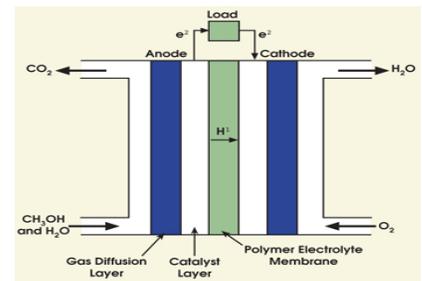
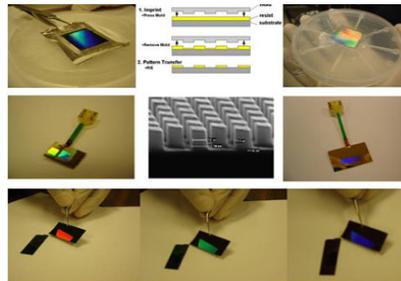
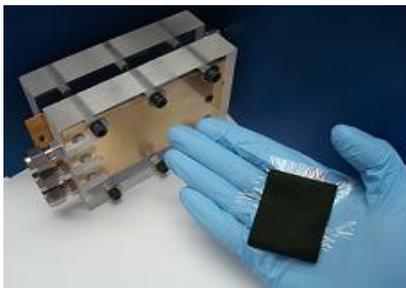


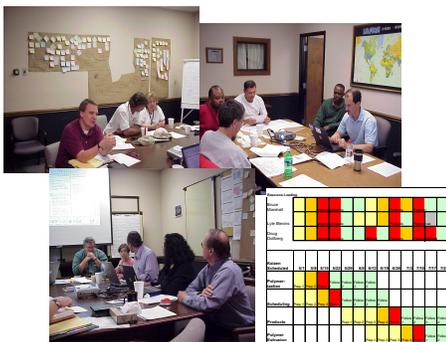
Case 7: A leading fuel cell business started with an objective to reduce inventory & lead time

- They recognized the need to make substantial improvement in the amount of inventory required to support the business goals, and to the promised lead time to customers.
- The leadership of the main site believed that to make these improvements it will be important to introduce and capitalize on Lean principles.
- They started an effort with 3 key elements
 - 1) "Seeing It" – Make it visible - Inventory Management process; roles & responsibilities
 - 2) "Dealing With It" – Reinvigorated Inventory Team: To deliver a \$3 MM Inventory reduction and Benefits Tracking Process;
 - 3) "Gaining and Sustaining" – Targeted Improvements in the Polymer and Products Area that deliver, via Kaizen and other tools, a reduced lead time of products from 45 to 30 days.



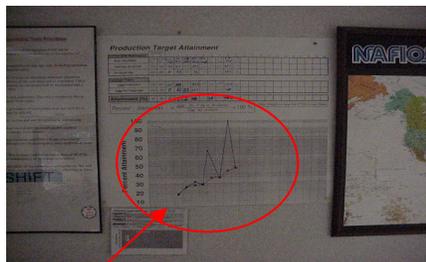
Impact: They built a model that moved the bulk of the inventory to semi-finished and allowed customer lead times to be reduced by 15 days (33%) as part of driving RONA from 2% to 26%

Kaizen

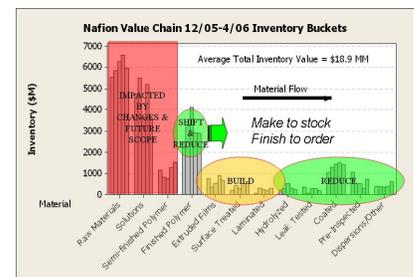


Standard Work & Methods On Target

Polymer: On-Aim 53% @ 89%
Products - Extrusion thru spray-coating

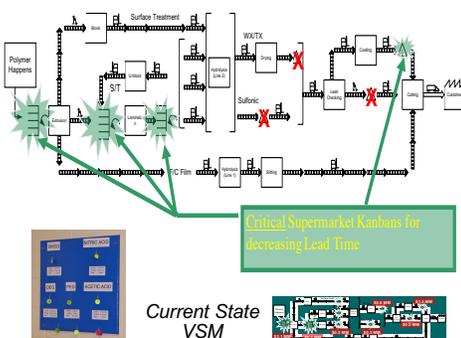


Inventory Redevelopment

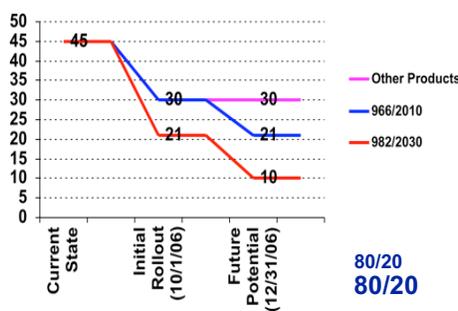


Decreased average inventory by 19% - over \$3.5MM reduction

Future State VSM with Kanbans



Lead-Time Reduction



Process Consistency to Improve Yields, Uptime & Labor Utilization

- Responded to significant increase in demand based on their new operating capability
- Exceeded Membrane Volume PO by 26%
- Exceeded Dispersion Volume PO by 53%
- Record volume month in August
- Record volume year
- Several record extrusion runs (rate & quantity)
- Record volume for polymerization