

METHODS AND APPARATUS FOR MEASURING FLOW OPENING AREAS

ABSTRACT

A method 400 and apparatus for measuring an opening 202 defined within object 38 using an optical sensor system 200 is provided. The method includes positioning 402 an illumination source 216 adjacent the opening, illuminating 404 a perimeter circumscribing the opening, sampling 406 an image of the illuminated boundary, and calculating 408 an area 213 within the received boundary. The system includes a light source 216 oriented to project a first sheet 220 of light intersected by a first portion 208 of the opening perimeter, the light source projecting a second sheet of light 222 intersected by a second portion 210 of the opening perimeter, a light detector 224 receiving a portion of the sheet of light intersected by the object opening perimeter and reflected toward the light detector 224, and an image processor 226 communicatively coupled to the light detector, the image processor 226 programmed to sample an image from the detector and programmed to determine the dimensions of the object opening from the sampled image.

Fig. 2