



Case Study

## **Crushing the Production Bottleneck - Cone Crusher brings Production Boost to Raj Stones**

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Through the use of Sandvik technology, Raj Stones, based in the United Arab Emirates, has reinforced its position as one of the premier aggregate suppliers in the region.

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The quarry of Raj Rocks LLC is one of the biggest aggregate pits in the United Arab Emirates. (Pictures: ©Sandvik Construction)

Fujairah based Raj Stones in the United Arab Emirates, part of the Raj Group of companies, began operations in 2004, expanded with the acquisition of another quarry named Raj Rocks LLC in 2008, and today possesses a hard won reputation for quality and reliability. In a relatively short period of time the company has developed a highly successful operation which now sees it as the premier supplier of aggregates for the construction industry in the area, now encompassing the supply of aggregates for export in the region, most notably to Qatar. The Raj Group itself is one of the leading companies in the Gulf Region, producing in excess of 8 million tons of per annum of high quality gabbro aggregates, as well as rock products for asphalt and ready mix plants. This is accomplished due to the group now owning a vast range of mining and crushing equipment to work alongside its strong logistics division. This enables the group not only to carry out all its quarry operations independently, but also to offer full range of mining services to third parties. In order to ensure smooth operations, and imbue the group with independence, they also possess specializing in drilling and blasting,

quarrying, trading and transportation company, Raj Stones LLC. At the heart of the Raj Stones business is its two quarries: Raj Stones LLC. and Raj Rocks LLC. With total estimated mineral deposits being in the region of 265 million tons, both quarries possess multi-stage, state-of-the-art crushing lines. Together, the quarries are capable of producing 1000 metric tons per hour of crushed aggregates and sands, which is used by the local construction industry, and now, increasingly, for export.



The CH660 cone crusher from Sandvik construction is at the center of the Raj Rocks LLC aggregate processing plant.

In order to deal with increasing market requirements for high quality aggregate, a key piece of equipment used by the Raj Stone quarry is the Sandvik CH660. It is no surprise that a company of the caliber of the Raj Stones uses the CH660, as Sandvik cone crushers are possessing a high capacity in relation to size, high reduction efficiency and produce excellent product shape. With hydraulically adjusted CSS, optional automation, a choice of several different crushing chambers, and many other high performance features, each model is versatile, user friendly and highly productive.

## **Rising Production Capacity**

The use of the Sandvik CH660 cone crusher came about as Raj Stones identified a need to modernize their production capabilities, requiring an efficient cone crusher capable of producing aggregate to their exacting specifications at a throughput of between 450-500 mtp. The new cone crusher would replace their existing Sandvik supplied H6800. Following a thorough search of all the premier crusher brands on the market, Raj Stones decided to replace the H6800 with its modern replacement - the Sandvik CH660. The CH660 has proved to be ideal for Raj Stones secondary requirements because of the new design of the intake flow; this compact and easy to service design makes it the perfect choice for Raj Stones quarrying operation. Such features as its automatic overload protection, and Sandvik's revolutionary automatic setting system, ASRi, have also played a key part in maximizing production. The latter system optimizes cone crusher efficiency by automatically adapting the crusher to variations in feed conditions, and by continuously measuring and compensating for crusher liner wear the ASRi allows the user to fully utilize crusher liners, thereby scheduling liner replacements in order to coincide with planned maintenance. The ASRi also assists in keeping the crusher choke fed, thus maximizing rock-on-rock crushing, which helps to optimize the quality of the final product.

## **Benefits of the new Crusher**

Raj Stones hydraulically adjusted CH660 crusher is characterized, as are all Sandvik cone crushers, by robust design and high performance. A combination of Constant Liner Performance (CLP) crushing chambers and high motor power, gives the crushers very high capacity. However, the Sandvik CH660 design as used by Raj Stones has undergone an extensive upgrade designed to optimize operations at all levels, with these enhancements covering the entire crusher, including the feed hopper, top shell, bottom shell and main shaft/ head center. The top shell has been reinforced to meet the greater demands from quarrying and mining customers. Developed using the latest software, the brand new design of the CH660 offers smoother curved corners to decrease stresses. In addition, the spider cap diameter has been increased to protect the spider hub. The feed hopper is bolted with lock nuts, and possesses a reinforced four piece design producing increased stability. The bottom shell has a five arm instead of a three arm design, providing the eccentric hub with stronger support ensuring overall sturdiness. Improved throughput and productivity are delivered through an increased breathing tube which allows the free flow of air in and out of the spider bearing, thereby preventing clogging to take place. The spider arms are lifted up



creating more room for the material to flow into the chamber, with an optional level indicator also being available for enhanced control of the level in the feed hopper. This radar sensor in K-band technology performs continuous high precision level measurements making it possible to adjust the material level within small variations. Additionally reduced vibration and noise pollution result due to the CH660 being equipped with Sandvik lightweight polymer linings for wear protection and noise reduction, producing a better working environment and longer wear life, as the linings are easy to install and to change. Several standard crushing chambers are also available for each model meaning the crushers may be easily matched to changes in production through selecting the right crushing chamber and eccentric throw. A vital factor that played an important role in Raj Stones deciding which cone crusher to buy when upgrading their cone crusher was the quality, and availability of spare parts, together with the aftermarket support available. Hence Raj Stones had been impressed with the support they had previously received from Sandvik for their H6800, and since starting to use the CH660 they were keen to develop the relationship through the use of Sandvik wear and spare parts, signing service and supply agreements for the whole of 2013. This continued partnership between the two companies ensures the highest levels of productivity and lowest possible cost per ton production. The Raj Stone Quarry now supplies aggregates for a diverse array of uses by the construction industry throughout the UAE, and other Gulf states. Thus, from their state of the art site the company is able service its customer base of road builders, developers, asphalt plants and ready mix plants. Through the use of such equipment as a Sandvik CH660 cone crusher, the Raj Stone quarry services the multifaceted needs of the aggregates industry, operating some of the cleanest and most modern plants in the country, aided through the use of some of most advanced equipment on the market.

#### **A Note from the Editor**

For all statements in this article that refer – directly or indirectly – to the time of publication (for example “new”, “now”, “present”, but also expressions such as “patent pending”), please keep in mind that this article was originally published in 2014.

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