



Manufacturers Alliance Seminar

Kanban Material Flow

Practical experiences from peers on how to setup material
delivery systems to flow just-in-time

Uponor

Jon Sillerud

VP of Operations

Kanban at Uponor

Jon Sillerud – VP of Operations



We
mean
progress.

Who is Uponor?

Uponor Corporation

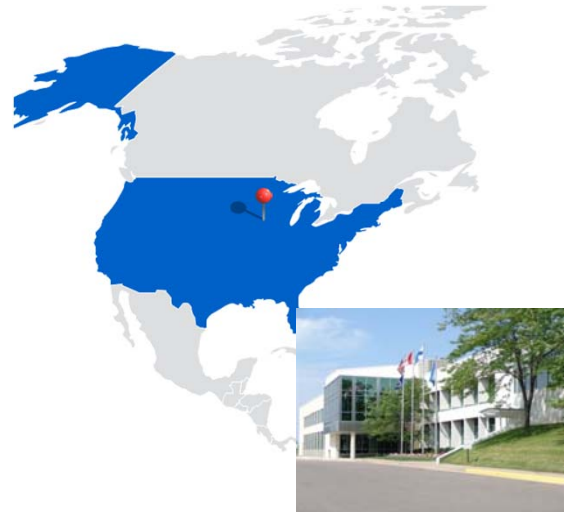
- Headquartered in Vantaa, Finland
- NASDAQ Helsinki
- Leading international systems and solutions provider for safe drinking water delivery, energy-efficient radiant heating and cooling and reliable infrastructure
- Net sales for 2017: €1,170.4 million



Who is Uponor?

Uponor North America

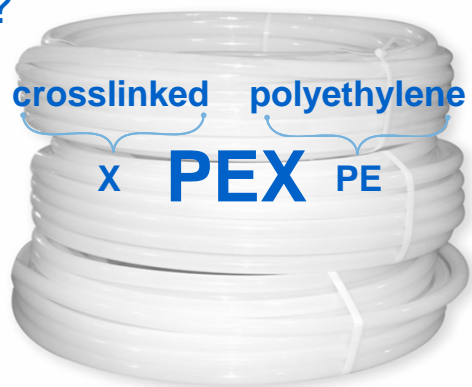
- Headquartered in Apple Valley, Minnesota
- 2017 Sales: ~\$373.2 million
- Main distribution center: 285k sq. ft. in Lakeville, Minnesota
- Manufacturer of 1/3 of all PEX tubing sold in North America
- Over ~5 billion feet of PEX tubing produced



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What is PEX?



PEX



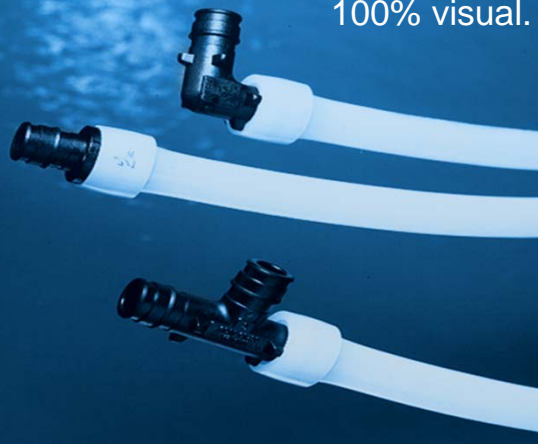
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Uponor ProPEX® fitting system

- Designed to work with PEX-a tubing
- Trained installers throughout North America
- Installed in all weather conditions
- Larger ID than other fittings
- Thicker walls and more mass than other fittings
- Widest selection of configurations
- Broadest array of fittings in engineered polymer (EP) and lead-free brass
- No external ring/clamp, calibration or gauges
- Can't be dry fit

The ONLY connection that is
100% visual.



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What we do



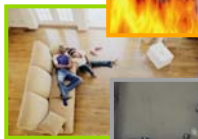
Uponor PEX Plumbing Systems

Features Uponor AquaPEX® tubing with Uponor's ProPEX® fitting system for a safe, clean, installation-friendly alternative to copper and other plastics.



Uponor AquaSAFE™

Incorporates residential fire safety and protection with Uponor AquaPEX plumbing systems.



Uponor Radiant Heating/Cooling

Features Wirsbo hePEX™ tubing for effective design delivering the ultimate in comfort and efficiency.



Uponor Hydronic Distribution

Uses Wirsbo hePEX tubing to transport water to terminal units.



Ecoflex® Pre-insulated Pipe

A flexible plastic distribution piping for a variety of hydronic heating, cooling and hot-water applications

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Reel Supermarket Kaizen: Need and Objectives

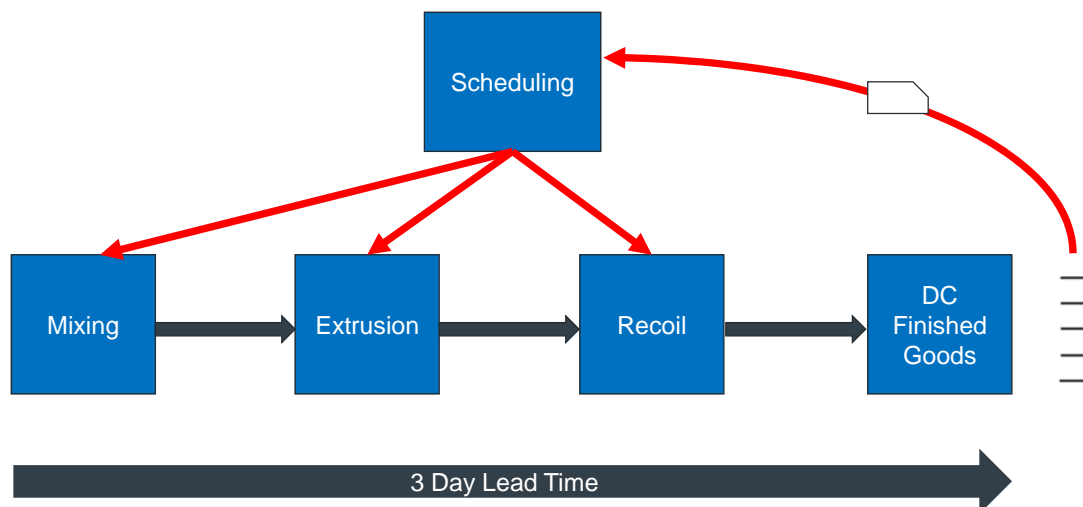
Need:

- Reduce the time required to replenish stock from 3 days to 1 day once a customer order has been picked for shipment

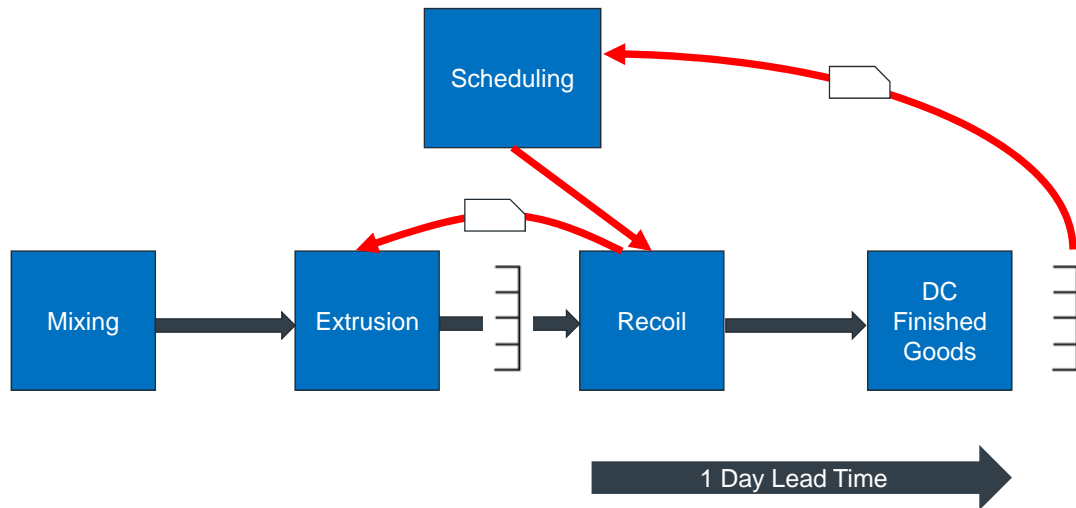
Objectives:

- Develop and execute a 1 month trial for 1/2 AquaPEX supermarket
- Develop a replenishment system utilizing heijunka principles
- Develop a scheduling method for the extrusion process
- Identify supermarket locations for 1/2 AquaPEX

Before Kanban State



After Kanban State



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Supermarket

- Material handlers remove cards & bring to schedule board every shipment (~3hrs)



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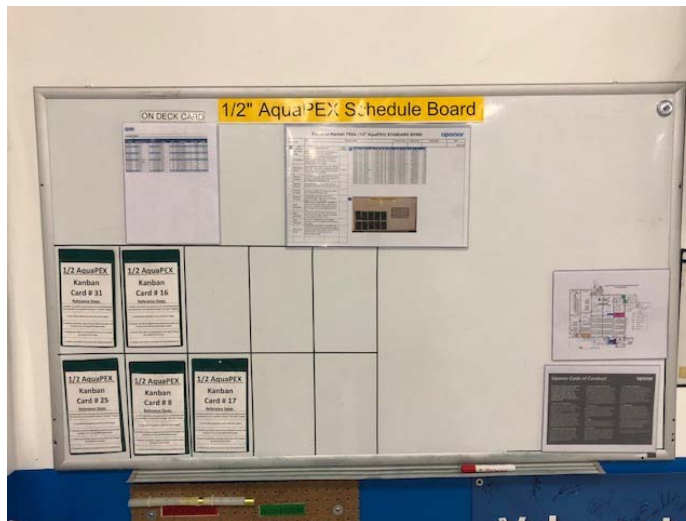
Scheduling list

- Scheduling creates sorted list so area leads know which machines need on-deck cards
- 3 hour intervals

Line	Machine	Event	Type	Stk	Datecode	Reel N	Item	Length
Line042	Running		Aquapex	1/2	UB42180222	40	W2005005	2,217
Line015	Running		Aquapex	1/2	UB15180222	107	W2005005	3,190
Line034	Running		Aquapex	1/2	UB34180222	452	W2005005	3,997
Line163	Running		Aquapex	1/2	UB163180222	292	W2005005	6,816
Line098	Running		Aquapex	1/2	UB98180222	304	W2005005	7,264
Line184	Running		Aquapex	1/2	UB184180222	311	W2005005	7,606
Line188	Running		Aquapex	1/2	UB188180222	230	W2005005	7,642
Line109	Running		Aquapex	1/2	UB109180222	324	W2005005	9,502
Line038	Running		Aquapex	1/2	UB38180222	99	W2005005	9,572
Line013	Tool Change		Aquapex	1/2	UB13180222	45	W2005005	9,705
Line018	Running		Aquapex	1/2	UB18180222	11	W2005005	11,422
Line101	Running		Aquapex	1/2	UB101180221	209	W2005005	12,038
Line106	Running		Aquapex	1/2	UB106180221		W2005005	14,765
Line052	Running		Aquapex	1/2	UB52180221	330	W2005005	16,567
Line003	Lack of Material		Aquapex	1/2	UB03180221	373	W2005005	21,422
Line039	Running		Aquapex	1/2	UB39180221		W2005005	21,542
Line067	Running		Aquapex	1/2	UB67180221	280	W2005005	25,687
Line155	Running		Aquapex	1/2	UB155180221		W2005005	25,880
Line125	Running		Aquapex	1/2	UB125180221	379	W2005005	26,190
Line082	Running		Aquapex	1/2	UB82180221	48	W2005005	26,240
Line169	Running		Aquapex	1/2	UB169180221		W2005005	27,295
Line179	Running		Aquapex	1/2	UB179180221	157	W2005005	28,617
Line120	Running		Aquapex	1/2	UB120180221	111	W2005005	28,980

Scheduling Board - Tier 1 Area

- Area Leads move cards from board to on-deck area on extruder



Extrusion – 1/2" Aqua only



On-deck card will be placed on machine



Operator will attach kanban card before reel is inserted into the extruder machine



Standard Work

Extrusion Kanban TRIAL (1/2" AquaPEX) STANDARD WORK				uponor		
SW_XXXXX	Rev	Revision Detail	Product Name	Department	Prepared By	Date
1	1	At the Tier 1 meeting, remind all operators of the Kanban trial and receive feedback.				3/20/18
2	1	At the beginning of shift and towards the end, pull up 1/2" reel status report. Sort by reel length and block off extruders in 3hr blocks. Provide report to PEX 1 Lead.				
3	1	Print a copy of the report on the Tier 1 Kanban board. Use this report by scheduling to identify reel changes that will happen during the shift on line running 1/2" AquaPEX.				
4	1	At the start of the shift, sweep the floor for any finished 1/2" AquaPEX reels and move them to the designated supermarket in 3B.				
5	1	As finished reels of 1/2" AquaPEX come off extruders, move them to the supermarket in 3B.				
6	1	As reels are loaded into trailers to go to M2 or DCI, remove the Kanban Card.				
7	1	After loading a reel trailer, return all 1/2" AquaPEX Kanban Cards to the Scheduling Board in the PEX 1 Tier area.				
8	1	When starting a new reel of 1/2" AquaPEX, attach a Kanban Card directly onto the RFID side of the reel frame. Cards will be found in the "On Deck" spot on the Skattek electrical box.				
9	1	If no card is in the "On Deck" spot within two hours of a reel change, notify your Lead that you are missing a Kanban Card.				
10	1	If no card is available at the reel change, continue running 1/2" AquaPEX and notify your Lead again.				
11	1	At least three hours before an expected reel change, go to the Scheduling Board to retrieve a Kanban Card. Place Kanban Card in the "On Deck" position on an extruder with an upcoming reel change.				



Lessons Learned

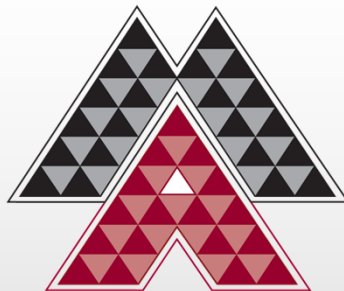
- Ensure the leaders allocate enough time to ensure the standard work is followed on all 4 shifts
- Create an audit process early on to understand adherence to standard work

Accomplishments

- Reduced replenishment lead time from 3 days to 1 day
- Schedulers' time reduced (no searching or planning)
- Increased flexibility to meet the changing needs of the customer

Thank You!

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Manufacturers Alliance
Thank you for joining us!

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Call: 763-533-8239

Email: ma@mfrall.com