



# ROC'N

REMCO OPERATORS COUNCIL NEWSLETTER

## REMco's Crushing Test Services

The True Cost of Researching your Rock



**Figure 1:** The REMco TestMax VSI and VFD unit. Available for testing in three different configurations based on each customer's desired product output.

### Plant Flow Software

Computer modeling is a good way to get an idea of how modifications to your rock plant may impact total throughput or the ability to make new products. But, models are not gospel and should be considered as a first step in the due diligence process.

The old axiom "garbage in, garbage out" is very much alive and should serve as a constant reminder to dig deeper to provide a more accurate model.

Most, if not all, plant flow software allows the user to input field/test data which can make the difference between a pat on the back or a kick in the

pants when the "idea" becomes a reality.

This realistic data option is just one of the reasons REMco offers its customers test crushing services at our in-house lab. REMco's lab utilizes a real production series 1025 REMco VSI crusher, not a scaled down mini crusher for determining performance.

This machine is easily convertible to any mode of operation for a VSI crusher; autogenous (rock-on-rock rotor and chamber), semi-autogenous (rock-on-rock rotor and anvil chamber) and hard parts (rock-on-steel shoe table and anvil chamber).

## Ever Changing customer Product Request

A multi-unit REMco customer located in the Eastern United States was interested in another REMco SandMax VSI to produce specialty sand for one of his big (250,000 tons per year) customers.

As with previously purchased equipment, this customer requested REMco to test the rock from this site to prove the viability of the idea. After testing, it was indeed proven that the specialty sand could be made and our customer purchased and installed another REMco SandMax and started making specialty sand.

However, after several months, market demand shifted and the 250,000 tons per year customer didn't want "that sand" they wanted a completely "new specialty" sand. Leaving our customer with a dilemma; tell a very good customer no (never a good idea) or figure out how to produce this new sand in a processing circuit they just built to make another product.

Project engineers contacted REMco for advice. They needed to produce two new finished products; one minus #20 mesh x #100 mesh, and a second product that was minus #40 mesh x #200 mesh crushed limestone.

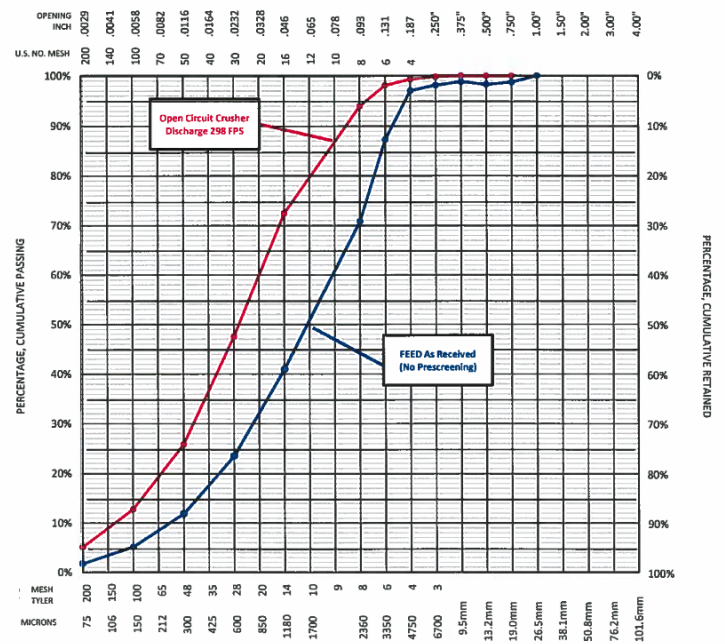
As you might expect, this was not an easy application and testing the material was the only reliable way to determine how a new sand could be made.

## Why is Testing Important

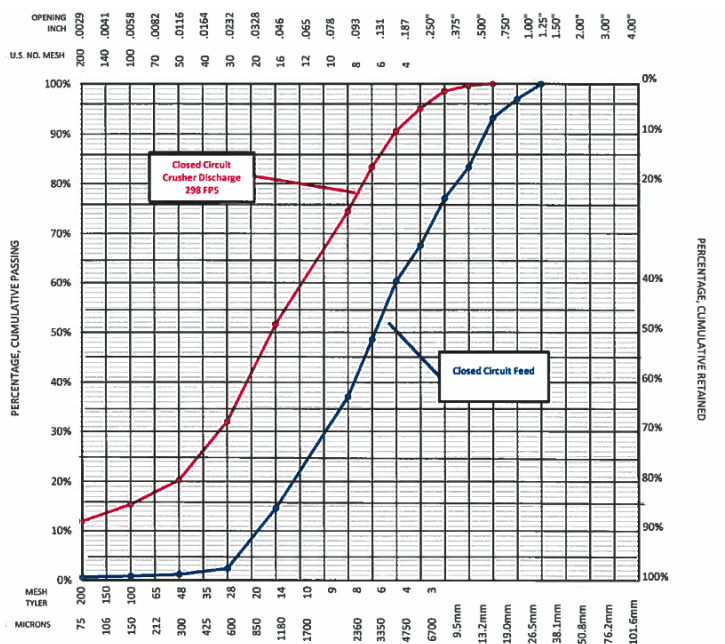
Testing provides an opportunity to see how different crusher configurations will perform with a specific rock. Based on the given product specifications and field performance from the existing SandMax, REMco selected a semi-autogenous configuration with a four-port enclosed rotor for this customer.

Further, since the machine would be operated in a closed circuit when installed, REMco's test had to be done in a closed circuit, returning oversize to the machine for a further reduction to provide a realistic simulation.

Closed circuit testing allows REMco technicians to determine the mass flow balance of the processing circuit for sizing of the crusher as well as ancillary components required to consistently make finished products.



**Figure 2:** The graph above shows the output of the limestone in open circuit; the feed received is indicated in blue and the output of the run is seen in red. The graph below shows the results of the limestone crushing test in closed circuit.



Particle distribution across the sieves in conjunction with particle shape makes the product pass or fail stringent standards set by the customer. In this instance, the semi-autogenous operation provided the highest product yield with good particle shape.

On the operational side, the material had a low abrasion index making the wear cost reasonable at just \$0.21 per finished ton making semi-autogenous operation the clear choice.

Based on the strength of the crushing test findings REMco recommended converting the SandMax into a ST/AR (Swing Top / Anvil Ring) machine by replacing the autogenous component with an anvil ring kit which included the anvil ring with anvils, rotor guard ring, bearing cartridge shroud and hardened rotor, for a fraction of the cost of replacing an already new machine.

By doing the testing, our customer was able to go to his customer with confidence (along with finished product samples) and say YES, I can make that material and I'll be ready to do it in about four weeks.

That kind of confidence does not come from a computer program alone, it is science, art, hard work, and a supplier partner that works with you to achieve your goals.

### How to get Testing done at REMco

If you would like to learn more about how to get your rock tested, there are two ways that this can be done. First, you can visit REMco's website [www.remcovsi.com](http://www.remcovsi.com) and click on the *Crushing Test Services* tab. You will be directed to an online form that will ask several basic questions about your rock. These type of questions will help the testing department formulate a game plan to meet your desired objectives.

Second, if you have more specific questions about testing, you can contact your local sales representative who can walk you through the process:

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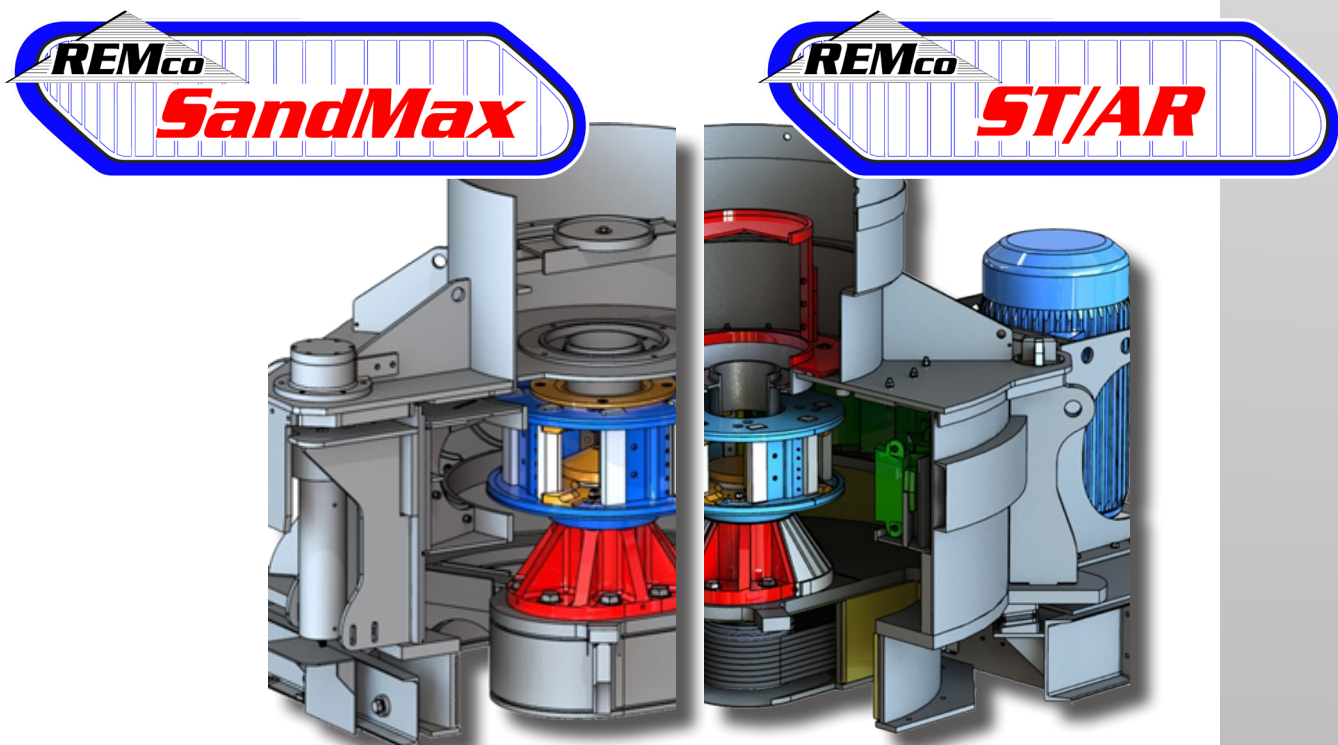
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The rock never wins, you do!



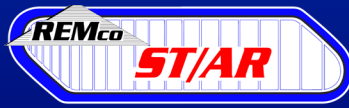
**Figure 3:** On the left is a rendering of the SandMax autogenous crushing chamber, while on the right is a rendering of a STAR semi-autogenous crushing chamber with hardened rotor.

# Just Crushin' it since 1983



REMco **SandMax**, **RockMax**, and **ST/AR** VSI crushers are recognized around the world for their production of fine aggregate and sand to meet customer expectations for specification, finished TPH, and operating cost. Guaranteed!

- C33 Concrete Sand
- Specialty Sand Products
- Cubical particle shape
- High fracture face count
- Increased finished product durability
- Balanced plant production



## GO PRO AND GET IT DONE

Size reduction and separation equipment designed for years of reliable service in aggressive aggregate environments. Primary jaw crushers, secondary and tertiary cone crushers, vibrating feeders and screens, REMco's PROline can solve your processing and budget challenges at the same time.

- Fixed installation
- Optional modular skid mount
- Optional portable mount



***Backed by 5 year manufacturer warranty!***



**Rock Engineered Machinery Co. Inc.**

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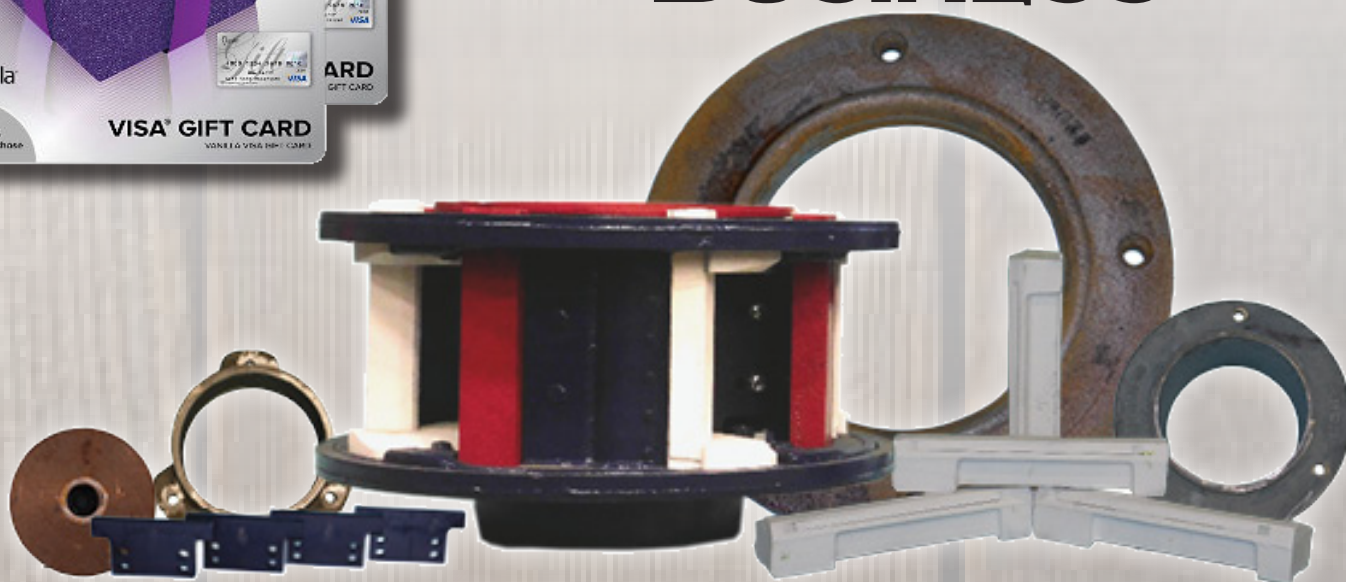
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# GIVING

# Thanks

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***REMco would like to extend its appreciation for your continued support this year. Receive \$150 gift card for REMco rotor wear part orders of \$4,500 or more placed during 11/01/18 - 11/21/18. Plus, everyday, enjoy our free \*freight program for rotor wear part orders over \$8,000.***

***Contact your REMco Team member and place your order today!  
Call Toll Free (800) 782-2411 with promocode #giftcard***

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# TECH TALK

## SERVICE AND MAINTENANCE TIPS FOR REMco CRUSHER OPERATORS

### More to Crusher Inspections than just the Rotor

It is recommended that all REMco VSI crushers be visually inspected on a daily basis. It takes only a few minutes and can be very beneficial in preventing operating problems and unnecessary downtime due to preventable failures.

While most operators are quick to inspect their rotor parts for wear they often ignore other areas of the crusher that require inspection and attention from time to time. For the purpose of this Tech Tip, we will discuss three often overlooked but critical components of a REMco crusher that should be inspected regularly.

#### The Feed Tube

Figure 1 shows *customer A* is an example of an operator that ran their machine for 18 months without inspecting the feed tube. They contacted REMco when a maintenance attendee noticed a hole in the floor of their feed hopper. It was after they were instructed to inspect the bottom of the hopper lid that they notice that the feed tube was completely gone allowing the material to reach the hopper lid causing the wear issue. Some of the reasons for feed tube breakage:

- Low feed rate of large rocks
- Improperly positioned feed tube inserted too deep into the rotor
- Not centered feed tube coming in contact with the rotor body
- Excess build up between feed tube and feed eye of the rotor from the dirty or sticky feed

During normal operation, the feed tube wears vertically. This vertical wear must be checked to prevent the feed tube from wearing to the point that rock feed can travel over the top of the rotor. If this occurs, wear of the top of the rotor will be excessive, and damage to the chamber, lid, and rotor will occur.

Feed tube breakage is an indication of feed or operating conditions which need to be modified to ensure proper crusher performance. If this condition exists, contact REMco for guidance.



**Figure 1:** Customer A noticed a hole in the top of their hopper lid (left), and discovered the feed tube completely worn through, and a hole on the bottom of the hopper lid (top).

- Feed tube will fail when it becomes thin due to normal wear and not being replaced
- Oversized feed too large for the crusher

#### The Bearing Cartridge

*Customer B* contacted REMco after noticing an abnormal vibration of their crusher on a particular day. The customer contacted REMco's Technical Service Manager, Mr. Jim Trinkle for advice. After talking to Jim, the customer investigated a series of probable causes to discover the top seal plate of their bearing cartridge was worn away allowing the material to penetrate the bearing cartridge wearing the seal and bearings, which caused excessive vibration of the VSI unit.

Figure 2 shows that the rotor skirt that protects the top seal plate when the crusher is in operation had completely worn

out which allowed material to attack the top seal plate. See ROC'N Tech tip from our June 2017 issue regarding worn rotor skirts. Without the rotor skirt to protect the bearing cartridge top seal plate, the material can damage and penetrate the top seal plate of the bearing cartridge.



**Figure 2:** Customer B has worn through the rotor skirt causing material to enter into the bearing cartridge.

Not only should the rotor wear parts be inspected, but the rotor overall should be examined after or before every shift. The damage seen in Figure 2 does not happen overnight. Inspection of the bottom of the rotor is just as important as the top and the middle.

When inspecting the top and bottom of the rotor, look for excessive streaming/racing behind tips, wall plates, and bolts. Streaming/racing will be shown by excessive wear on the face of the tip or the wall plates. If the material is streaming/racing on top of the rotor, it is usually an indicator that your feed tube is wearing above rotor feed eye or not positioned deep enough into the rotor. If racing is on the bottom of the rotor, that is a normal indicator of material build-up on the tunnel belt section. If this situation is present in your current crusher, contact REMco for guidance.

### The Chamber Liner

All REMco crushers are field convertible to meet any of three basic model requirements, autogenous, semi-autogenous, and hard-parts. These crushing chambers are the protective armor of the crusher body and available for coarse, medium and fine applications.

In an autogenous application, the crushing chamber normally does not experience any significant wear

when the crusher is fed material at full load amps continuously. With the crusher properly fed it can last the thousands of hours with no replacements required. Nevertheless, routine inspection is ideal and helps when determining the difference between typical wear versus unusual wear.



**Figure 3:** Customer C who ran his REMco unit empty that resulted in exposure and erosion of the rock shelf.

Figure 3 shows customer C who ran his REMco unit empty for an extended period. The air in the chamber created a sweeping motion that exposed the chamber structure. When normal feed was reintroduced to the crusher, rock was allowed to build up in the chamber, and excessive erosion on the gusset protectors occurred. This same circumstance also occurs when a VSI is operated in an extremely low feed condition called “dribble feed” where the load to the crusher is so low proper chamber build up cannot be achieved.

With any routine inspection, make sure that the chamber liner lid seals the crushing chamber. Inspect the outer edges, bolts and gusset protectors. If any wear is visible, it might be an indication that it needs to be replaced. The chamber lid is suspended by bolts from the hopper lid and is meant to protect the hopper lid.

With routine inspection, small wear issues can be addressed before big problems occur costing money and downtime. For any questions or issues that may be present in your REMco VSI, contact our Technical Service Manager for guidance.

Additional helpful information about how to keep your REMco VSI in top performance shape is available in Tech Talk section of every issue of ROC'N, REMco's newsletter designed exclusively for REMco operators.

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# UPCOMING EVENTS



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**VISIT OUR  
BOOTH N229**



Join us on **January 22 - 25, 2019** as REMco will be exhibiting at World of Concrete 2019 in fabulous Las Vegas, Nevada.

Visit our booth #N229 located in the North Hall to see REMco's newest VSI unit. This no-nonsense crusher is built for the tough aggregate job that lesser machines can't do without breaking the budget. REMco VSI crushers manufacture all types of sands; concrete sand with the right F.M., asphalt sand with the right grading, durability and volume, blast sands, and much, much more.

Hope to see you there and don't forget to enter to win our daily prize.

***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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