



The unit pictured is a FluoroScan™ Imaging System, a high resolution, low radiation device for continuous real-time viewing of stationary or moving objects. Intended primarily for medical applications, it is produced under NASA license by HealthMate, Inc., Northbrook, Illinois.

The FluoroScan system is a second generation spinoff from NASA technology originally developed for use in x-ray astronomy, where imaging at extremely low x-ray intensity is required. The technology was subsequently applied—by Goddard Space Flight Center—to development of an isotopic, portable, minimal radiation x-ray instrument known as the Low Intensity X-ray Imaging Scope, designed principally for emergency medical use. One of several NASA licensees, HealthMate replaced the isotope penetrating source with a variable power x-ray tube and added a number of improvements while retaining the small size, light weight and maneuverability advantages of the original system.

Major components of the FluoroScan system include

an x-ray generator, an x-ray scintillator, a visible light image intensifier and a video display; in the photo, the cylindrical tube contains the detector, intensifier and video camera, while the x-ray housing, tube and power supply are in the “C-arm” from which the cylinder is suspended. X-rays from the generator cast a shadow of the object being examined—a bone, for example—on the scintillator, which converts the x-ray image to a visible light image. Intensified by the high gain light intensifier, the image can be viewed directly through the tube or on the closed circuit television (CCTV) monitor; use of CCTV allows images to be recorded and stored.

Easy mobility is provided by the wheel-and-caster base and by the primary arm/C-arm arrangement shown, allowing the examining physician to position the unit rather than position the patient. Moving the unit closer to the patient is not dangerous because radiation levels are far below those of conventional x-ray equipment, and such movement allows magnification of the image up to 4½ times with higher resolution. For all its capabilities, FluoroScan occupies only two square feet of

space and weighs about 20 pounds. It can be plugged into an electrical outlet or, in portable use, operated by power from a rechargeable battery.

In medical applications, FluoroScan has particular utility in examination of fractures, dislocations and foreign objects and in placement of catheters. In surgery, its continuous real-time imaging capability offers continual monitoring; for example, an orthopedic surgeon can set a fracture while viewing the insertion of pins. In attending newborns, especially those requiring intensive care, it offers the dual benefits of lower radiation for tiny patients and higher resolution of the area being viewed. In veterinary medicine, FluoroScan permits examining animals without sedation because it does not require a still patient to produce a quality image. ▲

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