

ONLINE SUCRO CRYSTAL IMAGING SYSTEM



Online sucro crystal imaging system performs the automated measurement of crystal size distribution parameters in the massecuite using classical image analysis techniques. The measurement of the crystal size distribution is a key requirement in optimizing the growth of sugar crystal in crystallization pans or for the quality control of the final product.

Images are captured at different phases of the process using an automated sample collecting device which includes the Smart camera. A powerful, adaptive and automatically controlled LED light source backlights the crystals on a glass surface in front of a high-resolution digital camera with optical magnification.



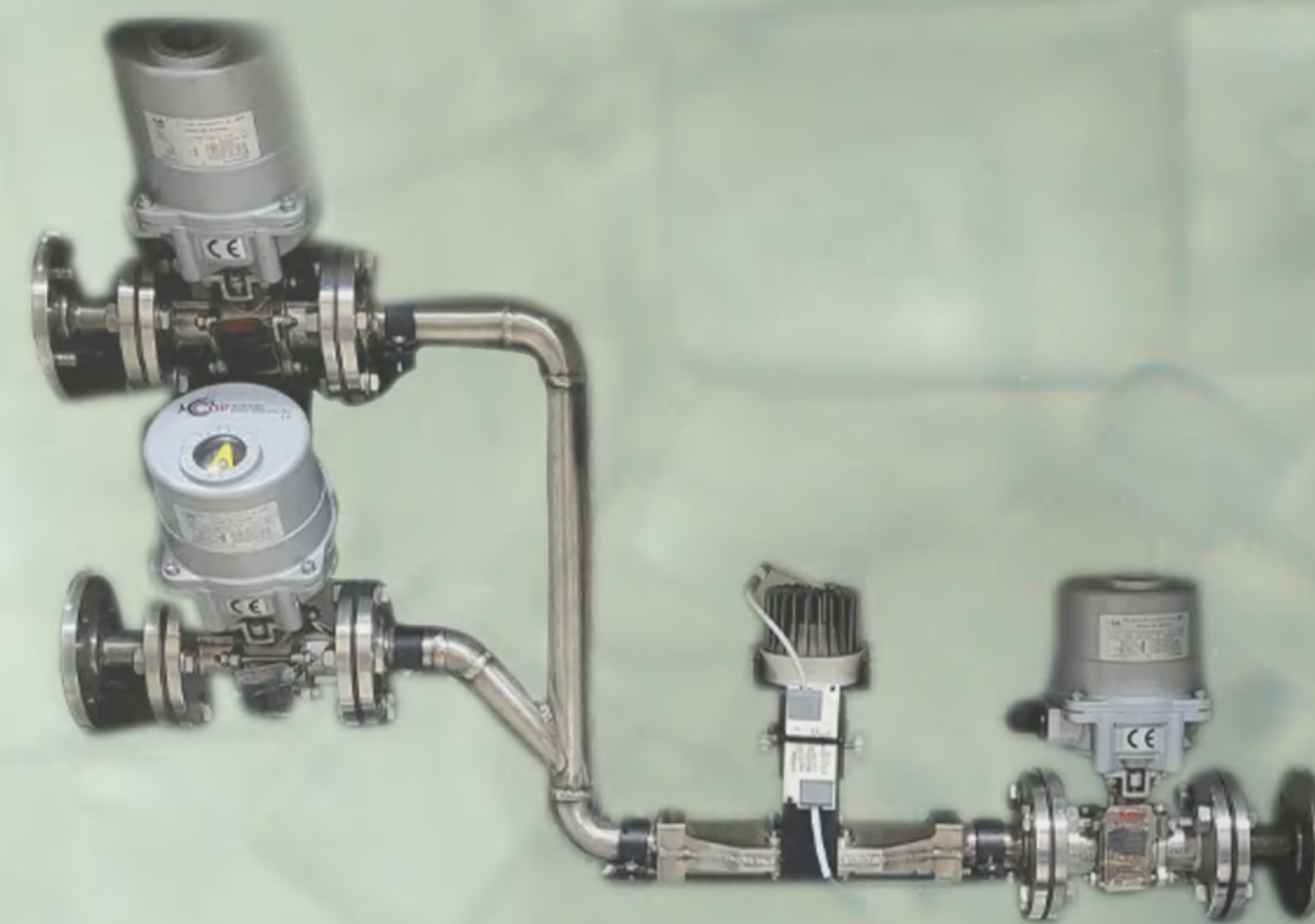
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CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING



Ministry of Electronics and Information Technology
Government of India

Advantages

- Direct mounting on the pan wall
- Simple design and rugged construction, suitable for the pan floor environment
- Crystals observed from 5-micron size and throughout the strike
- Processed Crystal Image showing on a TFT display
- Provides real time information essential to prevent the formation of agglomerates and false grains
- Local controlled automatic flushing valve for cleaning of viewing glass field



Product Specifications

Model/Series	OSIS01
Displayed parameters	
Crystal Image	Picture
Average Crystal Size	Numerical display in microns
Crystal Size distribution	Chart
Operation status	Labelled LED
Functions	
Operation mode	Auto Switch
Crystal Analysis	Computer Vision and Machine learning algorithm
Operating on UI	Touch panel
Smart Camera	
iVIS Smart	C-DAC
Sensor type	CMOS
Lens Module	
Lens mount	C-Mount
Pixel Size	0.5 μm
Type of lens	50mm F2.8 Manual Iris C-Mount Lens
Imaging	
Sampling Rate	5 FPS
Resolution	1920*1080
Focal Length	90 mm
Tool Suite	IVDT (for programming only)
Control Valves	
Electrical Actuator Operated 2 Way Ball Valve	
IVIS IO expander module	C-DAC
External interface	
Ethernet	TCP/UDP
IO Channels	2 Nos., Analog Output (4 – 20mA)
Display	TFT touch display, Analog indicator
External Features	
Unit Size (L x W x H)	42 x 88 x 100cm
Net Weight (kgs)	80
Degree of protection	IP-55
Case material	SS
Power supply voltage	230V AC
Current consumption	5A
Indicator lamps	Yes

Operating conditions

Temperature range	0 to 65°C
Pressure range	-1 to 1 bar
Humidity range	40 – 70% RH

Standard Design

- Body and mounting flange in stainless steel
- Smart camera with microscope optics
- Automatic steam valve for flushing of pipelines and sight glasses
- Welding flange for OSIS mounting on pan wall.

Benefit

- Side mounts onto the crystallizer vessel to provide realtime images of the sugar crystals during the process.
- Labelled processed crystal images
- Crystal growth rate chart
- Calculates MA, CV and percent of fines using continuous image processing techniques.
- Average Crystal size
- Measures crystal sizes from 5 μm , monitor the seeding phase and detect false grain
- Masecuite drop time indicator at tightening stage



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