

ROC'N

REMCO OPERATORS COUNCIL NEWSLETTER

As the Rotor Turns - Trouble in Paradise

Producer resorts to rock-on-rock VSI use after many costly years of operating anvil style VSIs

There exists a large cement company on an island in the Pacific (who wishes to remain anonymous) that operates a number of quarries where coarse and fine aggregates are produced for use in ready-mix concrete and asphalt paving. The reader of this article should be aware that construction materials produced by quarry operators are subject to tight grading specification requirements including particle shape. Failing to meet those critical requirements can be a severe negative to the producer's business.

Background

For a number of years this producer faced declining profits that loomed dangerously close to making the plant's continued operation undesirable. The principle reason for this was the inability of the crushing plant to keep up with the local market demand for high quality sand. Their sand production for the last five or six years was not only of unacceptable quality and poor grading, but also was produced at a high cost in a highly competitive market. After years of study, plant management decided that a large VSI crusher was the answer to their sand production problems. They had extensive experience with anvil-type crushers and now decided that a rock-on-rock unit would be the best choice.

In pursuit of a rock-on-rock solution, they talked to a number of VSI manufacturers. Sandvik demonstrated one of their small chassis mounted VSI units in the customer's plant for a number of weeks. This demo unit was powered by a single 250 HP electric motor and seemed to meet the user's sand quality needs but was severely short on tonnage. Sandvik sales representatives told the customer it was a simple "scaling up" of the crusher size to achieve their desired production goals.

Based on their field test and manufacturers recommendations, the customer justified the purchase of a new high horsepower Sandvik VSI on the following points:



Figure 1: Cement company's final product pile minus #4 concrete sand.

- Use one Sandvik rock-on-rock VSI crusher powered by 700 HP (two 350 HP motors) to replace two aging anvil-type Canica VSI crushers powered by 400 HP each (a total of 800 HP). This would result in a 100 HP savings.
- Increase the production of minus #4 mesh specification sand with a minimum of 65% passing the #8 mesh sieve at the rate of 130 tph.
- Reduce crushing cost by using one rock-on-rock VSI in place of two anvil-type VSIs.
- Improve the product quality by producing a smoother, more cubical product shape than the existing anvil VSI crushers.
- Reduce total plant operating hours due to a higher per hour production rate with the new crusher.

Continued on next page 2



Figure 2: (left) Sandvik Model CV229 currently installed with a REMco 37-4-14 rotor (right) Customer feed size 2 1/2" being fed into the REMco 37-4-14 rotor.

The project continues ...

In June 2015, Sandvik supplied a 700 HP (two 350 HP motors) Model # CV229 for the job complete with a variable frequency drive (VFD). During commissioning of the new VSI crusher is when things became difficult for the producer as problems began to surface and production suffered:

- The crusher had to be assembled on site.
- The electric motors supplied with the unit were not of equal RPM on their name plates and took 8 weeks to replace.
- The VFD was difficult to operate and would not hold even the new motors at a consistent RPM.
- Personnel sent to the site by the manufacturer did not fully understand the machine or its operation or its intended use.
- Sand production averaged only 60 tph of finished minus #4 mesh x 0 sand with an average of 56% passing the #8 mesh sieve. Well short of the desired finished product promise in the justification.

At startup they also found that the Sandvik rotor could not consume the connected 700 HP which explains the lack of #4 mesh sand and the shortfall of #8 mesh in the grading.

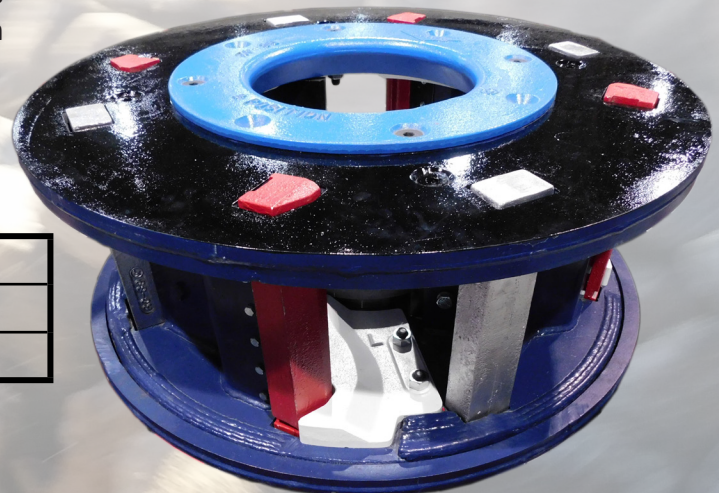
This forced the operation of the machine as recommended by Sandvik into Bi-Flow mode. The Sandvik Bi-Flow feed system is a method where up to 50% of the total crusher feed does not go through the rotor but by-passes it. In By-Flow mode, no saleable product increase was achieved. By-Flow mode converts the Sandvik VSI into nothing more than a mechanical chute. After much testing and numerous weeks of disappointing sand production, the customer was forced to place one of his two old 400 HP anvil-type machines back in service to meet the plants demand for sand.

Despite their best efforts and five months off time, Sandvik factory personnel were unable to make their VSI perform as promised. It was during one of these site visits that the customer learned that Sandvik had never produced or applied their VSI crusher with this much horsepower and had never tried to produce this volume of finished sand tonnage at previous installations. The customer grew more frustrated to the point of considering total removal of the Sandvik crusher and returning his operation back to using the two old anvil-type crushers with their high wear and labor costs.

Product Features

Rotor Size	37 - 4 - 14"
Max Feed Size	3" (77 mm)
RPM Range	1,500 - 2,000

Figure 3: Typical REMco 37-4-14 rotor.



For many manufacturers the VSI is an “also ran” product, meaning they want to have one so that it can be offered, but that does not make them VSI experts. Many of these manufactures simply copy designs from others and do not invest in the technology or the people to truly make their crushers perform for the end user. We believe this is an example of one such company. Sandvik has built a solid reputation on compression type machines (jaws, gyratories, cones) and do not possess the technical expertise to supply and support a solid VSI crusher leaving their customer promises in this case, unfulfilled. In total desperation, the customer sought a solution to their Sandvik problem and found REMco.

REMco Philosophy

REMco has built its reputation by supporting its VSI crushers to the maximum. This skill has in many cases become well known by producers all over the United States and many overseas markets. After several conversations and a site visit to inspect the Sandvik machine, we diagnosis’s it with the following issues; Sandvik’s machine is essentially a poor copy of a Barmac crusher. It is an obsolete design with a 90’s style 3-port rotor and Bi-Flow system that is simply not capable of producing the customer’s product at this horsepower.

REMco made the following recommendations to

achieve their desired production rate.

- Disable Sandvik’s Bi-Flow system and force all material to go through a REMco rotor.
- Install a REMco 37” 4-port 14” rotor and 13” feed tube assembly.
- Allow REMco technicians’ access to the crusher to make necessary modifications along with their plant maintenance personnel so they could be trained on its operation.

REMco offered these changes on a guaranteed performance basis and if we could not get the crusher to perform, our technicians would help restore the machine to its original state. The customer agreed to REMco’s proposal and the necessary components and technicians were on site in mid-January 2016 to make the change. After 12 hours of sweat, dust and comradery, the REMco / customer team had the crusher back in operation with impressive results.

The following statistics are based on actual 3 foot belt samples taken from the crusher feed and discharge belts, as well as the finished product belt.

- Rotor throughput from the REMco 37” 4-port 14” rotor was 460 tph, no Bi-Flow feed.
- Minus #4 mesh x 0 sand averaged 140 tph with an average of 68% passing the #8 mesh sieve.
- No supplemental crushing from the old anvil style crushers.
- Average amp load on the 350 HP motors; 360 amps each.
- REMco guarantee deemed achieved, customer satisfied.

After 16 months of operation, the customer is still happy and other benefits have been discovered. The REMco rotor service interval is 900 hours. Most frequently changed part is the distributor plate every 400 hours. In contrast, the Sandvik rotor was completely spent every 250 hours.

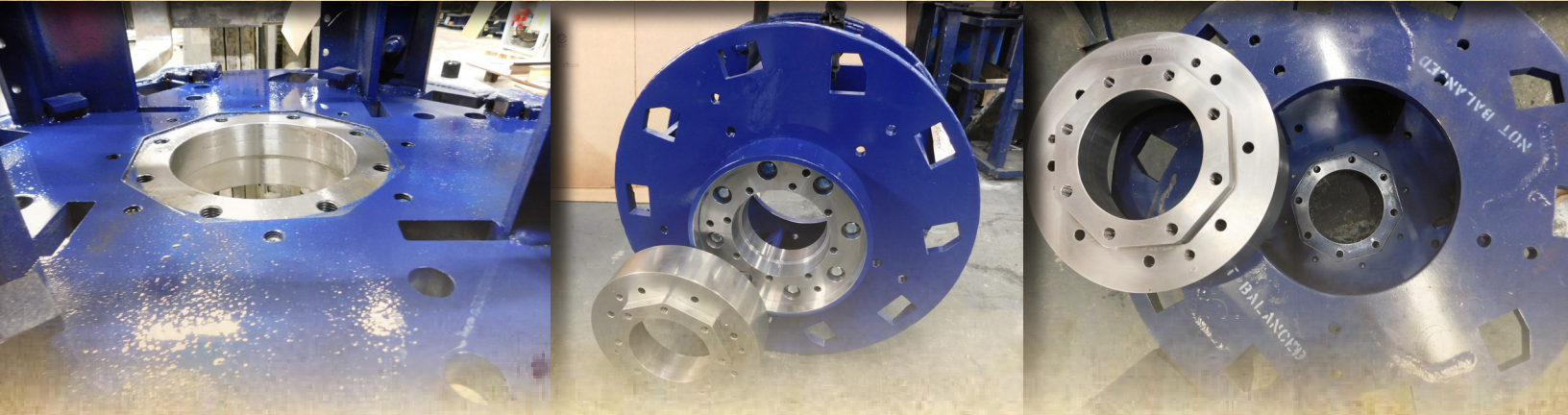
Conclusion

Don’t be a VSI victim, do your homework. Be sure your crusher supplier offers a written guarantee of performance otherwise, you might be the one left between a rock and a hard place.



Figure 4: (left) REMco’s boss placed on the Sandvik bearing cartridge (right) 37-4-14 rotor being installed onto the bearing cartridge.

REWARD



Replace your existing rotor with a new REMco bolted boss and collect your bounty through 7/31/17.

Your old REMco rotor ***in any*** condition is worth big bucks when purchasing a new REMco rotor.

- \$1,000 for your old model REMco rotors 18" to 27" in diameter
- \$2,000 for your old model REMco rotors 30" to 42" in diameter

REMco's new and improved rotor designs with bolt in rotor boss ****patent pending*** and dual taper has several advantages over our older rotors which include:

- A damaged rotor boss is quickly and easily changed in the field with no special tools or skill
- No need to repair worn rotor boss skirt
- A replacement rotor body is less costly because you can remove the boss from the damaged body and install it in the new body
- Dual taper or "stepped" boss and taper lock provides better grip on the crusher shaft and is faster to torque into the crusher
- Our built in "wear indicator" lets you know when the boss and or taper lock have reached their usable service life

Contact your REMco Team member and place your order today!

Toll Free (800) 782-2411 or email Lupe or Jason with the **promocode #bounty**



Rock Engineered Machinery Co. Inc.

263 S. Vasco Road • Livermore, CA 94551 • USA

Tel (925) 447-0805 • Fax (925) 447-7038

Website: www.remcovsi.com/offer.html

A WORLDWIDE PRODUCT OF REMco - AN AMERICAN COMPANY

Bounty is applicable to end users only and cannot be combined with any other offer/discount and varies based on the size of the rotor

CONEXPO



ConAgg/ConExpo 2017 in fabulous Las Vegas, Nevada has come and gone. New developments were on display at REMco's Booth, #32649, located this year in the Central Hall where hundreds of new visitors were hosted. Many thanks to existing REMco users who visited the booth.

REMco displayed its brand new series 310 VSI, a powerhouse little machine specifically made for producers with lower tonnage needs. For the big boys, the latest series 4060 VSI crusher complete with modular installation kit was shown. This bolt together installation system can be assembled as it comes off the truck and is ready to run in just a few hours. REMco also displayed the latest series 1530 VSI, a midsize machine that has it all, versatility, production and all the features you have come to expect from a REMco VSI crusher.

The high-tech feature for VSI crusher management, the REMco SmartBox, was a big hit with visitors and existing users who asked about updating their old REMco crushers to this new system. All REMco VSI crushers since 2010 include SmartBox-ready construction. The REMco SmartBox system outpaces all competitor devices for crusher automation and management.

In addition to the legendary VSI, REMco also showcased its PRO-line. A 250 horsepower cone crusher mounted on REMco's modular installation kit with oscillation dampening mounts, safety service platform access stairway and discharge hopper. The REMco PROscreen, a general purpose incline vibrating screen complete with feedbox, discharge lips, wedge pin screen tensioning, coil spring trunnion mount and pivoted motor base was displayed with many favorable comments.

REMco's PRO-line was developed by Proman Infrastructures of India more than a decade ago and now boasts a proven track record of operation and durability in Asia. We are proud to offer this high quality, affordable equipment to our customers in the Americas as it compliments REMco's USA produced VSI crusher line. Introduced at the 2017 ConExpo/ConAgg show, all new REMco VSI crushers and PRO-line equipment is backed by our 5 year manufacturer's warranty against defects in materials and workmanship, proving once again, with a REMco the rock never wins, you do.

Hope to see you again at the next ConExpo in 2020.

- REMco Team



Talk TECH TIP

WORN SKIRTS EXPOSE MORE THAN YOU THINK

Let me tell you, a worn skirt exposes things that no one really wants to see. Of course I am talking about "rotor boss skirts". In a REMco crusher, the rotor boss skirt is an area that extends down from the rotor boss protecting the bearing cartridge top seal plate by deflect rebounding material away from this area. If material were allowed to attack the top seal plate it will cause it to be worn away, fine rock particles will defeat the damage labyrinth seal and will find their way into the bearing cartridge which will cause premature bearing failure. Now that you know about exposure and the potential damage of a worn skirt, let's talk about prevention.

WHY

... does it happen?

Wearing of the rotor boss skirt is a normal part of the crusher's operation and the reason for the skirt in the first place. However, this type of wear typically takes several thousand hours to occur. Premature wear on the rotor boss skirt is most often caused by excessive build-up in the crushing chamber, or drive tunnel or clogged discharge opening(s) that can cause material to build-up and rub directly on the rotor skirt significantly reducing its service life, see figure 1.

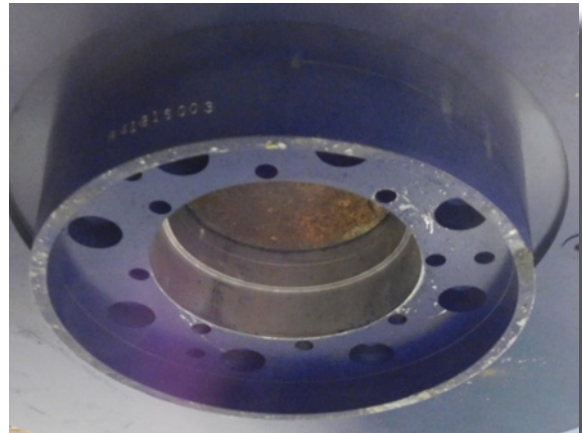


Figure 1: Extreme example of excessive build-up in the crushing chamber **causing the machine to stall.**

Poor operational practice such as extremely low feed rate will also cause premature wear to the rotor boss skirt due to excessive rebounding of crushed material back towards the center of the crusher, see figure 2.



Figure 2: Example of excessive wear on the rotor boss skirt (top) versus a new rotor boss skirt (bottom).



WHEN

... should this area be inspected?

Maintenance personnel should inspect the rotor boss skirt and top seal plate each time the rotor is removed for service. This is a simple visual inspection to insure the skirt and seal plate look normal. Figures 4 and 5 are examples of new and worn skirts and seal plates. If anything looks suspicious check these areas further.

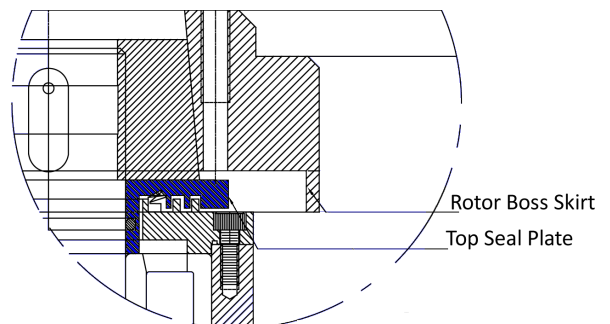


Figure 3: Detail view of the rotor boss skirt fitting on top of the REMco oil or grease bearing cartridge.



Figure 4: Example of new seal plate on bearing cartridge.

Rotor skirt dimensions vary depending on the size of your rotor but they will typically be from 1" to 1 3/8" tall and 1/4" to 3/8" thickness. If you are unsure contact REMco's Tech Services and we will tell you how long and thick your skirt should be.

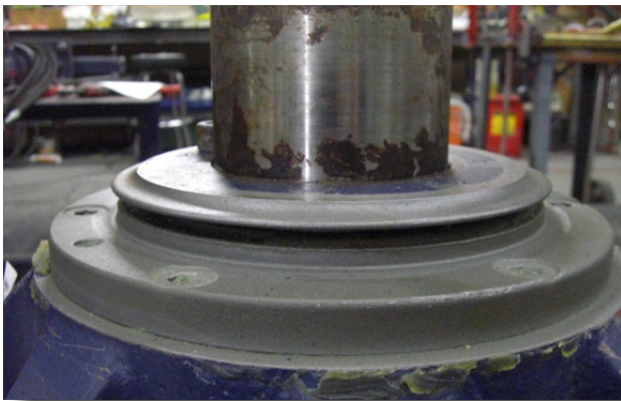


Figure 5: Example of excessive wear on the seal plate.

However, the easiest measure is this: with the rotor installed, inspect the area around the lower edge of the skirt; you should not be able to see the top seal plate, see figure 3 and figure 6.

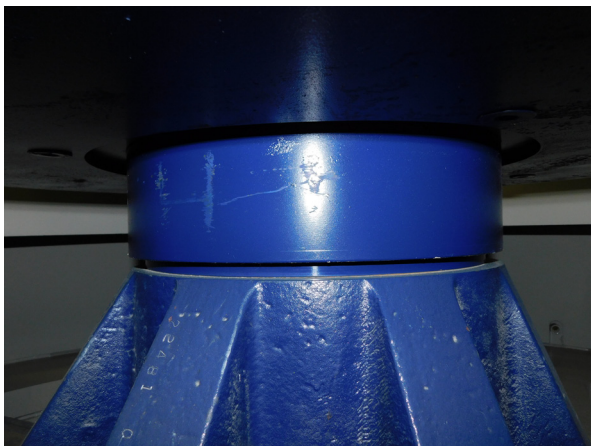


Figure 6: Example of how the rotor boss skirt should fit on top of the seal plate / bearing cartridge.

WHAT

... should I do if my skirt is short?

If the rotor boss skirt is worn and exposing the top seal plate it is best to repair or replace the boss skirt. Skirt replacement can be done in two ways. 1) On newer REMco rotors, the rotor boss is bolted into the rotor body and the fastest, cleanest solution is to replace the boss. If your company is operating an older design that has a welded boss, replacing the rotor boss is problematic and best done by REMco or your local REMco dealer. 2) If you have skilled maintenance mechanics, the rotor boss skirt can be rebuilt in the field as part of your normal rotor maintenance.

WHERE

... do I get more information and / or assistance?

The objective of the Tech Tip section of this new letter is to help the customer avoid down time, reduce maintenance headaches and get the best performance out of your REMco crusher. You can contact your local REMco dealer or REMco's Parts Department for replacement parts at **1-800-782-2411** or you can contact REMco's Technical Service Department with questions.

Request Tech Data Sheet *TD-02-0004 (welded skirt repair details)* and/or *TD-2009-02 (MK 10 skirt repair details)* for how to repair your rotor boss skirt.

HOW

... to prevent it from happening?

To turn a phrase, preventative maintenance is the key to success, wish that it were so easy. Awareness of the condition is more than half the battle. This type of wear does not normally happen overnight, it takes time. If your maintenance staff is aware of what to look for and what to do as it happens this will not be a problem for you. As demonstrated here ignoring the problem or not knowing about it in the first place is when everything goes the wrong direction. If there are any questions on this or other REMco crusher conditions, contact REMco or your local REMco dealer.

Keep your skirts the right length and keep your bearings tight. Be sure to watch for our next Tech Tip on how to convert your machine from grease to oil lubrication.

UPCOMING EVENTS

Save
THE
DATE



Proman Infrastructure Services Pvt. Ltd. is a company formed by a group of professionals with extensive experience in Crushing, Screening and Heavy Equipment and is REMco's business partner in India. **Proman Infrastructure** has been our local exclusive authorized licensee for REMco products in India since 2001 and is the standard bearer for VSI excellence in the region.

Join us in supporting **Proman Infrastructure**, as they will be exhibiting at the **EXCON 2017** with their full product range which includes the REMco VSI, PROcone, PROscreen to name a few in Bengaluru, India December 12 - 16, 2017. This is the 9th International Construction Equipment and Construction Technology Trade Fair in Asia with over 500 local and international exhibitors and over 30,000 visitors.



ANNOUNCEMENTS

We are pleased to announce the promotion of Wayne Peacock to the position of Shop Foreman. Wayne brings to this newly appointed position just under 10 years' experience working in REMco's Production Department wherein his ability, talent, experience and expertise make him a unique fit for the position and a natural leader among his peers.

Join with me in congratulating Wayne on this promotion which is well deserved on his proven abilities.



REMco

This newsletter is produced for REMco users and its intent is to make your life easier! We want to hear what has been happening with the REMco crusher in *your plant*. Send us your questions, comments and job stories today!

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