This, in turn, will boost demand for alloy steel used in manufacturing various equipment.

In the oil and gas sector, alloy steel is mainly used in the bottom hole assembly (BHA), surface equipment, production well, flanges and valves. BHA is a component of drill rigs constituting the 15-20% of overall demand in the oil and gas segment. Surface equipment and production well constitutes around 30% of alloy steel demand. Flanges and valves are two important forged components used that consume 50-55% of alloy steel in the segment.



Defence

Currently, India’s defence equipment requirements are largely met by imports. The government’s ‘Make in India’ initiative is focussed on 25 sectors, including manufacturing defence equipment. At present, major alloy components for battle tanks are manufactured locally by various forging companies in India. The key alloy steel components used are road wheel arms, crankshaft, flywheel, track shoe, torsion bars and other forged components.



Opening the sector for private sector participation will help foreign OEMs to enter into strategic partnerships with Indian companies.

Conclusion

For alloy steel manufacturers, the pandemic has made the call to adopt a blue ocean strategy all too loud and clear. With the automobile sector – the mainstay consumer so far – unlikely to recover to fiscal 2019 levels before fiscal 2022, value innovation and offerings in new and uncontested market spaces become urgent imperatives.

Any hope of growth in demand rests squarely on non-auto sectors.

Analytical Contacts

Rahul Prithiani

Director
CRISIL Research
D: +91 22 3342 3574
rahul.prithiani@crisil.com

Guranchal Singh

Associate Director
CRISIL Research
D: +91 22 3342 4034
guranchal.singh@crisil.com

Deepa Agarwal

Senior Analyst
CRISIL Research
D: +91 22 3342 5882
Deepa.agarwal@crisil.com

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