

# Application News

Industrial X-Ray Inspection System

No.N113

## Internal Observation of Fluorescent Lamps and Automotive Light Valves

Energy saving now is a globally important issue, and a big target in development is to improve the efficiency of electrical equipment.

In this news report, we look at "lighting" as one of these target fields, and introduce an example of X-ray observation (fluoroscopy and CT) as a non-destructive observation means generally applied to product inspection and analysis of defects for "fluorescent lamps" and "automotive light valves" as products typical of this field.

The microfocus X-ray inspection/CT system (inspeXio SMX-225CT, Fig. 1) was used as the means of observation.



Fig. 1 Overview of X-Ray CT System inspeXio SMX-225CT

### ■ Observation Results

#### 1) Observation of fluorescent lamp

Fig. 2 shows a full fluoroscopic view of a fluorescent lamp, and Fig. 3 shows a 3D CT image of the fluorescent lamp filament taken by CT imaging.

With the fluoroscopic image, it is difficult to observe details since parts are overlapping. With the CT image, however, it can be seen that the observation target can be extracted and enlarged.

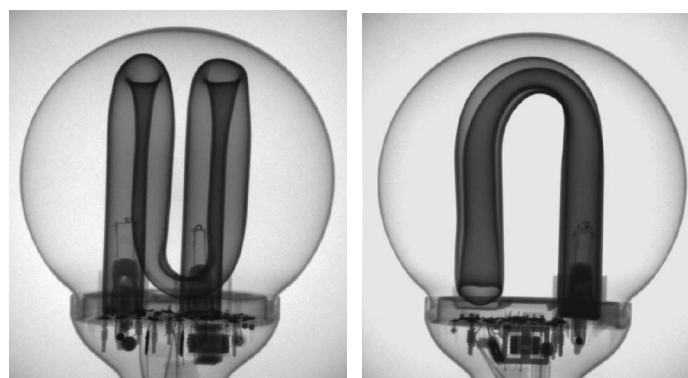


Fig. 2 Example of Fluoroscopic Images of Fluorescent Lamp

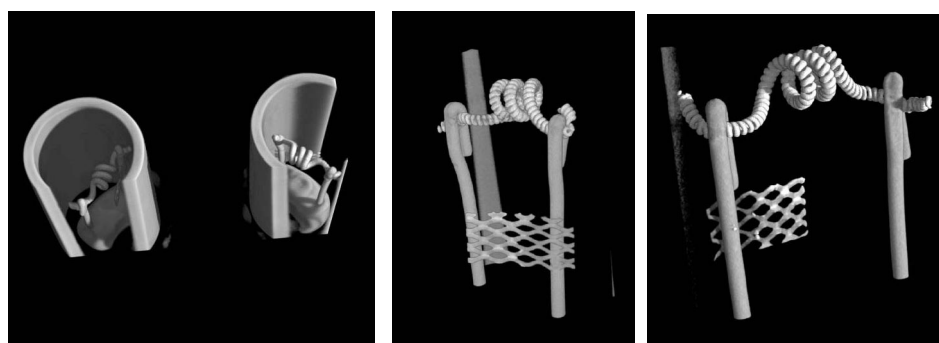


Fig. 3 Example of CT Images of Fluorescent Lamp

## 2) Observation of automotive valve

Next, Fig. 4 shows a comparison of a non-defective and a defective light valve used as the light source for automobile headlights and examples of fluoroscopic

observation taken of each. On the defective light valve it can be seen that part of the filament is missing, making it shorter.

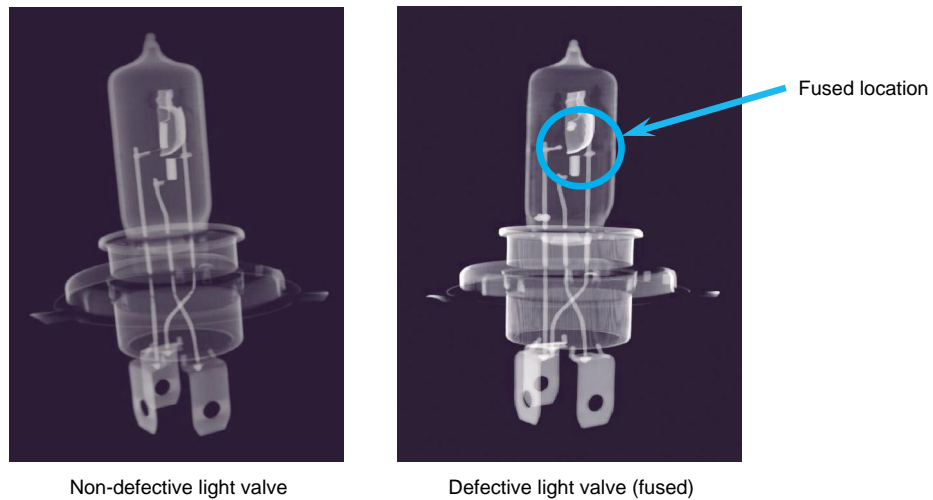


Fig. 4 Example of Fluoroscopic Images of Automotive Light Valve

Fig. 5 (left) shows the enlarged CT image taken for observing the fused location in detail. A fragment has fallen down to the light valve base due to its fusing. In the same figure on the right, it can be clearly seen in

the fluoroscopic image obtained by further enlarging the fused location that the filament has melted, resulting in an apparent void.

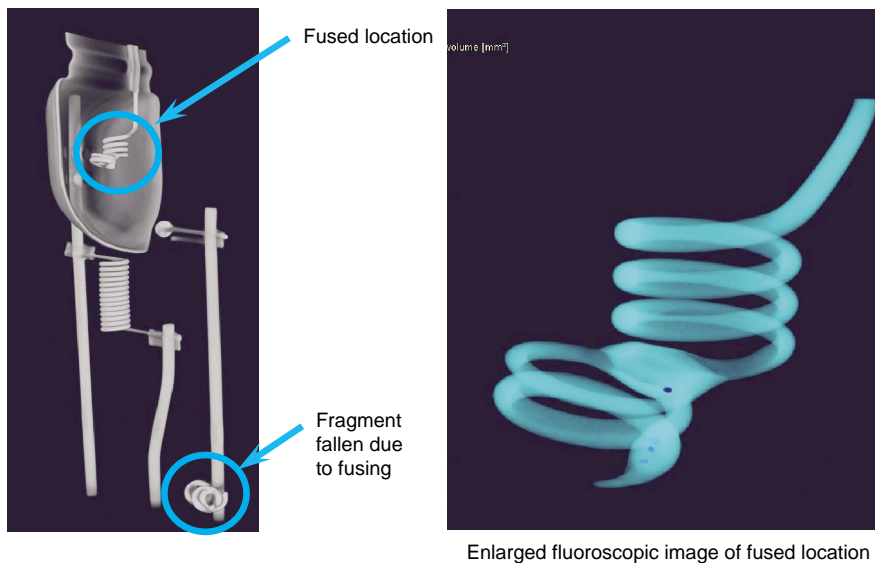


Fig. 5 Example of CT Images of Automotive Light Valve

### 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 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