

# BUOYANT FUTURE

Mobile crushing and screening plants are finding precedence over stationary plants due to a range of practical and operational advantages.

**A**n unprecedented and the highest-ever, \$1 trillion has been earmarked for investment in infrastructure development by Government of India in the current Five-Year Plan period (2012-17). Speeding along the guidelines set forth by the government, the infrastructure construction activity is rapidly growing in roads and highways, bridges, airports and power, while realty sector is yet to catch up.

Although the government is committed to spurring economic growth and the

intent is clear in the form of different programmes and initiatives announced across the energy and infrastructure sector. Public spending in the infrastructure sector will be the key economic growth driver. As of the 12<sup>th</sup> Plan, an estimated \$1 trillion of investment is required in the infrastructure sector, and this report states that the requirement is far greater than this and significant private sector participation will be required to fill the gap. Some of the big-ticket programmes like Housing for All, 100 Smart Cities, 24x7 Power for All, One billion tonne of Coal

from CIL by 2019, 30 km of roads per day, different highway projects and dedicated freight corridors etc, all planned to strengthen the overall energy and infrastructure capabilities and capacities in India. While, one may argue that these programmes are yet to be flagged off in a major way, there is no debate on these getting translated into actual work on the ground. The report anticipates huge demand for mining, construction and material handling equipment in the process of adding infrastructure capabilities across the country.





Crushed and screened aggregates are the lifeline of construction. As a result, the crushing and screening equipment (CSE) which cater to the construction activities is witnessing exponential growth.

Owing to many restrictions and practical operational issues, mobile crushing and screening plants are mushrooming all over the country over the stationary ones, to feed all on-going infra projects with many more to come, thereby ensuring a continuous growth of CSE in India. Some say that the growth will be in double-digits.

### Market overview

Market reports suggest that Indian market for aggregates and CSE has matured. All globally renowned CSE manufacturers are present, while some of their Indian counterparts have become market leaders in the country. Since customers have matured, so have their demands and expectations from CSE suppliers. The resulting paradigm shift is towards seeking total crushing and screening solutions with relevant guarantees, instead of only equipment from the vendors. As such, completion is in a dimension, making the suppliers work on new business strategies.

According to a study conducted by Central Pollution Control Board of India, 135 billion tonne of crushed aggregates will be required during the 12<sup>th</sup> Plan period. When translated to equipment needed, it is a thumping 26,500 CSE units by FY17 as compared to around 12,000-15,000 operational units currently.

In line with the above projections, the industry turnover can be pegged at \$1 billion which will provide gainful employment to nearly 500,000 people with special reference to rural sector, where there is a dearth of employment opportunities.

Being aligned to the projected market growth prospects, **Rajender Khoda, Group Business Development Advisor, Puzzolana Machinery Fabricators (Hyderabad) LLP**, confirms, "Union Government has increased spending on road and infrastructure development to the tune of around Rs one lakh crore for projects announced in 2016-17. So requirement of aggregates



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**- Ramesh Palagiri,**  
*Managing Director & CEO, Wirtgen India*

is bound to increase. Overall crushing and screening equipment businesses in first two quarters of 2016-17 have shown increase of more than 25 per cent compared to last year."

**Pinaki Niyogy, Vice President - Manufacturing & Engineering, TIL Ltd** conservatively comments, "Road construction and infrastructure development are happening at a rapid rate in India. Consequently, there is a substantial demand for aggregates. A lot of this demand is being met by aggregate mining. However, delays in obtaining environmental clearances have led to a sluggish demand for crushing and screening equipment in many states."

Not influenced by the market reports, **Ramesh Palagiri, Managing Director & CEO, Wirtgen India** comments, "The commercial aggregate market is flat due to slowdown in the real estate sector, but there is a boom in the infrastructure sector."

### Changing market preferences

Aggregate crushing industry exists in the vicinity of almost all urban and rural inhabitations for feeding realty and infrastructure developments in and around these areas. However, for project construction, the contractors identify the nearest source to their construction sites. Many a time, the yield from one source is inadequate to meet their requirement. As a result, they are compelled to exploit large number of quarries to fulfill their needs, thereby making a stationary CSE plant, economically and operationally unviable. Secondly, length of the project (for example: canals, railways and roads) is a significant factor necessitating localised development and use of multiple quarries at different locations. Similarly, many

projects in thermal and hydro power sector, for example, are conceived at remote and many a times some of the most inaccessible locations.

Another important aspect to consider mobile plant is the type of aggregate source like mountain, underground or river bed and others.

Further, cost of aggregates is a significantly large percentage of the total project cost and volumes required are high. Therefore, even one Rupee per tonne increase in cost can severely impact the project economics for similar ticket size at different locations.

Driven by the above situations, the CSE industry innovated and developed mobile solutions for delivering high quality crushed and screened aggregates meeting the most stringent requirements in terms of elongation and flaky index, shapes and sizes, at affordable costs and production requirements of the customers.

As such mobile crushing and screening solutions of different production capacities have caught the attentions of the customers, and made them realise the benefits and versatility of these solutions, resulting in a significant shift of their CSE preferences.

Khoda agrees, "Few years back, 80 per cent of the mobile track crushing and screening plants were sold to iron ore segment and 20 per cent to aggregate segment. Due to environmental issues and global slowdown, most of the iron ore mines in India were closed. This made mobile crushing and screening plant manufacturers to focus on road segment. In view of the fast-track projects presently 90 per cent of the mobile crushing and screening equipment are sold to road segment. "This is primarily due to





Photo courtesy: Puzzolama

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easy deployment of mobile crushing and screening equipment. Stationary crushing plants will take about 2-4 months for erection and commissioning. In a time-bound road projects, especially for initial requirement of GSB and WMM materials, mobile crushing and screening plants are the best alternatives. Mobile crushing and screening plants are plug in and play type and can be put in operation in an hour after reaching the site. Relocation of mobile crushing and screening plants is very easy,” he says.

Niyogy is more informative as he explains, “There was a time when mobile plants were preferred only by road contractors. However, in the last 2-3 years, the demand for mobile crushing and screening equipment has increased. Although most of the quarry owners still prefer stationary/wheeled plants for long-term operations in fixed places,

some of them have now begun to shift towards mobile plants in order to boost up the operational speed and achieve desired targets quickly.”

“The main advantage with track-mounted crushers is its mobility and flexibility to move to a quarry, start crushing immediately and move out as soon as the job is done. If there are some delays to the next project site, no special clearances are required to start operations and finally no foundation costs.” Palagiri explains his views.

### Market drivers

India's focus on developing infrastructure to global standards is fuelling the demand for crushing and screening equipment for construction and mining verticals. A significant market driver is competition amongst CSE suppliers to deliver innovative products like trailer

mounted primary jaw crushers, secondary and tertiary hydraulic cone crushers, vertical and horizontal shaft impactors, coupled with in-stage multi-deck vibrating screens and aftermarket solution support to entice more customers.

Palagiri informs, “The market is now predominantly in the roads sector and there is a very good demand for C&S plants. The mining sector is still in the slowdown phase. As I said, the road segment is driving the demand currently and the market is moving from stationary type mounted plants to track mounted plants.”

“Presently, road sector is driving the demand for mobile crushing and screening equipment. Big road companies are outsourcing the crushing jobs to aggregate contractors, who in turn prefer to go for mobile crushing and screening equipment. The main difference of mobile crushing and screening equipment over static equipment is the ease of deployment and zero civil works. So, residual losses are nil in mobile crushing and screening equipment compared to static plant which is more than 30 per cent approximately,” says Khoda.

Niyogy also joins in by stating, “The main demand for mobile crushing and screening plants in India is being generated by road contractors and commercial aggregate suppliers. With little to no



iron ore mining happening currently, there is very little demand from that segment. A stationary plant, as the name suggests, is a fixed plant where the crushers and screens are mounted on fixed structures. Work is required on the foundation and it typically takes around 2-3 months to start production. Whereas, because in a mobile plant, crushers and screens are mounted on a crawler-driven chassis, it affords great intra-site and inter-site mobility, and production can start almost immediately. Therefore, revenue generation is also immediate for a customer in case of a mobile crushing and screening plant."

### Operational challenges

Prohibitive transportation costs, irrecoverable stationary plant installation expenses and environmental protection restrictions imposed by CPCB are the most significant challenges being adequately addressed by the CSE industry through mobile solutions.

Palagiri indicates, "With track-mounted crushers and screens, there are less environmental restrictions/clearances compared with stationary plants."

Khoda explains, "It is very difficult to install fixed crusher near the urban settlements due to environmental restrictions and this works in favour of mobile crushing and screening equipment. Globally, mobile crushing and screening equipment are environmentally friendly compared to static plants."

Niyogy comments on environmental clearances for setting up a crushing unit, "Obtaining the necessary environmental clearance is the main concern for any customer in the crushing and screening industry. A project has to get approvals from various government bodies depending upon its class (A, B1 or B2). Although the process is now more simplified than it used to, it remains challenging and time-consuming."

### Technologies on offer

Each manufacturer has its version of technology offered by them. Niyogy elaborates on TIL's range, "TIL manufactures and distributes crushing and screening equipment in India under licence agreement with the Astec Aggregate & Mining Group of USA. Our crushers – both wheeled/stationary and mobile plants – representing the Astec-TIL association, incorporate cutting-edge world-class technology in crushing and screening solutions. Our fully hydraulic jaw crushers and cone crushers, which are easy to maintain, offer decreased machine downtime. We have fixed shaft screw type cone crushers which produce more cubical end products. While a stationary crusher plant runs for 20 hours a day during the peak aggregate

### Advantage mobile CSE

**Zero set-up time** – A stationary/wheeled plant (of 200-300 TPH capacity), in general, requires at least 2-3 months of set-up time. This is one area where mobile plants have a serious edge over conventional fixed plants from the point of view of utilisation, even though operational and running costs are a little bit higher in comparison to stationary/wheeled plants.

**Instant mobility** – Mobile plants are of immense logistical advantage to road contractors who are especially engaged in small-phase works in multiple locations.

**Ease of instant shifting** – empowers the owner to go all out on new jobs in new locations.

**Quality of aggregates** – Mobile crushers can generate aggregates of much better shape and size, due to the fixed-shaft-type cone crusher configuration compared to conventional floating-shaft-type fixed crushers generally available in the market.

- Pinaki Niyogy,

Vice President – Manufacturing & Engineering, TIL

demand season, we are proud to say that our mobile plants have been running for 18-20 hours a day in many sites, thus serving as easy substitutes for stationary plants."

Palagiri says, "Kleemann crushing plants have several innovations like the CFS – Continuous crusher feed system, diesel-electric drive, crusher de-blocking system etc."

Khoda informs, "Puzzolana believes in environmentally friendly technology. That is why we have introduced dual



Photo courtesy: TIL

Indian market for aggregates and CSE has matured.





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Puzzolana Machinery Fabricators (Hyderabad) LLP*

power crushers who can run either on board DG set or external electric power. We have used electrical motors for crusher and conveyor drives and 90 per cent of the hydraulics were eliminated. O&M cost will be approximately 30 per cent lower compared to conventional hydraulic drive crushers."

### C&S equipment & features

Product range and features for enhancing operational excellence are the key success factors for the industry in this highly competitive environment. Niyogy says, "We have just one model in this range, i.e. the 300 TPH mobile crushing and screening plant. We have seen from experience that a typical customer for a 200 TPH crusher is happy to go for this higher capacity plant, which can easily achieve an output of 200 tonne in lesser time. We also have the FT2650 jaw crusher, FT300DF cone crusher and the FT3620 screen."

He adds, "We have a lot of advanced features in our plants, for e.g., the patented liner retention system in the cone crusher, patented field replaceable threads in the upper frame of cones, tramp iron relief system in cones, replaceable jaw die seat tips, large heavy-duty flywheels, dual-wedge adjustable assembly in jaw crusher, heavy-duty triple-deck screen with 6' x 20' top and middle deck and 6' x 18' bottom deck, hydraulic controls for variable angle operation, along with other features. Optional items include permanent cross-belt magnet, dust suppression system with manifolds, remote grease lubrication, hydraulic anti-spin etc."

Niyogy also elaborates on TIL's new screen range, "We have a very unique product called the High Frequency Screen (HFS). It's a value-added product which

can be used to produce M-sand or Manufactured Sand of less than 5 mm grain size. It's a dry-classification product, so there is no slurry formation or water requirement as needed in a washing plant. With the ban on river sand mining, the demand for M-sand is on the rise and our HFS provides just the right solution for customers looking to make M-sand."

### CSE: OPPORTUNITIES

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Palagiri says, "We offer the complete range of track-mounted crushers from 150 TPH to 1,500 TPH in jaw, cone, vertical shaft impactors and screens.

Khoda adds, "Puzzolana presently has a 250 TPH plant (PTJ1176 Jaw, PTC1125 Cone and PTS1552 Screen) and we have plans for adding many more crushing and screening models to the portfolio."

### Mining perspective

Says Niyogy, "Our mobile crushers are suitable for all mining applications – be it aggregate, iron ore, or any other ore. It's a direct substitute for stationary/wheeled crushing and screening plants with higher output, better shape and lower TCO per tonne."

Palagiri states, "We are quite successful in limestone mining with impactors and iron ore mining with our jaw/cone/

screens in Australia, USA, Russia and Europe. In India, we are just staring at the mining segment. At the IMME 2016, we would be having an indoor stall where we would showcase our Kleemann C&S plants and Wirtgen surface miners."

According to Khoda, right now the major mining sector where mobile crushing and screening plants are used is iron ore which is expected to revive now. "Other market segments like coal and bauxite also will have substantial mobile crushing and screening plants in the near future. We are participating in IMME 2016 expo particularly with focus on mining," he says.

### Outlook

Palagiri expects the demand for mobile CSE to grow at a rate of 25 per cent every year. Khoda also has a positive outlook, "Right now the share of mobile crushing and screening plants is approximately 15-20 per cent. In next five years, this may go up to 30-35 per cent."

Niyogy visualises the future, "Mobile crushers and screens are certainly here to stay and the future looks very promising. Why wait for three months to start earning when you can start earning from day one – that single argument is sufficient in itself to justify the acquisition of a mobile plant. With TIL introducing the 300 TPH mobile plant, which doesn't have an analogue in the market, even quarry owners with daily output requirements of upto 4,000 tonne are happy to go for mobile plants."

Having recognised the humongous volumes of aggregates to be crushed and screened during the upcoming decade, many Indian CSE manufacturers are emerging as market leaders posing a significant challenge to the erstwhile well entrenched foreign companies for providing high performance but affordable mobile solutions to their customers.

Similarly, quite a few internationally recognised players who were not having a CSE product portfolio earlier have joined the race by acquiring technologies and products to capitalise on the country's high potential of aggregate requirements.

**ET**

**- SHANKAR SRIVASTAVA**