

## SIMAS – Robotic system for In-pipe Inspection

The **SIMAS** equipment provides internal inspections in tubular equipment and pipelines.

**SIMAS** is a modular system able to perform large types of NDT. The robotic system has the HD-SDI visual inspection module, hi-low module, and laser scanner module. The ultrasonic module is under development and will be ready soon.

As it is modular it can be mounted in different ways, according to the required specifications of the project.

This system has been used on different projects in Brazil, eg, P-55 – steel catenary risers and flowlines; Production and export system of the Sapinhoa norte and Cernambi sul fields in production and gas injection steel catenary lazy wave risers and gas export free standing hybrid risers; PLETs equipment of Iracema Sul project.

### SERVICES

- The SIMAS equipment provides internal inspections in tubular equipment and pipelines.
- In-pipe HD-DVI remote visual inspection;
- Inspection/measurement of weld root height penetration;
- Inspection/measurement of depth/length of grooves;
- Inspection/measurement of depth/length of visual discontinuities;
- Hi-Low measurement;
- UT inspection (in progress);
- Wall thickness inspection (in progress).



PTZ



UTM



ToFD

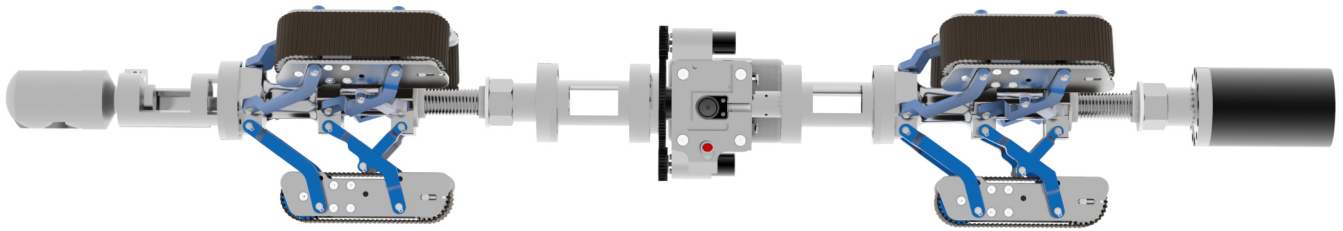


GEO



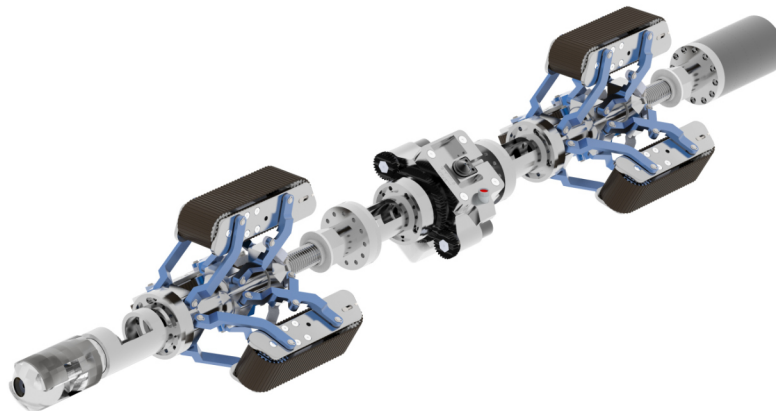
# In-pipe inspection robots

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## VISUAL SPECIFICATIONS

Manufacturer	INSFOR
Module Name	INS4-HDSDICAM
Image Sensor	1/3" Panasonic CMOS Sensor
Total Pixels	1956 (H) x 1266 (V)
Resolution	Digital: 1080p/60fps, 1080p/30fps, 720p/60fps, 720p/30fps, Analog: 700TVL
Min. Illumination	Color: 0.5 lux, BW: 0.1 lux, Color DSS: 0.125 lux, BW DSS: 0.025 lux
Video Output	HD: Digital (LVDS), EX-SDI HD-SDI, TVI 2.0, Analog SD: VBS (without WDR)
Zoom Ratio	Optical x10 Digital x32 Zoom
Focal Length	f = 5.1mm ~ 51mm
Aperture Ratio	F1.6 (wide) ~ F1.8 (tele)
Focus	Mode (Auto / One Push / Manual) Distance / Zoom Speed / Lens Refresh / E.Zoom
Exposure	Auto / Iris.P / Shut.P / Manual
Defog	Off / On(Auto / Manual)
Pan / Tilt	360° free / 210°
Digital Image Stabilizer	On / Off
Digital Noise Reduction	2D + 3D



## MEASUREMENT SPECIFICATIONS

Manufacturer	INSFOR
Module Name	INS4-MCL2
S/N	20141610
Image Sensor	Progressive scan RGB CMOS 1/4"
Resolution	1280x720 to 320x180
Frame rate	Up to 25/30 fps (50/60 Hz) in all resolutions
Light sensitivity	0.1-10000 lux
Lens	Fixed iris, Fixed focus 3.7 mm, F2.5 Horizontal angle of view: 57°
Video compression	H.264 (MPEG-4 Part 10/AVC), Motion JPEG
Pan	360° free
Lasers	1 linear unit
Interface	Ethernet
Uncertainty	±0.03mm