

JOEST US – Your partner for foundry industry

Categories: Foundry & Steel Industry

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JOEST US Adapts to Bell Foundry's Shake Out Needs

When Bell Foundry in California (www.bfco.com) began their recent modernization they were looking for a partner who could satisfy their technical requirements for a new shake out. They also wanted a partner that could build a high quality solution since the shake out will be at the heart of their process. Since this was a retrofit of a very old machine, it meant that the new shake out had to fit in the exact same footprint as the old one. Because of the age, drawings of the existing machine, structural supports and foundations were questionable.

The primary challenge was that the existing machine used overhead mounted, water-cooled exciters. This is an extremely high temperature location above the hot castings and sand. The old drives were problematic because the cooling was not sufficient and running the water itself over the shake out reduced the water's cooling capacity. In addition, the maintenance of the oil in the exciters was an additional issue Bell wanted to avoid. Due to space constraints, the new shakeout machine still had to be designed with overhead mounted drives. So how to solve these seemingly conflicting requirements?

Since JOEST has been manufacturing its own drives for almost 100 years, we have the knowledge, experience and flexibility to optimize the drive selection for any application. As a custom equipment manufacturer we can adapt our designs to meeting the customer's ideal needs. Combining these two abilities, JOEST decided to build the shakeout machine with overhead drives, but use oil-free, unbalanced motors instead of exciters.

Using unbalanced motors satisfied the customer's needs but required JOEST US to design and build the largest unbalanced motor-driven shake out. But not having been done before doesn't mean it can't be done. JOEST has proven time and time again to safely and reliably elevate the bar to meet the customer's and market's increasing demands such as when JOEST US designed and manufactured one of the largest mining screens in North America.

"When we first saw the application we could clearly see the struggles Bell was having keeping this under-performing piece of existing equipment held together and operating" explained Steve Rowland, P.E., General Manager of JOEST US. "Our foundry engineering experts from all over the world formed a team that was able to work closely together with JOEST US to confirm the engineering and performance calculations, as well as validate the final shake out design."

Since this design was new, a Finite Element Analyses (FEA) needed to be done using JOEST's existing software and in-house analysis tools. This in-depth review is performed by JOEST on all vibratory equipment that approaches the limits of the company's existing design standards and whenever a new design threshold needs to be developed. These tools along with personal expertise of in-house industry experts allows JOEST to raise performance levels, create new industry standards and help set JOEST apart from the competition.

An additional challenge was making sure the shake out fit the existing space while still providing increased performance. This meant that JOEST couldn't just build a bigger shake out. It meant that we had to closely analyze every characteristic of the castings, sand and shake out looking for multiple areas of improvement that would add up to a large overall increase in performance.

The fact that increasing the size of unbalanced motor driven shake out offerings was a significant step increase in JOEST's capabilities and provides the market place with a new and innovative solution stole the headlines. However, the incremental improvements were also important for the shake out to still fit in the space proved while increasing performance. This showed that small improvements are equally important. Thanks to excellent on-site dimensional analysis, tight manufacturing tolerances and solid engineering, the shake out was dropped right in place and performed to the customer's expectations right away.



Tags: JOEST,JOESTgroup,JOEST US,Bell Foundry,FEA,Shake Out,Finite Element Analyses,Vibratory Equipment