The Dangers of Cracked Screws

Chinese Company Investigates Cracking Behavior

Cracked screws are a frequent cause of customer complaints. The Chinese manufacturer EJS has identified the source of the problem.

According to EJS cracks can occur on the screws, especially with large screw diameters © EJS

As a screw manufacturer, E.J.S Industry Co., LTD, Ningbo, China (EJS), often receives complaints like this: "We have received your screws. Are you sure your people have carried out an inspection? Look at this crack, I think anyone can see that it is damaged. How can we install such a screw on our machine? How fast can you ship us a replacement? We need one immediately. Please let me know."

Mistakes in Production?

When the first 125 hard-faced screws were ready for inspection, the employees at EJS noticed that there were cracks. How could that happen? Was it caused by poor temperature control, inferior bimetallic alloy powder, poor quality base steel, or process management? To find out why, the company scheduled a number of tests, and applied numerous labels to the product for later identification. After an extensive process of trial and error, EJS at last identified the cause of the cracks and their relationship.

Hard-faced screws are normally processed by a PTA welding machine. The energetic plasma arc generates temperatures of over 1000 °C to fuse the alloy powder and weld in the flights one by one

During production, large temperature differences sometimes occur, which are one reason for crack formation © EJS

until the screw is complete. This process inevitably results in repeated thermal expansion and contraction due to the big difference between the temperature of 1000 °C and the ambient temperature (5 to 40 °C).

Nothing to Worry about

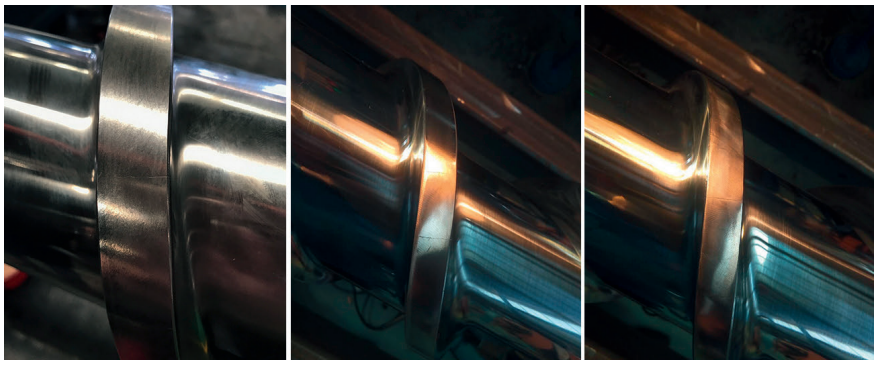
Since 2015, EJS has used a special furnace to maintain the hard-faced screws at high temperature for several hours after PTA welding, which helps it to reduce the numbers of cracks. Unfortunately some cracks still remain. Is there any way to get rid of them?

As a quality-oriented company, EJS has tried everything to avoid cracks. However, it is not possible to completely exclude the possibility of cracks forming. The company has consulted senior engineers, checked with experts, analyzed together with experienced production managers and sought advice from long-term customers in different countries. In the end, the Chinese company accepted the fact that cracks are inevitable for some alloys on big sizes, because no cracks means soft flights. There are some alloys for which micro cracks cannot be avoided. They have always been present. Moreover EJS has found that

- severe cracking is acceptable if the flights remain intact;
- long cracks are acceptable if the flights remain intact;
- wide cracks are acceptable if the flights remain intact;
- it is acceptable if the cracks are regular in one direction;
- however, it is unacceptable if the cracks cause peel-off of the facing.

Using these simple questions, customers can check whether their screws are okay or not. In case of doubt, the experienced EJS staff will be happy to help. (*ed.*) ■

According to the company, the cracks are not production defects © EJS



EJS has investigated the cracks in various comprehensive analyses. The result: the cracks are very small and do not reduce the quality and durability of the screws © EJS

Contact

E.J.S Industry Co., Ltd, Ningbo, China, is specialized in producing, repair and rebuilding screws, barrels and components for plastic product manufacturers, rubber product manufacturers, extruder and injection molding producer. With 25 years experience they are aim to supply screws barrels with more wear resistance and corrosion resistance.

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