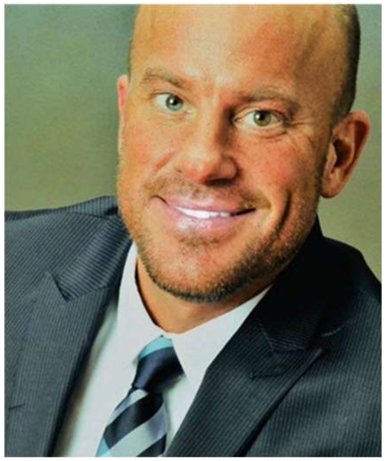
A Demand-Driven Transformation

How JELD-WEN is capitalizing on DDMRP principles.

Speaker Profile



Darin Wolding DDPP, CPIM, CSSBB JELD-WEN Inc. | VP, Supply Chain	
29	Years of Supply Chain / Operations experience
6x	ASCM CONNECT National Conference Presenter (USA)
2023	JELD-WEN President's Award for Operational Excellence
2019	Oshkosh Corporation Excellence Award
1	Quotes attributed to me: *"Materials Management is a mathematical equation."*

ABOUT JELD-WEN

JELD-WEN is a leading global designer, manufacturer, and distributor of high-performance interior and exterior doors, windows, and related building products serving the new construction and repair and remodeling sectors.

AT A GLANCE

Founded	1960 in Klamath Falls, Oregon, USA
Global Headquarters	Charlotte, North Carolina, USA
2023 Net Sales	$4.3 billion
NYSE	JELD
CEO	William J. Christensen
Operations	North America and Europe
Associates	18,000
Website	corporate.jeld-wen.com
ESG Commitments	corporate.jeld-wen.com/responsibility

OUR PURPOSE

We bring beauty and security to the spaces that touch our lives.

OUR VALUES

- BUILD BUSINESSES ETHICALLY AND SAFELY
- INVEST IN PEOPLE
- INSPIRE CUSTOMERS THROUGH INNOVATIONS
- DELIVER ON OUR PROMISES
- IMPROVE EVERY DAY

IN THE BEGINNING…

By The Numbers	
53	Manufacturing sites in NA.
7	Buyer/Planners on the corporate Supply Chain team.
15k	Stocking positions managed by the corporate Supply Chain team.
0	Raw material forecasting standard processes.
750k	Past due units on customer orders.
45	Average supplier lead time in days.
14	Average required order fulfillment lead time in days.
0	Warehouses for raw materials or finished goods distribution.
1	Covid-19 pandemic disrupting the entire supply chain world.

PROBLEM SUMMARY

Get the right parts to the right place at the right time without a forecast and without space to hold extra inventory.

- **Classic supply chain problem:** Too much of what we do not need and not enough of the things we do need.
- **Fragmented supply chain function:** Locally managed, non-standardized processes / tools. Undertrained buyers. Poor inventory / BOM control.
- **Significantly space constrained factories:** SKU proliferation and no portfolio management.
- **Immature S&OP process:** Top level planning accuracy <40%. Lots of BOM complexity due to configurations and P-rules.
- **Undisciplined supply base:** Supplier On-Time and In-Full <35%.
- **Archaic and under-supported systems:** Green screen ERP system without MRP functionality. Supply Chain managed via email.

Factors to Consider

FACTOR	DESIRED CHARACTERISTIC	MRP	KANBAN	DDMRP
Organizational Maturity	Centralization of Supply Chain function required simple, effective process to demonstrate quick results with minimal training.	1	2	3
Cost of Implementation	Need a low-cost, high-concept solution as no money had been budgeted for Supply Chain improvement.	1	2	3
Administrative Burden	Need a manageable process due to resource constraints and exceptional demand volatility.	1	1	3
Process Maturity	Need to mitigate the risk of BOM and inventory inaccuracy.	1	3	1
Infrastructure	Need to ensure we do not consume space with materials that are not needed.	1	2	2
	TOTAL	5	10	12

How did $34,000 fund a transformation?

Steps of Implementation

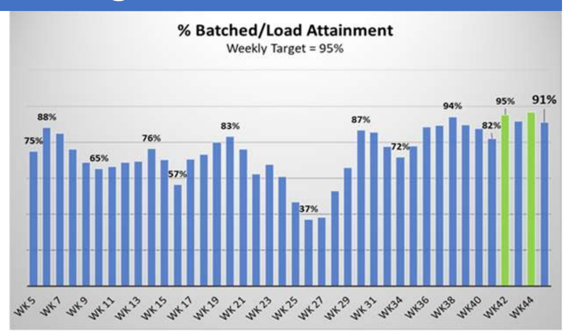
PHASE	IMPLEMENTATION STEP
Testing (Prove it.)	Develop manual DDMRP report in MS Excel
	Execute DDMRP replenishment for vertically integrated supply
	Request funding for ERP systems enhancement (DDMRP replenishment)
Training (Teach it.)	Multiple 3-day workshops to introduce DDMRP along with other core Supply Chain processes
	Buyer / Planner specific training according to centralization timeline
Technical Deployment (Do it.)	Parameter validation / Data cleansing
	Inventory rationalization (address Excess & Obsolete)
	Deploy DDMRP replenishment process across domestic supply base
Management System (Sustain it.)	Immediate Demands© and TIRA©
	RedDot© Supply Escalation Process
	Supply Chain Operating Cadence

Item Nc	Item Desc	Runout Date (Rcp	Qty On Hanc	Avg Daily Usage	Pallet Qty	QUAL	PO Qty Past Due	PO Qty Open (Incl Past Du	PLN	NFP	OHD
<00655	SK ATHERTON 4P 32X96	9/15/21	0	0.00	225	0	0	0	0.00	GREEN	GREEN
<02364	SK SANTA FE BIF 24X80	11/10/21	326	34.88	225	0	450	900	0.93	GREEN	YELLOW
<02365	SK SANTA FE Bifold 30X80	11/12/21	689	26.20	225	0	0	225	0.88	GREEN	OTOG
<04905	SK ROCKPORT 5P 20X80	11/25/21	93	2.36	225	0	0	0	0.31	GREEN	GREEN
<04906	SK ROCKPORT 5P 24X80	11/12/21	-353	25.32	225	0	1125	1125	0.76	YELLOW	BLACK
<04907	SK ROCKPORT 5P 28X80	11/16/21	1339	55.08	225	0	450	450	0.90	GREEN	OTOG
<04908	SK ROCKPORT 5P 30X80	11/18/21	1382	93.16	225	0	1125	1800	0.94	GREEN	YELLOW
<04909	SK ROCKPORT 5P 32X80	11/2/21	360	21.84	225	108	0	225	0.53	YELLOW	GREEN
<04910	SK ROCKPORT 5P 36X80	11/4/21	-71	24.08	225	0	675	675	0.62	YELLOW	BLACK
<04911	SK ROCKPORT 5P 20X84	9/15/21	0	0.00	100	0	0	0	0.00	GREEN	GREEN
<06013	SK SANTA FE 2P 24X80	11/22/21	1815	57.56	225	0	450	450	1.09	OTOG	OTOG
<06014	SK SANTA FE 2P 28X80	11/5/21	645	95.24	225	0	675	2250	0.84	YELLOW	RED
<06015	SK SANTA FE 2P 30X80	11/8/21	2555	177.68	225	0	900	2925	0.85	YELLOW	YELLOW
<06016	SK SANTA FE 2P 32X80	11/12/21	1343	74.68	225	0	450	1350	1.00	GREEN	GREEN
<06018	SK SANTA FE 2P 36X80	11/11/21	882	67.44	225	0	900	1350	0.91	GREEN	YELLOW
<06500	SK SANTA FE 2P 16X96	9/15/21	0	0.00	225	0	0	0	0.00	GREEN	GREEN
<06505	SK SANTA FE 2P 30X96	1/10/22	28	0.40	225	0	0	0	0.12	GREEN	GREEN
<10792	SK CAMDEN 2P 30X80	9/15/21	0	4.64	225	0	0	225	0.61	GREEN	BLACK
<10793	SK CAMDEN 2P 32X80	12/29/21	123	1.80	225	8	0	0	0.41	GREEN	GREEN
<10794	SK CAMDEN 2P 36X80	12/30/21	85	1.16	225	10	0	0	0.29	GREEN	GREEN
<10924	SK CONTNL 2P 24X80	11/24/21	1173	36.00	225	0	225	225	1.04	OTOG	OTOG
<10925	SK CONTNL 2P 28X80	11/23/21	1961	61.20	225	0	450	450	1.09	OTOG	OTOG
<10926	SK CONTNL 2P 30X80	11/29/21	3331	98.80	225	0	1125	1125	1.25	OTOG	OTOG
<10927	SK CONTNL 2P 32X80	11/17/21	1276	48.24	225	0	450	450	0.99	GREEN	OTOG
<10928	SK CONTNL 2P 36X80	11/15/21	687	34.12	225	0	450	450	0.88	GREEN	GREEN
<11297	SK CAMDEN 2P 32X84	9/15/21	0	0.00	100	0	0	0	0.00	GREEN	GREEN
<14844	SK PRINCETON BIF 30X84	11/25/21	9	0.24	100	0	0	0	0.08	GREEN	GREEN
<14846	SK PRINCETON Bifold 36X84	11/15/21	17	0.24	100	8	0	0	0.08	GREEN	GREEN
<15121	SK CONTNL BIF 24X80	12/9/21	899	18.68	225	0	0	0	1.11	OTOG	OTOG
<15122	SK CONTNL BIF 30X80	1/5/22	766	10.36	225	52	0	0	1.30	OTOG	OTOG
<15123	SK CONTNL BIF 36X80	1/3/22	357	5.44	225	0	0	0	0.90	GREEN	OTOG
<15126	SK CONTNL BIF 36X84	9/15/21	0	0.00	100	0	0	0	0.00	GREEN	GREEN
<15185	SK PRINCETON 2P 24X80	12/31/21	57	0.52	225	8	0	0	0.20	GREEN	GREEN
<15186	SK PRINCETON 2P 28X80	11/30/21	56	0.76	225	14	0	0	0.17	GREEN	GREEN
<15187	SK PRINCETON 2P 30X80	11/30/21	124	1.84	225	22	0	0	0.36	GREEN	GREEN
<15188	SK PRINCETON 2P 32X80	12/31/21	38	0.36	225	4	0	0	0.14	GREEN	GREEN
<15345	SK PRINCETON 2P 32X84	9/15/21	0	0.00	100	0	0	0	0.00	GREEN	GREEN
<42303	SK CRAFTSMAN 3P 30X80	11/9/21	1564	86.68	100	358	1350	2025	1.03	OTOG	GREEN
<56479	SK CRAFTSMAN 3P 32X80	11/1/21	921	31.44	100	344	225	225	0.70	YELLOW	OTOG
<56538	SK CRAFTSMAN 3P 24X80	11/3/21	851	30.80	100	148	225	225	0.83	YELLOW	OTOG
<56539	SK CRAFTSMAN 3P 28X80	11/4/21	1699	62.52	100	0	0	450	0.95	GREEN	OTOG
<56540	SK CRAFTSMAN 3P 36X80	10/25/21	617	27.48	100	172	225	225	0.67	YELLOW	OTOG
<56541	SK CRAFTSMAN Bifold 24X80	11/10/21	37	7.44	100	0	200	200	0.71	GREEN	RED
<56542	SK CRAFTSMAN Bifold 30X80	11/17/21	179	4.72	100	0	0	0	0.72	GREEN	OTOG
<58654	SK CRAFTSMAN BIF 36X84	9/15/21	0	0.00	100	0	0	0	0.00	GREEN	GREEN
<82990	SK ROCKPORT 5P 32X96	12/8/21	89	1.56	225	14	0	0	0.27	GREEN	GREEN
<83207	SK Caiman (Smth) 2P 30X96	9/15/21	0	0.00	200	0	0	0	0.00	GREEN	GREEN

Results of Implementation

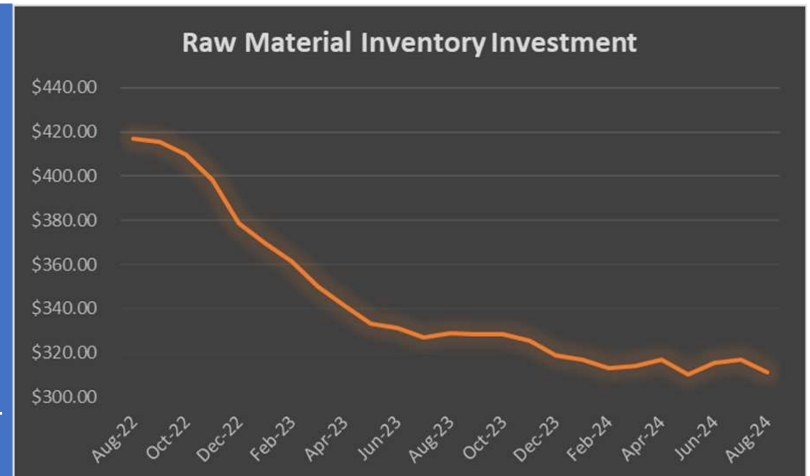
Characteristic	Before	After
Central Managed Sites	16	33
Centrally Managed Stock Positions	15,000	75,000
Past Due Sold Units	750,000	37,500
Supplier OTIF	35%	90%
TIRA	35%	72%

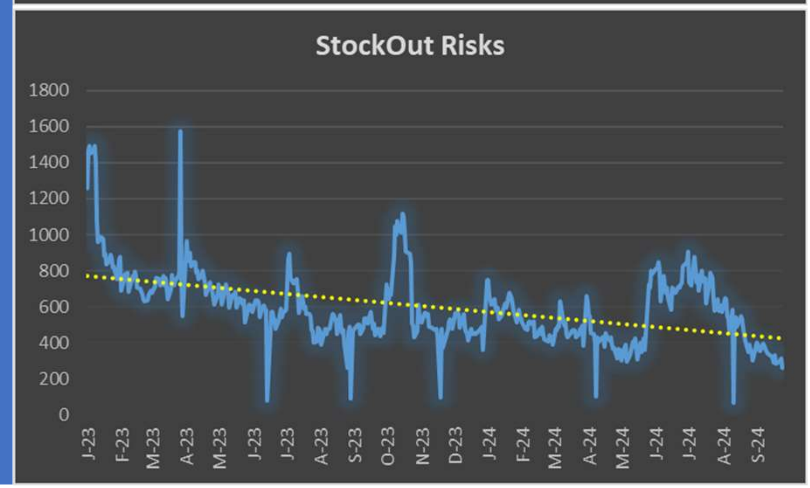
Delivery Performance Results @ Focus Site



“This has never happened before…”

NA Network Level Improvements



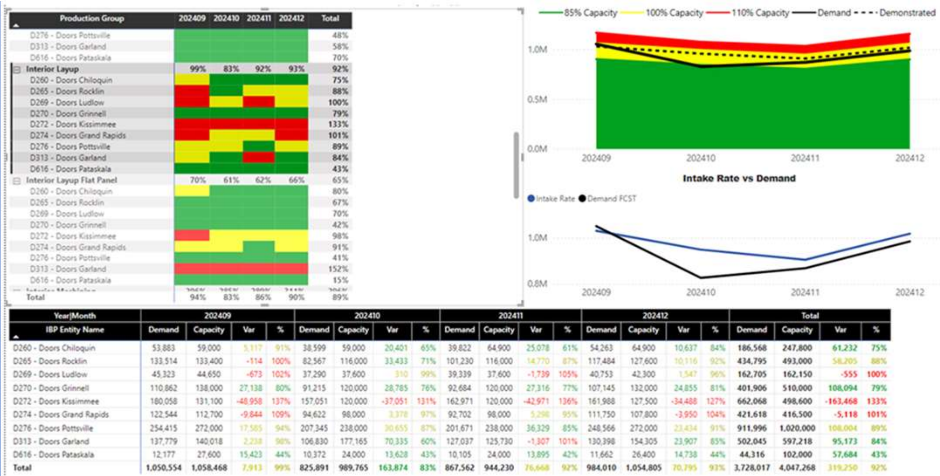


Lessons Learned

ADVICE FOR THOSE CONTEMPLATING A DEMAND-DRIVEN INITIATIVE	
Involve the customer.	There are many customers. Don't miss an opportunity to leverage their testimonials. (Consumers, Operations, Finance, Sales, etc.)
Sell the extended value.	Think about the opportunities associated with other projects that can be funded by changes in Net Working Capital.
Support with a management system.	Processes break down when put under stress or not being measured. Have a plan for crisis management as well as continuous improvement.
Ongoing Education	Buyers are the ambassadors of the initiative. Continue to invest in their development.
Playbook	There is no "one size fits all" solution. Establish a playbook with prescriptions for varying use cases.
Garbage In. Garbage Out.	Ensure the change management strategy addresses the critical input variables e.g., BOM and Inventory Accuracy.
Tailor Goals. Update Often.	DDMRP enables mathematically calculated goal-setting for each individual. Exploit the opportunity to drive accountability.

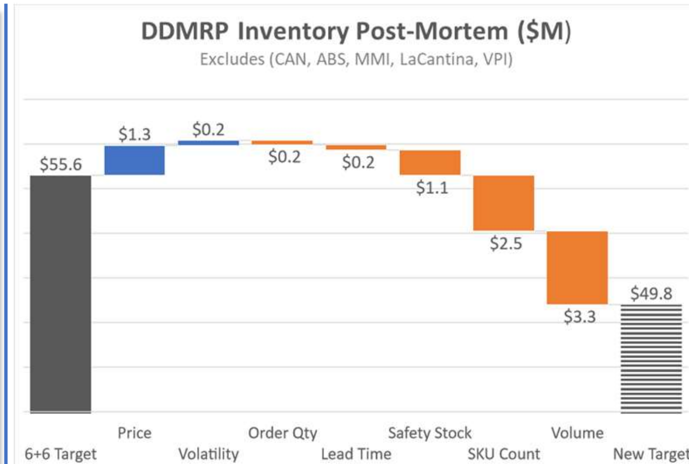
Next Steps

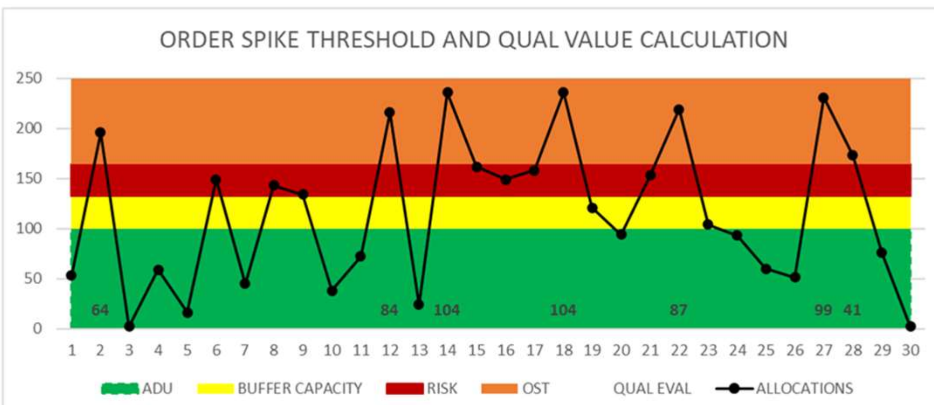
- Incorporate DDMRP principles in the supply planning process (S&OP).
- Continue to enhance DDMRP capabilities.
- Leverage demand-driven principles to create innovative solutions.

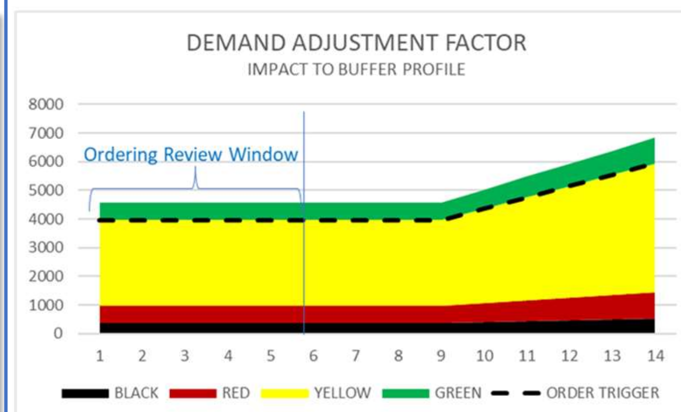


Production Group	202409	202410	202411	202412	Total
D276 - Doors Pottsville					48%
D313 - Doors Garland					58%
D616 - Doors Pataskala					70%
Interior Layup	99%	83%	92%	93%	92%
D260 - Doors Chiloquin					75%
D265 - Doors Rocklin					88%
D269 - Doors Ludlow					100%
D270 - Doors Grinnell					79%
D272 - Doors Kissimmee					133%
D274 - Doors Grand Rapids					101%
D276 - Doors Pottsville					89%
D313 - Doors Garland					84%
D616 - Doors Pataskala					43%
Interior Layup Flat Panel	70%	61%	62%	66%	65%
D260 - Doors Chiloquin					80%
D265 - Doors Rocklin					67%
D269 - Doors Ludlow					70%
D270 - Doors Grinnell					42%
D272 - Doors Kissimmee					98%
D274 - Doors Grand Rapids					91%
D276 - Doors Pottsville					41%
D313 - Doors Garland					152%
D616 - Doors Pataskala					15%
Total	94%	83%	86%	90%	89%

Year|Month	202409				202410				202411				202412				Total			
IBP Entity Name	Demand	Capacity	Var	%	Demand	Capacity	Var	%	Demand	Capacity	Var	%	Demand	Capacity	Var	%	Demand	Capacity	Var	%
D260 - Doors Chiloquin	53,883	59,000	5,117	91%	38,599	59,000	20,401	65%	39,822	64,900	25,078	61%	54,263	64,900	10,637	84%	186,568	247,800	61,232	75%
D265 - Doors Rocklin	133,514	133,400	-114	100%	82,567	116,000	33,433	71%	101,230	116,000	14,770	87%	117,484	127,600	10,116	92%	434,795	493,000	58,205	88%
D269 - Doors Ludlow	45,323	44,650	-673	102%	37,290	37,600	310	99%	39,339	37,600	-1,739	105%	40,753	42,300	1,547	96%	162,705	162,150	-555	100%
D270 - Doors Grinnell	110,862	138,000	27,138	80%	91,215	120,000	28,785	76%	92,684	120,000	27,316	77%	107,145	132,000	24,855	81%	401,906	510,000	108,094	79%
D272 - Doors Kissimmee	180,058	131,100	-48,958	137%	157,051	120,000	-37,051	131%	162,971	120,000	-42,971	136%	161,988	127,500	-34,488	127%	662,068	498,600	-163,468	133%
D274 - Doors Grand Rapids	122,544	112,700	-9,844	109%	94,622	98,000	3,378	97%	92,702	98,000	5,298	95%	111,750	107,800	-3,950	104%	421,618	416,500	-5,118	101%
D276 - Doors Pottsville	254,415	272,000	17,585	94%	207,345	238,000	30,655	87%	201,671	238,000	36,329	85%	248,566	272,000	23,434	91%	911,996	1,020,000	108,004	89%
D313 - Doors Garland	137,779	140,018	2,238	98%	106,830	177,165	70,335	60%	127,037	125,730	-1,307	101%	130,398	154,305	23,907	85%	502,045	597,218	95,173	84%
D616 - Doors Pataskala	12,177	27,600	15,423	44%	10,372	24,000	13,628	43%	10,105	24,000	13,895	42%	11,662	26,400	14,738	44%	44,316	102,000	57,684	43%
Total	1,050,554	1,058,468	7,913	99%	825,891	989,765	163,874	83%	867,562	944,230	76,668	92%	984,010	1,054,805	70,795	93%	3,728,017	4,047,268	319,250	92%







Thank you.