TRANSPORTATION

CASE STUDY

GAMMA RADIATION TESTS OF BRAKE DISKS FOR THE RAIL INDUSTRY IN FRANCE

SGS Industrial Services carries out the Gamma Radiation Testing of brake disks for IBRE, the designer and producer of braking disks for the rail industry in France.

WORKING FOR LEADING TECHNOLOGY PROVIDERS

IBRE was established in 2005 on the heritage of Pont-à-Mousson / Renk / SEE, the developers of the smart technology of cast iron friction rings molded on (elastic) steel inserts. Today, IBRE develops and produces disk brakes and callipering systems in cast iron or steel, serving the rail industry, private networks and Original Equipment Manufacturers (OEMs) in France and the rest of the world.

IBRE produces its brake disks by using gravity cast technique (sand cast and silica binder comprised of two half-dies). The gravity cast technique is a manufacturing process wherein molten material, such as metal, is poured into a mold which contains a hollow cavity of the desired item. As opposed to injection techniques, the only pressure that makes the molten material fill the mold is its own weight. The material then hardens within the mold, and the solidified part or cast, is ejected or broken out to make a rough disk. Casting is used for making parts that have complex shapes and are difficult or uneconomical to make by other methods, such as cutting from solid material. The casting process is subdivided into two main categories: expendable and non-expendable casting (for plastic only). It can be further classified by mold material, such as sand or metal, and pouring method, such as gravity, vacuum, or low pressure.

TOTAL CLIENT SATISFACTION FOR MORE THAN 20 YEARS

SGS Industrial Services has been in charge of brake disk testing for IBRE since 1988, carrying out Gamma Radiation Testing with Cobalt-60 for brake disks in accordance with European technical standards and reference images ASTM E446 and E186. Cobalt-60 is a radioactive isotope of cobalt and is used in the industry to take images of welding seams and other structural elements for the detection of defects. SGS uses gamma rays as the casts are very large and weigh about 150 kilos each.

After the production of a series of around 20 - 30 casts, 2 - 3 pieces are sent to SGS Industrial Services in order to be tested for defects. These samples are exposed to gamma rays for 1.5 to 3 hours - depending on cobalt source - for radiography Subsequently, SGS experts analyse and interpret the resulting images, and if they find any defects, extra samples may be tested to confirm the previous results. Depending on the new results, IBRE may decide to scrap the entire series of casts. The usual kinds of defects are sand inclusions, shrinkage cavities and blowholes. If no defects are found by SGS, IBRE can continue with the brake disk operation process.

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QUICK AND RELIABLE TESTING AND INTERPRETATION ARE CRUCIAL IN THE SUPPLY CHAIN

As the production of brake disks is on hold during the inspection period, it is very important that the SGS experts work very quickly. SGS radiation control is on the critical path of IBRE's supply chain which is why it is essential that operations be processed without delay, and that experts are able to interpret the results quickly and reliably. Normally, the overall control process by SGS takes around 2 to 3.5 hours.

SGS not only identifies cast defects, but also allows deducing their causes. The usual causes for the defects are: degassing issues, inappropriate temperature or incorrect speed of the flow. For IBRE, it is very important and helpful to pinpoint and understand what went wrong in the production process in order to fix the errors and prevent further problems.
Working for more than 20 years for this customer shows that the company is very pleased with the work of SGS. Due to SGS's quick and reliable work, IBRE is able to maintain production quality. The support that SGS provides is particularly important in phases of change or process setting, where it can save days of production capacity.

SGS provides a fully integrated service pack for its clients, combining Non-Destructive Testing Services, Inspection and Asset Integrity Management through its worldwide NDT network in over 30 countries. The scope of SGS covers both conventional and advanced NDT methods, provided by qualified inspectors to international standards around the world.

SGS IS THE GLOBAL LEADER AND INNOVATOR IN INSPECTION, VERIFICATION, TESTING AND CERTIFICATION SERVICES. FOUNDED IN 1878, SGS IS RECOGNIZED AS THE GLOBAL BENCHMARK IN QUALITY AND INTEGRITY. WITH OVER 59,000 EMPLOYEES, SGS OPERATES A NETWORK OF OVER 1,000 OFFICES AND LABORATORIES AROUND THE WORLD.

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