

LGIInternational
Advancing the technology of labels

DDMRP/TOC at Lgi
Lane Kagey - COO

WHAT WILL WE TALK ABOUT TODAY?

- Lgi's Business
- Our adoption of DDMRP/TOC
- Our latest improvements
- So what? What are the benefits?

LGI'S BUSINESS

- Lgi starts in 1978 and is quickly drawn into the technology community in the Portland area.
- Our technology customers moved to Asia, we followed



Penang, Malaysia



Wuxi, China



Portland, USA

LGI'S BUSINESS

- Lgi is a product engineering company that creates custom solutions for engineers.
- We are passionate about innovation that brings highly specialized manufacturing solutions to the products you engineer.

LGI'S BUSINESS

- We are engineers pushing the boundaries in print technology and materials science.
- We are relentless about solving customer problems.
- We develop highly responsible and reliable relationships with engineers and engineering-focused companies.

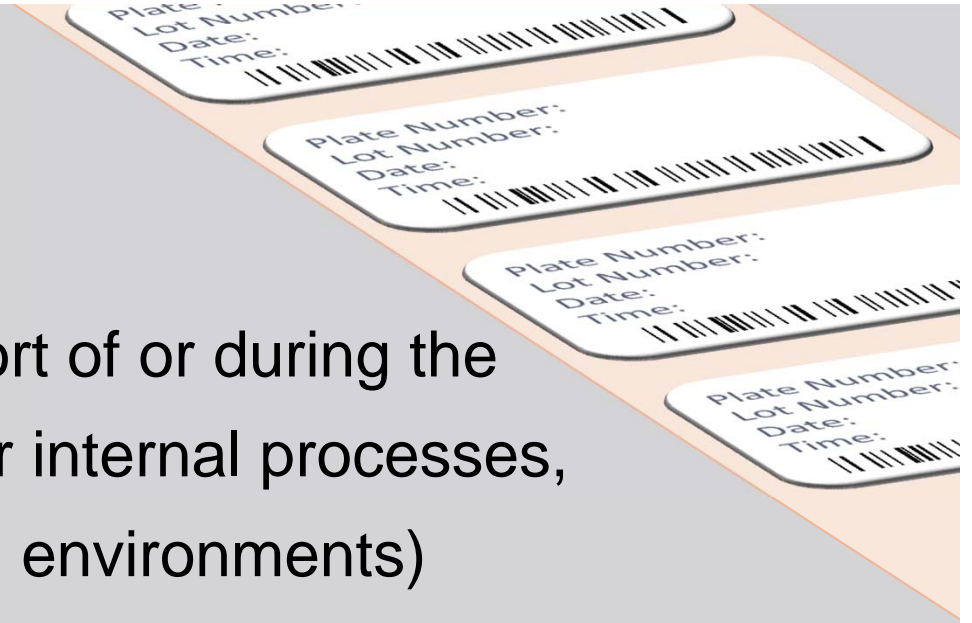
LGI'S BUSINESS

○ Our Results

- Specialized labels, Film Insert Molding, Clean Room, Printable Electronics, Extreme Components, Flexible Electronics, and any new problem we can solve.

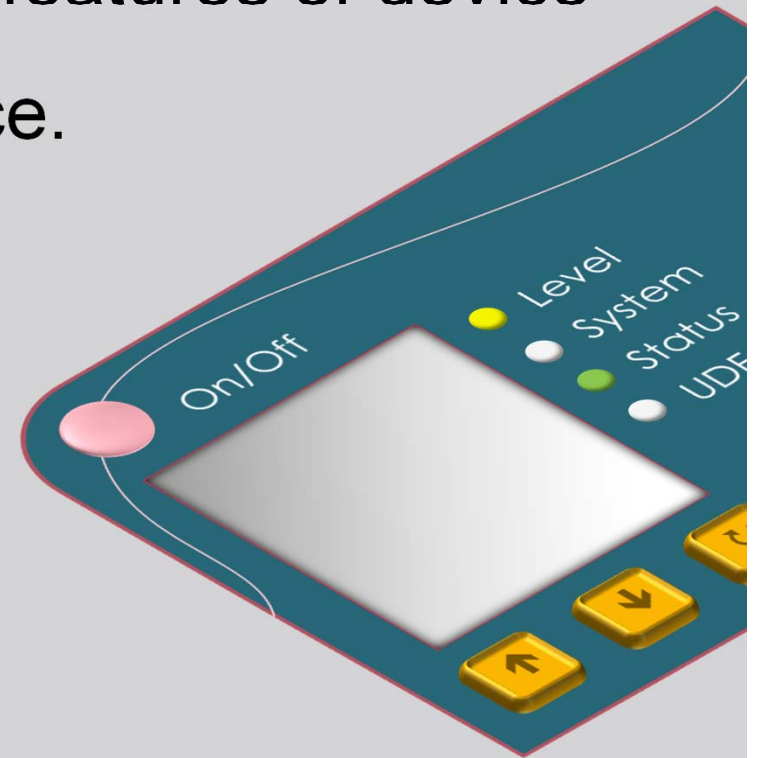
PROCESS LABELS

- Used or consumed in support of or during the production process (or other internal processes, such as laboratory/research environments)
- Does not include labels that become part of a finished product (such as packaging or product identification labels)
- Examples include:
 - Cleanroom labels
 - Sterilization process labels
 - Cryogenic and cold storage labels
 - Durable labels



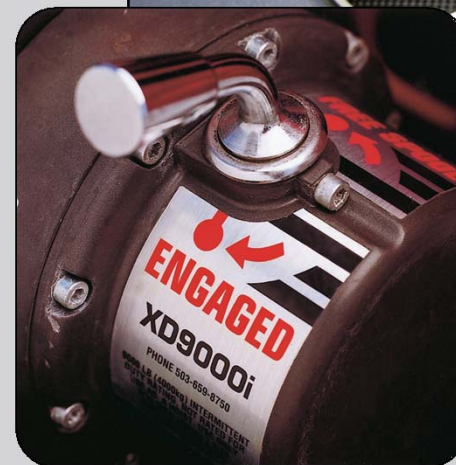
USER INTERFACE

- Enables user to interface with features of device and control device performance.
- Examples include:
 - Overlays
 - Membrane switches
 - Keypads
 - Buttons
 - Display and touch screens



PRODUCT IDENTIFICATION AND INFORMATION

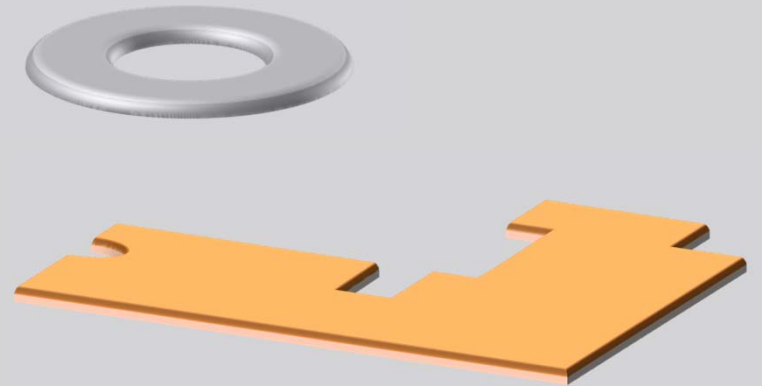
- Used to incorporate product identity and branding as well as product information such as serial and warranty information
- Examples include:
 - Metal nameplates
 - Embossed and Dome labels
 - Holographic and graphic-rich labels
 - UL/CSA approved labels



DIE CUT COMPONENTS

○ Used as a functional element of the device to provide features such as:

- Adhesion
- Thermal conductivity
- Electro static dissipation
- Vibration dampening
- Flame resistance
- Sealing
- Insulation
- Shielding

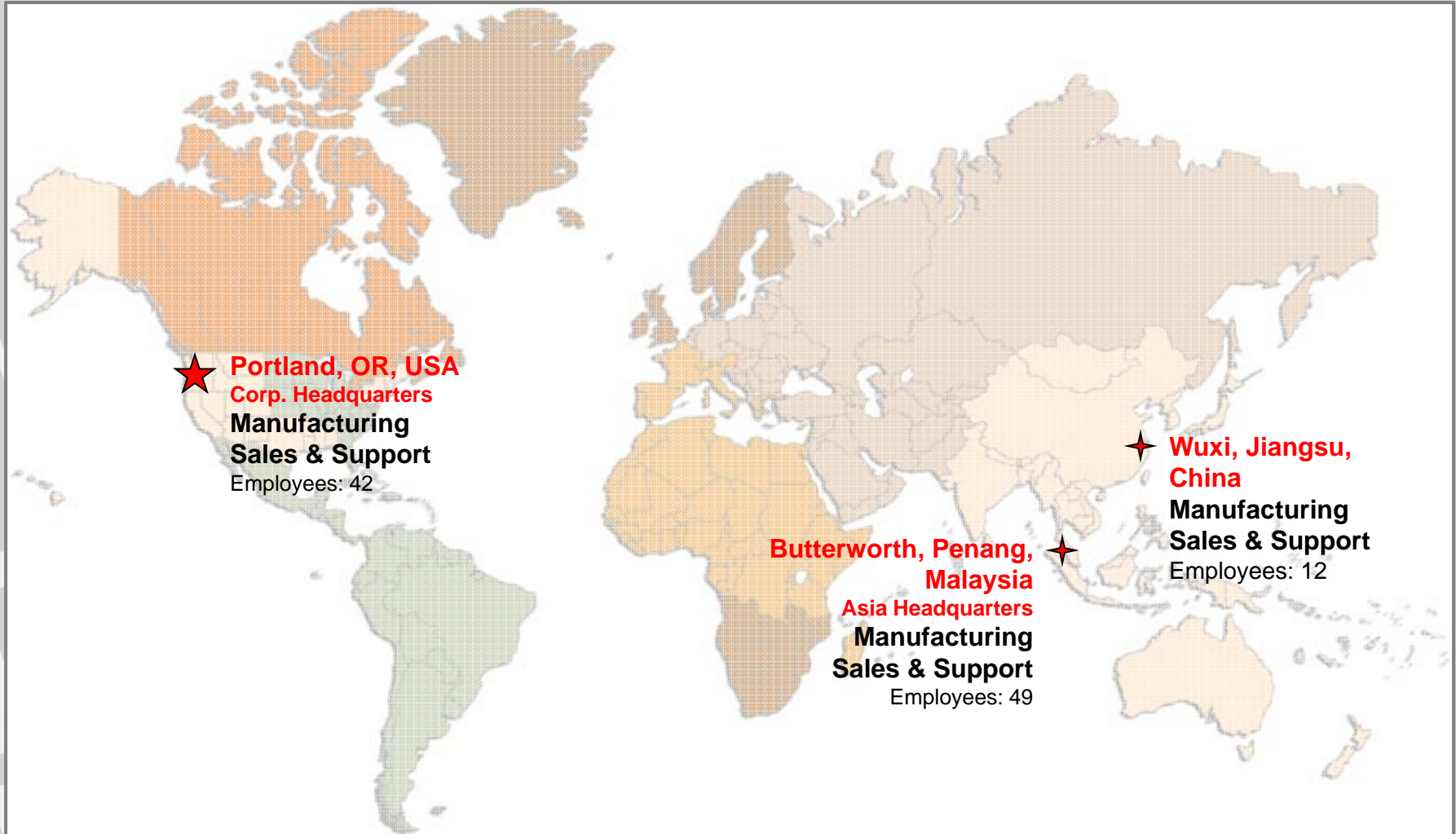


FILM INSERT MOLDED PARTS

- What is FIM?
 - Film is printed second surface, formed and trimmed to match geometry of molding tool used to create plastic injected part
 - Enables text and graphics to be integrated with molded plastic parts
 - Durable and visually appealing alternative to first surface forms of decoration
- Applications include:
 - Lenses
 - Displays
 - Badges
 - Remote Controls
 - Bezels



WORLDWIDE CAPABILITY



LGI AND TOC

- In 2004 we began an aggressive series of changes to revitalize Lgi
 - We needed a more robust strategic direction
 - We needed greater global reach
 - We needed higher performance production systems
- By 2005 we began looking for ways we could dramatically improve our production performance

LGI AND TOC

- The solutions had to account for
 - Global facilities – extreme price pressure
 - Both Low volume – High mix and High volume – Low Mix
 - Bills of Material – this is not common in our industry
 - Unique job shop with high product variation
 - Dynamic order variation
 - “Slot-ins”, “Pull-ins” and “Push-outs”
 - High short lead time volume < 1day order to delivery
 - Very fast quotation creation < 5 minutes goal
 - Easy to schedule
 - Easy to re-train staff

LGI AND TOC

- We first learned about TOC at an industry association conference in 2005.
- We hired a consultancy to help us adopt TOC practices and worked with them through 2008.
- The work we completed allowed us to successfully navigate the huge downturn of 2009 in our industry while maintaining profitability
- In 2010 as volumes rebounded we didn't need to staff up.

LGI AND TOC

- In 2009 we launched operational management software we designed and built for our business based on our TOC implementation.
- Subsequently in 2011 we integrated our software with DBR+.
- TOC principles are utilized throughout our entire business with on-going training both U.S. and International. Training has been challenging.

OUR CADENCE SOFTWARE

- Web based operational management software including DDMRP/TOC functionality
- Work began in 2008 originally designed to help us with improving our speed to quote.
- By late 2009 we had progressed into full job planning and order taking.
- In 2010 we began adding the front and back ends such as invoicing and shipping/receiving as well as globalizing the rollout to Penang

LGI CADENCE IMPLEMENTATION

Quote

- RFQ
- Estimate/Quote - 2008

Order

- Purchase Order - 2011
- Order Entry - 2009

Build

- Job - 2009
- DBR+ - Integration in 2011

Ship

- Inventory - 2010
- Shipping - 2009

Invoicing/Vouchering – 2012

Monitoring/Analytics - 2013

RECENT ENHANCEMENTS

○ Analytics

- Detailed on-time performance
- Detailed budget to actual for time and materials
- Buffer analytics just starting

○ Shop floor web based Status Monitors

- Job priority
- Buffer status
- Job kit availability
- Built using Cadence and DBR+ data

SHOP FLOOR MONITORS

- USB Android stick
 - Android version 4.2
- TV accesses our internal monitor website.
 - Current job running for the resource
 - Job sequence – latest start & planned duration
 - Job ready to start – color coded
 - Buffer status – color coded

PRODUCTION MONITORS



PRODUCTION MONITORS



PRODUCTION MONITORS



PRODUCTION MONITORS



int sonata

09:58

b32184 s60372 91500

2013-10-14 05:07

10/16 11:06 05:09 32184 91500 60372 Hitachi

10/18 08:46 03:26 32655 100000 61157 Kao Soap

10/18 14:51 01:24 32654 100000 61156 Kao Soap

10/21 10:32 03:23 32564 7900 60180 WD Media

10/21 13:55 02:20 32566 50000 57528 Hagemeye

10/18 07:00 01:08 32481 4000 59800 Electroc

PRODUCTION MONITORS

b35485 s60253 4890000

02/28 03:13 12:55

2/28	10:58	12:55	35485	4890000	60253	Hagemeyer
3/10	12:11	3:43	35617	150000	56643	Cardos Aut
3/11	10:44	1:32	35614	72750	57452	Cardos Aut
3/11	12:16	3:17	35692	60000	62302	Showa Denk
3/11	3:33	3:03	35691	40000	62625	Showa Denk
3/21	9:17	3:15	35473	500000	56171	Kao Soap (
4/7	8:55	2:39	35615	150000	57452	Cardos Aut
4/8	12:11	3:43	35618	150000	56643	Cardos Aut
5/5	8:55	2:39	35616	150000	57452	Cardos Aut
5/6	12:04	2:07	35619	75000	56643	Cardos Aut

PRODUCTION MONITORS

Schedule for PEN 6 Color Flexo Press – PEN 6 Color Flexo Press ... (constraint)

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Schedule for PEN 6 Color Flexo Press - PEN 6 Color Flexo Press ... (constraint)

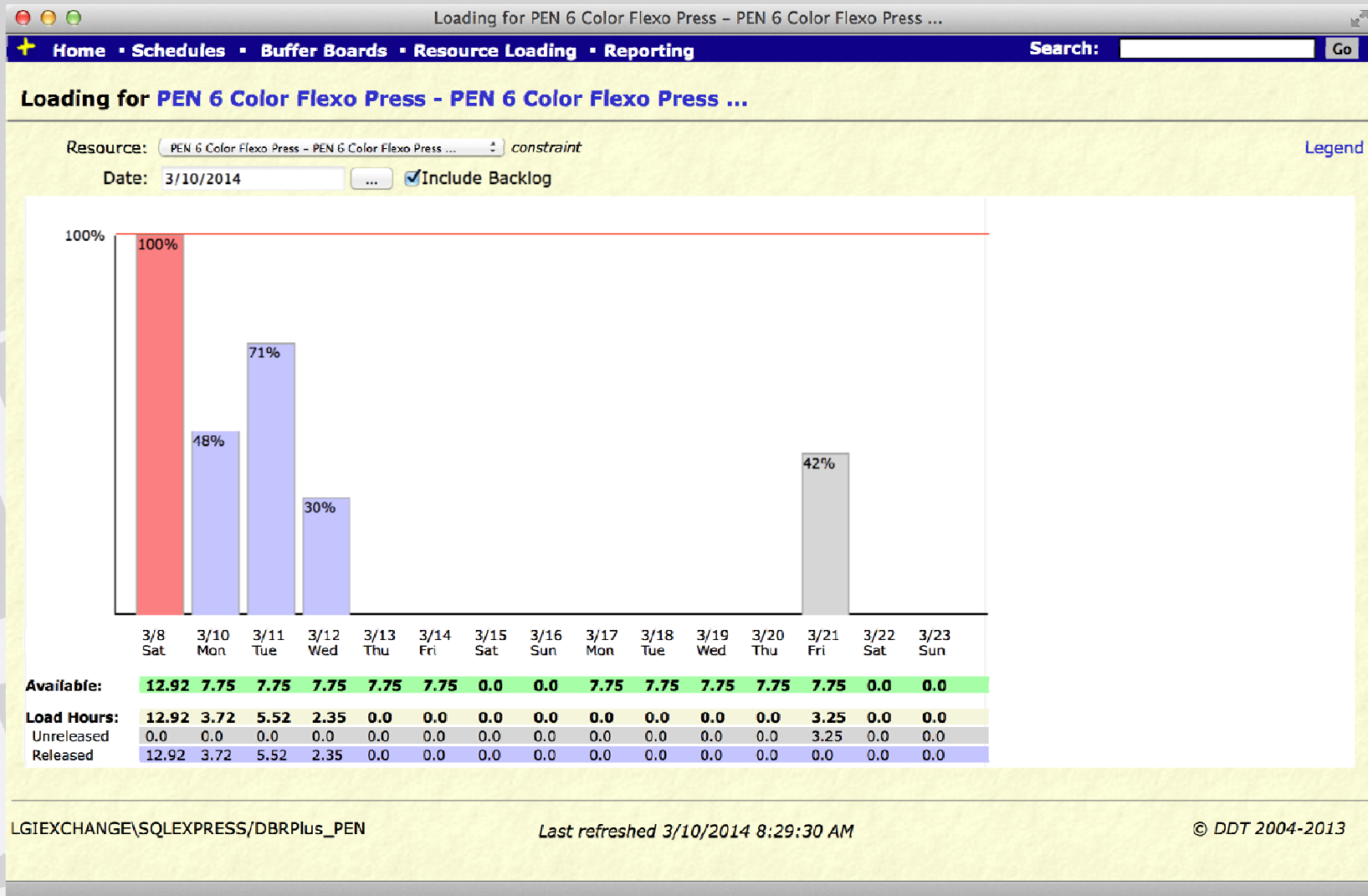
Resource:

Filter: Constraints Non-Constraints All Show Only Ready To Start [Dispatch List](#)

Ready	Work Order	Sales Order	Work Order Qty	Part	Customer	Expedite	Status	Start	Full Duration
	35485	8488658	4,890,000	35485	Hagemeyer (Thailand)	-	In progress at PEN 6 Color Flexo Press	2/28/2014 3:13 PM	12.92 hours
	35617	214409	150,000	35617	Cardos Automation System Sdn. Bhd.	-	Completed at Inventory- Penang	3/10/2014 12:11 PM	3.72 hours
	35614	214410	72,750	35614	Cardos Automation System Sdn. Bhd.	-	Released, awaiting start	3/11/2014 10:44 AM	1.53 hours
	35692	SHS4000008723	60,000	35692	Showa Denko HD Singapore Pte Ltd	-	Completed at Delam/Relam	3/11/2014 12:16 PM	3.28 hours
	35691	SHS4000008723	40,000	35691	Showa Denko HD Singapore Pte Ltd	-	Completed at Delam/Relam	3/11/2014 3:33 PM	3.05 hours

LGIEXCHANGE\SQLXPRESS/DBRPlus_PEN Last refreshed 3/10/2014 8:25:33 AM © DDT 2004-2013

PRODUCTION MONITORS



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Resource: PEN 6 Color Flexo Press – PEN 6 Color Flexo Press ...
Buffer Manager: PEN Flexo

Monday, March 10, 2014
8:17:02 AM

Yet To Be Received

EARLY	GREEN	YELLOW	RED	LATE
35691, 3.1 hours 35692, 3.3 hours 35614 , 1.5 hours		35617 , 3.7 hours		
Total: 7.9 hours		Total: 3.7 hours		

Received

EARLY	GREEN	YELLOW	RED	LATE

Only released work is displayed.

LGIEXCHANGE\SQLEXPRESS\DBRPlus_PEN
 Last refreshed 3/10/2014 8:17:02 AM
© DDT 2004-2013

LGI CADENCE BENEFITS

- On-time performance has improved
 - 85% to ~97% - To Customer due date
- Far less chaos in shop
- Clear priorities for all employees
- Budget vs. Actual
 - Time improved from about 10% to 3% delta
 - Material improved from about 7% to -11% delta
- Less arbitrary “rescheduling” by operators

LGI CADENCE BENEFITS

- Global “anywhere/anytime” visibility
 - Key executives
 - Job status for sales/customer service
- Reduction in inventories approaching 50%
- Focus on capacity management
- Exception reports allow us visibility of issues that we can correct before it affects the client.

LGI CADENCE BENEFITS

○ Profitability

- Making money now and in the future
- This is obviously the key criteria
- Our profitability was maintained through 2009 and has been improving since in spite of very large price drops and volume declines in our core Asia HDD business

WHAT'S NEXT?

- Currently we are in the midst of an upgrade to simplify Cadence for our Penang and Wuxi staff
 - Currency exchange – USD, MYR, SGD, THB, CNY, etc.
 - Dimensional analysis – Imperial vs. metric
 - The interaction of these two particularly for pricing, quotation, purchasing and inventory valuation.

WHAT'S NEXT?

- Next major release will include Cadence assisted buffer management for Raw Material and Finished Goods
 - ADU calculation
 - ADU History analytics
 - Buffer dynamics analytics – spikes, murphies, EOL, BOL, etc.
 - Customer usage integration where possible

Q & A

- Lane Kagey

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