SHIMADZU

Application News

Industrial X-Ray Inspection System No.N111

Internal Observation of Button-Shaped Batteries and LED Lights

Electrical household appliances around us are continuously being improved, as typified by the trend towards energy savings. This, in turn, has lead to the need for greater downsizing and more advanced functions in the components used in these appliances with each passing year.
Even though components are small, they still need to be accurately inspected to ensure their quality. Industrial X-ray inspection systems (fluoroscopy and CT) capable of observing the inside of components in detail in a non-destructive manner for this very purpose are being put to use as very effective means.
In this news report, we introduce an example of observation performed on button-shaped batteries and LED (light-emitting diode) lights using the microfocus X-ray inspection/CT system (SMX-100CT-SV3, Fig. 1) as a means of simulating inspection of general-purpose small components.

Fig. 1 Overview of X-Ray CT System SMX-100CT-SV3

■ Observation Results

1) Observation of button-shaped batteries

Fig. 2 shows a fluoroscopic image taken from the top, and Fig. 3 shows vertical/horizontal cross-sections (MPR image: Multi Planner Reconstruction) taken by CT imaging.
With the fluoroscopic image, internal details are unclear. With the MPR image, however, the positive electrode (lower side of vertical cross-section), cracking of the electrolyte, case sealing (caulked section), and other parts can be clearly seen.

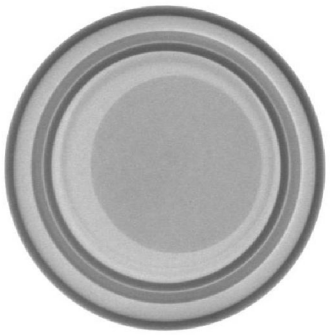

Fig. 2 Example of Fluoroscopic Image of Button-Shaped Battery

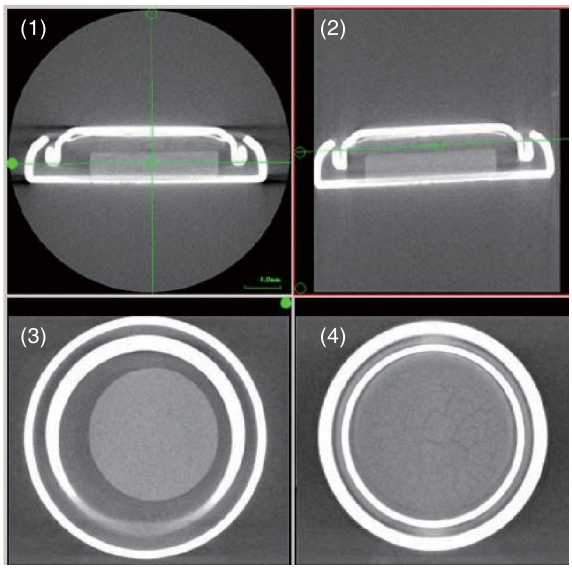

Fig. 3 Example of CT Image of Button-Shaped Battery

((2) shows a cross-section of the line indicated by ○ of (1), (3) shows a cross-section of the line indicated by ● of (1), and (4) shows a cross-section of the line indicated by ○ of (2).)

2) Observation of LED light

Fig. 4 shows a fluoroscopic image of the electrode bonding section seen from the side, and Fig. 5 shows its vertical/horizontal cross-sections (MPR image: Multi Planner Reconstruction) taken by CT imaging. Fig. 6 shows a 3D image reconstruction made using the CT imaging data.
With the MPR image and 3D image, the state of the electrode bonding section can be observed in detail.

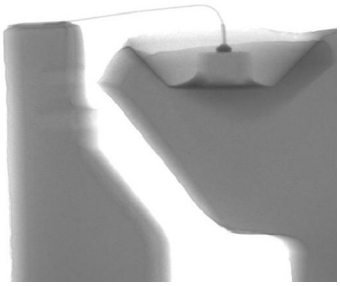

Fig. 4 Example of Fluoroscopic Image of LED Light

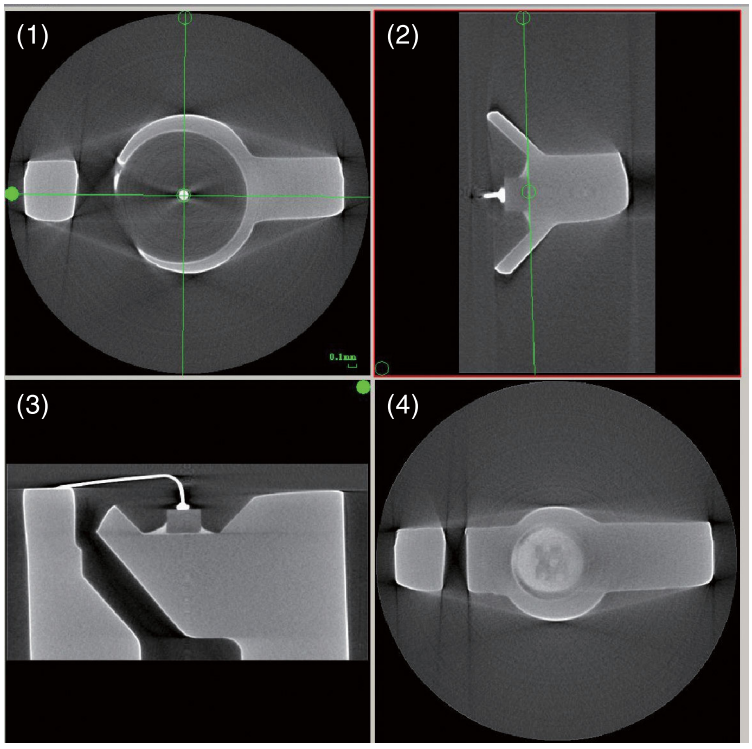

Fig. 5 Example of CT Image of LED Light

((2) shows a cross-section of the line indicated by ○ of (1), (3) shows a cross-section of the line indicated by ● of (1), and (4) shows a cross-section of the line indicated by ○ of (2).)

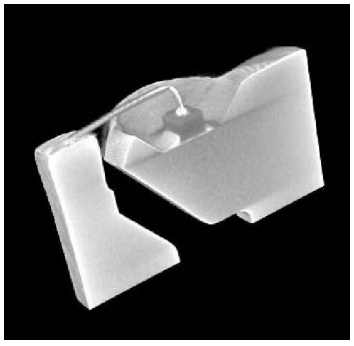

Fig. 6 Example of 3D Image of LED Light

NOTES:
✻This Application News has been produced and edited using information that was available when the data was acquired for each article. This Application News is subject to revision without prior notice.

SHIMADZU

SHIMADZU CORPORATION. International Marketing Division
3. Kanda-Nishikicho 1-chome, Chiyoda-ku, Tokyo 101-8448, Japan Phone: 81(3)3219-5641 Fax. 81(3)3219-5710
Cable Add.:SHIMADZU TOKYO

Printed in Japan 3295-09905-10A-IK

Related Solutions

- Price Inquiry
- Product Inquiry
- Technical Service / Support Inquiry
- Other Inquiry