

ZA-12 ZINC COMPRESSOR BEARING EQUALS BRONZE AT LOWER COST

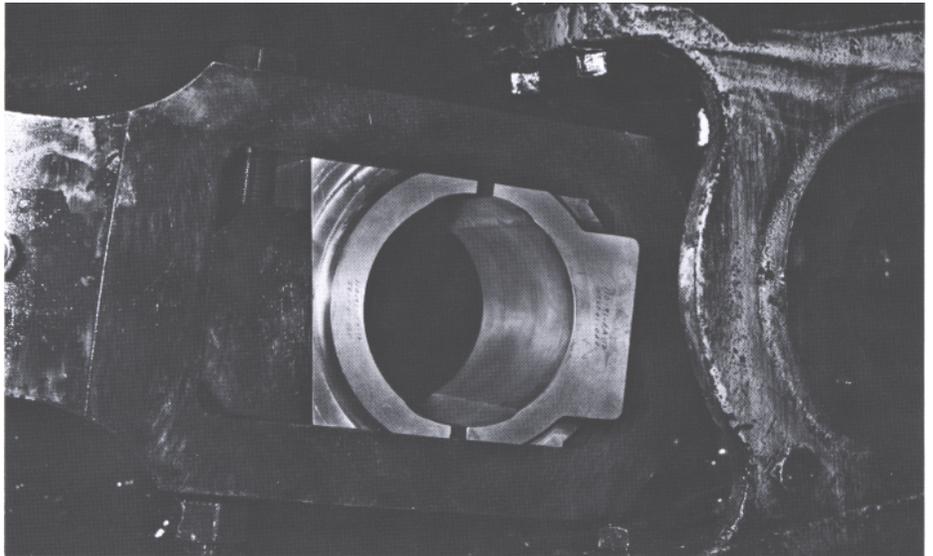
When a critical SAE 660 Bronze cross head pin bearing failed and shut down a main air compressor for an underground mine, you can bet the maintenance department worked overtime to correct the problem. But what do you do if a replacement bearing isn't available for twenty weeks? That's what happened to The Bunker Hill Company, Kellog, Idaho. They solved the problem by casting a zinc bearing and had the compressor back in operation within several days. The zinc alloy they selected was ZA-12, a new, low-cost, sand casting alloy which offers excellent bearing performance and high strengths.

The bearing shape was cast by Bunker Hill's maintenance department and rushed to the compressor manufacturer for machining and returned for immediate installation. That was nine months ago and except for routine maintenance the compressor has been running round-the-clock, seven days a week ever since. An inspection after 4,000 hours continuous service revealed no measurable wear whatsoever. The zinc bearing proved to be more than a temporary solution.

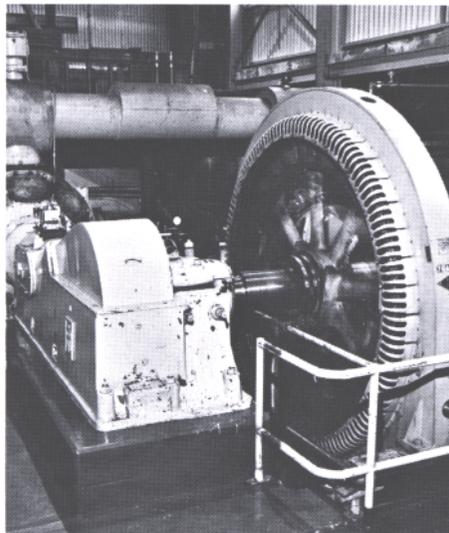
Ken Peterson, Manager, Technical Service for Bunker Hill advised, "We didn't know what to expect from zinc. We knew ZA-12 had good bearing properties but it had never been used in a demanding application like a compressor before." The compressor was a big one, Ingersoll-Rand's 4500 cfm, Model PRE-2 which provided 100 psi compressed air for underground mine equipment. The split crankshaft bearing weighed over 22 lbs. in ZA-12 and operates at 120°F under flood lubrication and bearing loads of 5100 psi. A 5-inch diameter polished 4140 chrome-moly steel pin rides in the bearing and connects to a giant 23-inch diameter compressor piston. The crankshaft is driven at 168 RPM by an 800 horsepower electric motor.

"Our maintenance department is convinced that the zinc bearing is equal to the bronze," said Peterson, "but we still don't know how long the zinc bearing will last. We do know that zinc can be applied for other mine bearings. In fact we instituted programs to eliminate bronze underground locomotive journal bearings, crusher bearings and equipment sleeve bearings. Zinc appears to work as well as bronze for these applications."

The reason for the enthusiastic switch to zinc is one of economics as well as performance. The zinc alloys are much lower in cost than bronze alloys. Bunker Hill realized a 30% cost savings on the ZA-12 compressor bearing and similar savings on their other components.



22 lb. ZA-12 zinc split bearing shown installed in air compressor crankshaft. A 5-inch diameter steel pin rides in the bearing and connects to a giant 23-inch diameter compressor piston. The crankshaft assembly and piston is driven at 168 RPM by an 800 H.P. motor. There was no measurable wear on the zinc bearings after 4,000 hrs. of continuous round the clock service and the zinc part has been running for over 9 months.



12 zinc bearings replaced bronze crankshaft bearings in this large 800 H.P. underground mine air compressor. Zinc bearings solved a twenty-week delivery problem for bronze and provided a 30% cost savings.

This story is just one of many where ZA-12 has equaled bronze. Recent bearings research has shown zinc alloy bearings provide lower coefficient of friction, higher bearing load capabilities and greater wear resistance than traditional bronze bearings. (Report available on request.) In many applications zinc has outperformed bronze and always at lower cost. **If you want to learn more about Eastern Alloys' new family of ZA casting alloys for bearings, just give us a call. We're the technical experts on zinc alloys and can assist your product evaluations. Also ask about our other ZA Alloys (ZA-8 and ZA-27) which are being applied as high-strength sand castings, die castings and graphite permanent-mold castings. Just call or write Derek Cocks for our full complement of ZA technical brochures.**



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