

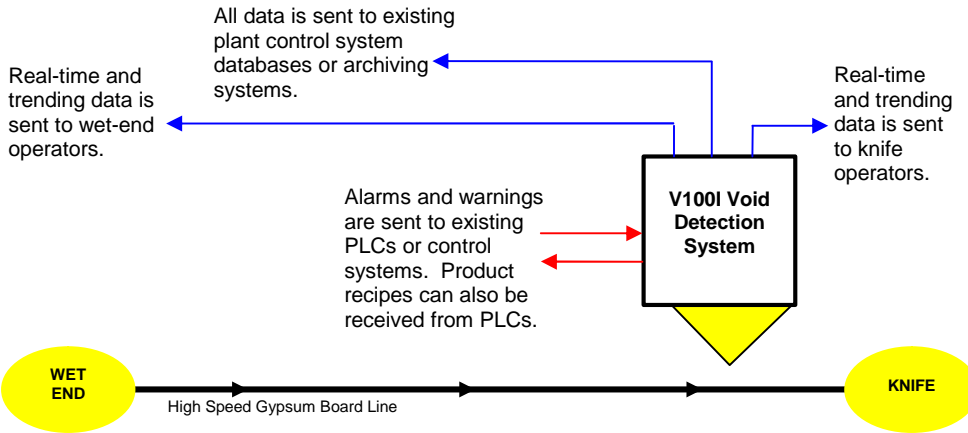
Void and Lump Detection for Gypsum Wallboard

Advanced Void and Lump Detection Systems for High Speed Gypsum Board Lines

Vision Engineering, Inc. proudly introduces a fully automatic non-destructive void detection and quantification system for gypsum wallboard. Utilizing state-of-the-art infrared cameras and high speed image processors, voids and lumps are automatically located, sized, and counted. These systems (patent pending) provide 100% inspection at rates up to 600 feet per minute.

Non-Destructive Void Detection System

VEI's Void and Lump Detection Systems provide previously unavailable, constant, real-time void data to operators at both ends of the production line.

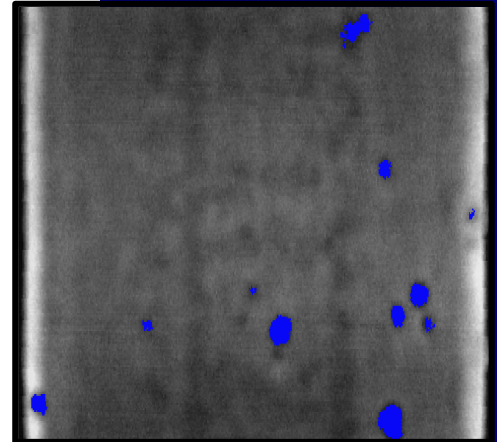


Gypsum Board Void Detection – Features and Benefits

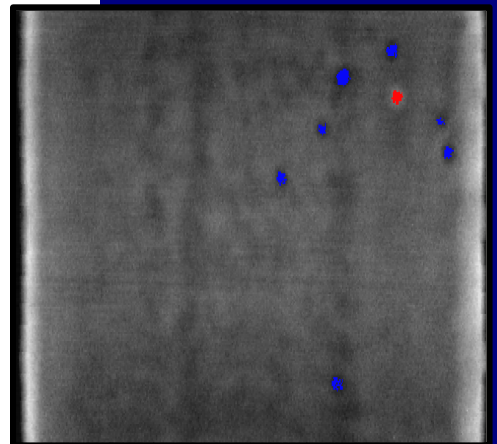
- **Lump and Hot Spot Detection** – VEI's systems can also optionally detect lumps and hot spots. Lump detection can help provide early warnings when the slurry is not being properly mixed.
- **Data Logging** – All data can be logged to text files, local databases or remote databases. Utilities are also available to provide user defined formatting and batch uploads.
- **Remote Administration** – System fully supports most available remote access software packages including modem, network, and internet based packages.

VEI Void Detection Systems

- ✓ Uses infrared technology to detect voids and lumps.
- ✓ Groups voids and lumps into three user defined categories.
- ✓ System counts voids and lumps in five user-defined zones.



Voids As Seen By Imaging Software.



Several Voids and a Single Lump.



Charting of voids per minute for the whole board and each of the five user-defined zones.

Real-Time 100% Inspection

Images are displayed real-time with all detected voids highlighted. The voids are classified according to size and location. Each minute, totals are calculated and added to an on-screen graph showing the frequency of voids over the last four hours. This data provides a visual reference for the operator to quickly determine recent and/or present board quality. This data also helps determine when adjustments are needed on the wet-end. Detecting voids sooner, and making adjustments when needed results in less wasted product and reduced chance of sending bad product out to the customer.

Last Inspection - Voids/Lumps Detected					
North Side		Center		South Side	
Voids		Voids		Voids	
Sml:	0	Sml:	0	Sml:	0
Med:	0	Med:	0	Med:	3
Lrg:	0	Lrg:	1	Lrg:	2
Lumps		Lumps		Lumps	
0		0		0	
North Side Taper				South Side Taper	
Voids				Voids	
Sml:	0			Sml:	0
Med:	0			Med:	0
Lrg:	0			Lrg:	0
Lumps				Lumps	
0				0	