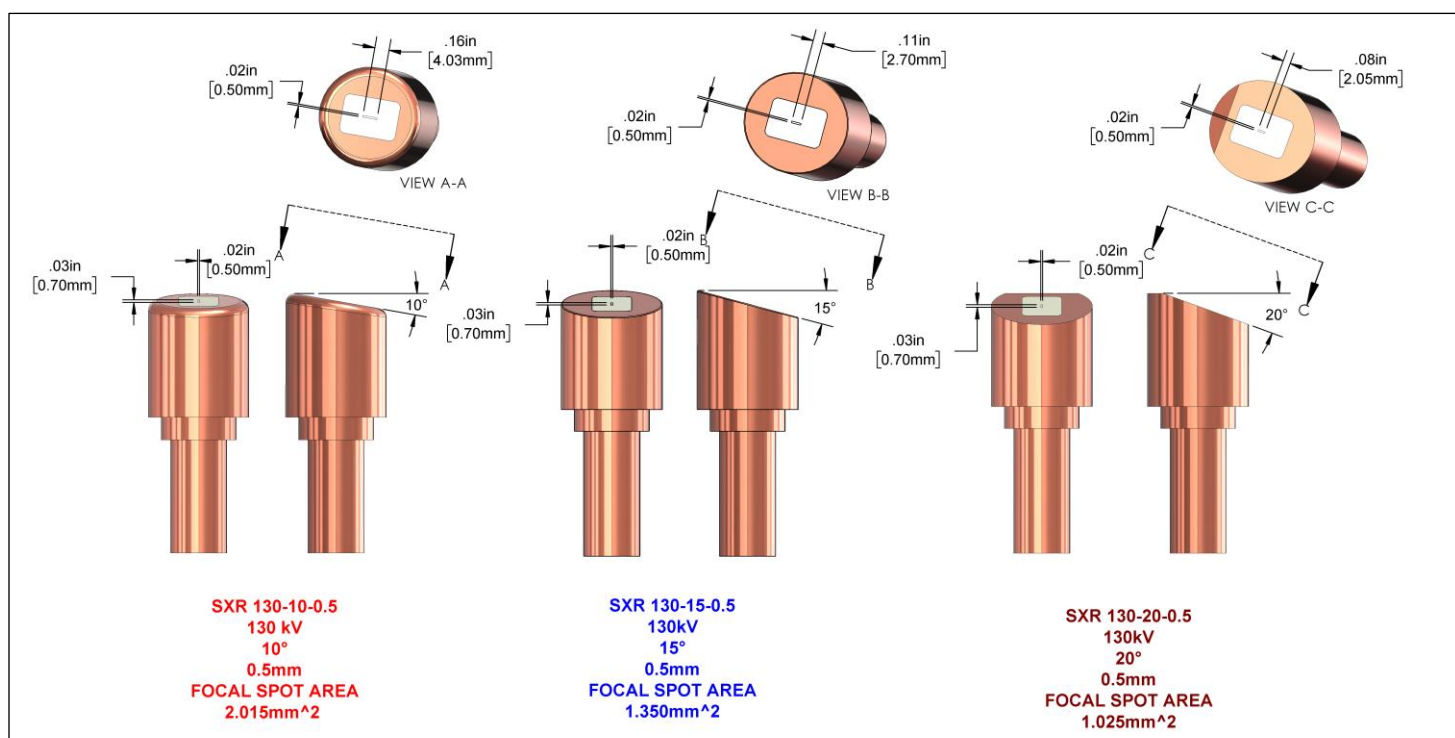


Three tubes with the same projected focal spot

Superior X-Ray Tube makes many different sizes of stationary x-ray tubes ranging from 35 kV to 160 kV. Many have the same focal spot size yet different. How can this be? This white paper will disclose the differences and give a brief description of the affects due to the differences.

I am going to focus of one basic tube type but, the same general information can be applied to others. For this paper, I am going to work with a series of tubes with the same projected focal spot, nearly the same anode geometry but each one has a different target angle.

- SXR 130-10-0.5 FM 1075
- SXR 130-15-0.5 FM 1065
- SXR 130-20-0.5 FM 1058



The three anodes above, all come from tubes rated to 130kV, with projected focal spots of 0.5mm. Due to the foreshortening effect of the different target angles, each project the same spot size but the area of the focal spot, on the face of the target, is different. The more area on the face of the target the higher the loading can.

Tube targets melt when the power per unit area on the face of the target exceeds the Max Single Exposure Rating. The engineers at Superior have calculated the Max Single Exposure Rating using FEA thermal analysis. As long as the guidelines set forth in the tube data sheets are followed and not exceeded, the tube target will not get damaged.

With all other parameters being equal, when comparing the 20° anode to the 15° anode. The 15° anode can handle 23% more power during a 1 second exposure. When comparing the 20° to the 10°, the 10° can handle 66% more power during a 1 second exposure.