



DFMA[®] Methodology,
Support for a Winning Whirlpool Business Case

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Design for Value Regional Manager, North American
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Improving Lives ... One home, one family at a time

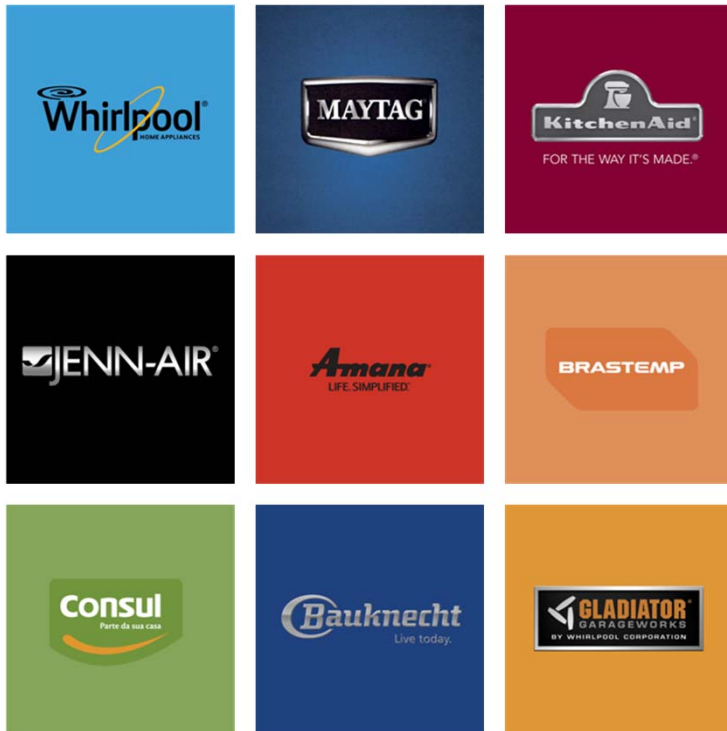
World's #1 major appliance company

\$18 billion in revenue

Products sold in more than 170 countries



Leading Portfolio of Brands



DFMA Methodology at Whirlpool

Engineering



Target Costing



Competitive Costing

Business Units



**New
Business
Creation**

New Business Creation



New Business Creation



The Workshop



Coordination & Cooperation



- Measured
- Weighed
- Photographed
- Record Attributes

High Volume Baseline

File Edit Analysis View Reports Graphs Tools Help

Definition

Name:

Part number:

Repeat count:

Item type: part sub-assembly

Securing method

secured later thread snap

push/press rivet self-stick

crimp stake electric

Minimum part criteria

Item theoretically must be separate because of: base part

material movement assembly

Item is a candidate for elimination: fastener connector other

Envelope dimensions, in

Symmetry

one way either way any way

Handling difficulties

nest tangle severe tangle flexible

difficult grasp tweezers grasp tools

bulky two hands two persons

swing crane mobile crane gantry crane

Insertion difficulties

view access align

resist severe holding down

regrasp support weight large depth

Labor time

Item fetching distance:

Item handling and fetching time, s:

Insertion/operation time, s:

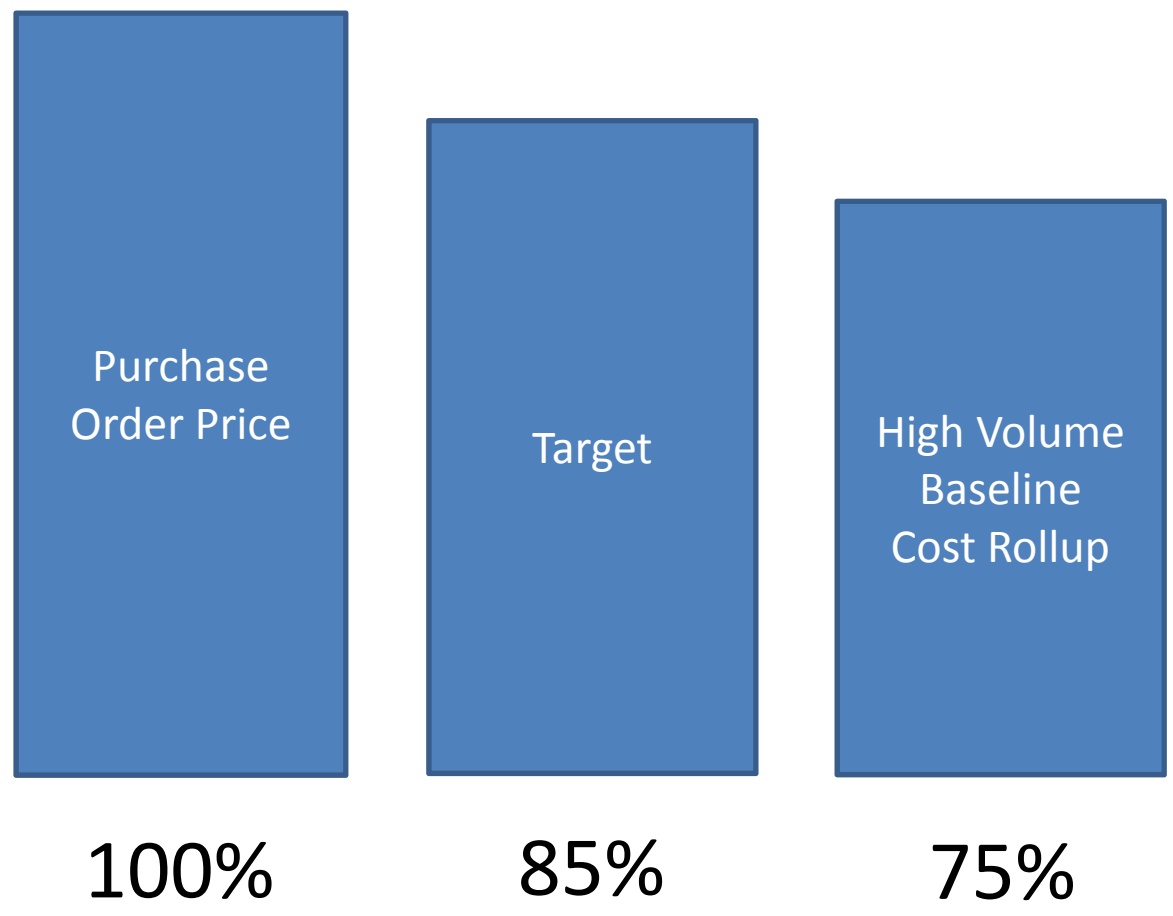
Manufacturing data

	Item	Product
Piece part cost, \$	<input type="text"/>	<input type="text"/>
Item cost per item, \$	<input type="text"/>	<input type="text"/>
Tooling investment, \$	<input type="text"/>	<input type="text"/>
Weight per item, lb	<input type="text"/>	<input type="text"/>
Material	<input type="text"/>	<input type="text"/>
Process	<input type="text"/>	<input type="text"/>

REVISD

The Output

72 components

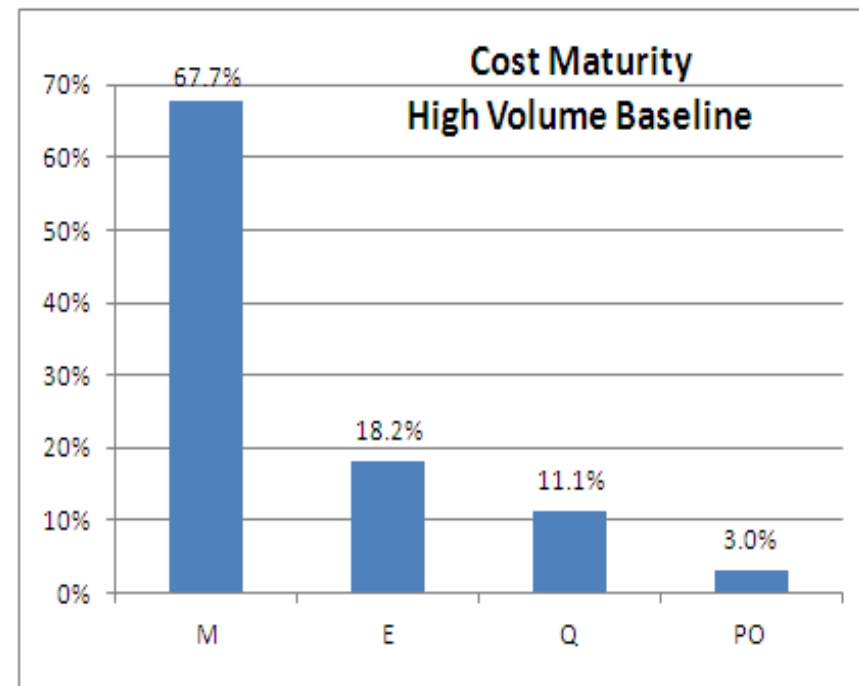
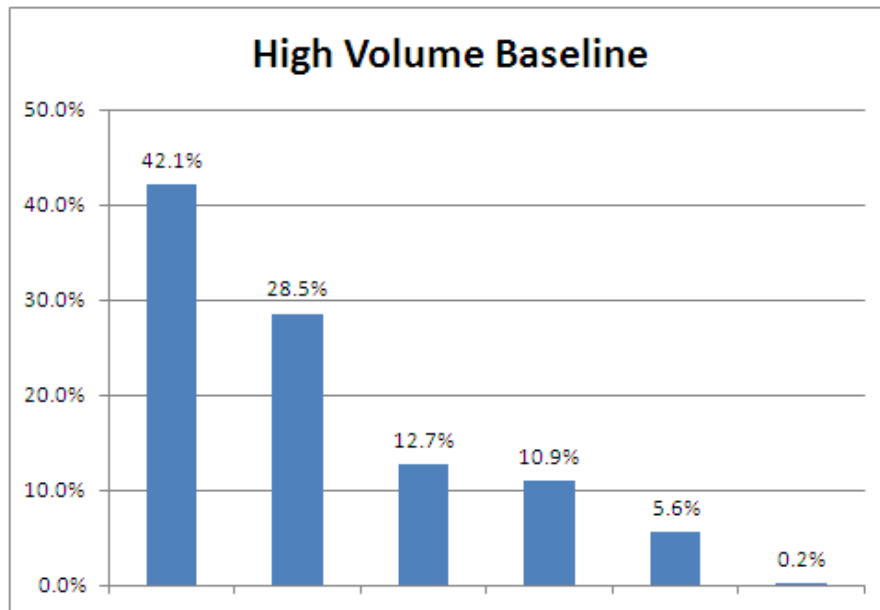


The Analysis

No.	Name	Part number	Type	Repeat count	Total count	Securing method	Minimum items	Minimum part criteria	Handling problems	Insertion problems	Ergonomi problems	Tool fetching and preparation	Item handling time, s	Insertion operation time, s	Total labor time, s
			Main												
2			Sub	1	1	Sep. op		None				0.00	1.95	1.50	3.450
3			Part	1	1	Sep. op	1	Base par	X		X	0.00	3.00	0.00	3.000
4			Part	1	1	Sep. op	0	None	X		X	0.00	3.00	0.00	3.000
5			Lib Op	18	18							0.00		7.00	126.000
6			Part	1	1	Sep. op	1	Base par	X		X	0.00	3.00	0.00	3.000
7			Lib Op	18	18							0.00		7.00	126.000
8					39		2								261.000
9			Part	1	1	Sep. op	0	None				0.00	0.00	0.00	0.000
10			Part	6	6	Rivet	0	Fastens				2.90	1.80	5.10	44.300
11			Part	2	2	Self-stick	0	Connect		X	X	0.00	1.80	6.20	16.000
12			Part	1	1	Snap	0	None				0.00	1.95	1.80	3.750
13			Sub	1	1	Sep. op		None				0.00	0.00	0.00	0.000
14			Part	1	1	Push	0	Connect		X	X	0.00	1.95	7.20	9.150
15			Oper	1	1	Thread						2.90	0.00	3.20	6.100
16			Part	1	1	Sep. op	0	Connect	X	X	X	0.00	3.00	3.40	6.400
17			Oper	1	1	Thread						2.90	0.00	2.30	5.200
18					4		0								26.850
19			Sub	1	1	Sep. op		None				0.00	1.95	1.50	3.450
20			Part	1	1	Sep. op	1	Assembl				0.00	1.95	1.50	3.450
21			Part	1	1	Sep. op	0	None				0.00	1.95	1.50	3.450
22			Part	1	1	Sep. op	0	None				0.00	0.00	0.00	0.000
23			Part	1	1	Sep. op	1	Movemei				0.00	1.95	1.50	3.450

Confidential

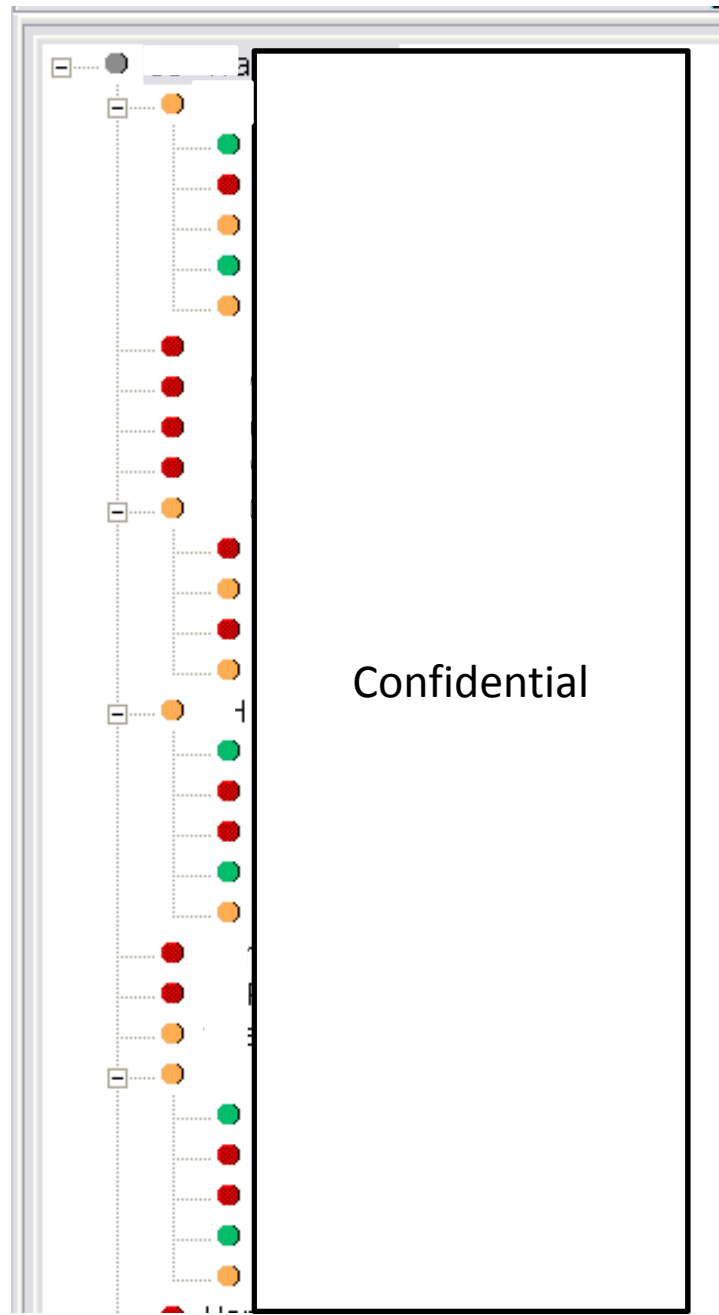
The Analysis



The Opportunities

Temporary Fasteners

Mounting & Fasteners



Executive Summary Comparison - DFA

Boothroyd Dewhurst, Inc.

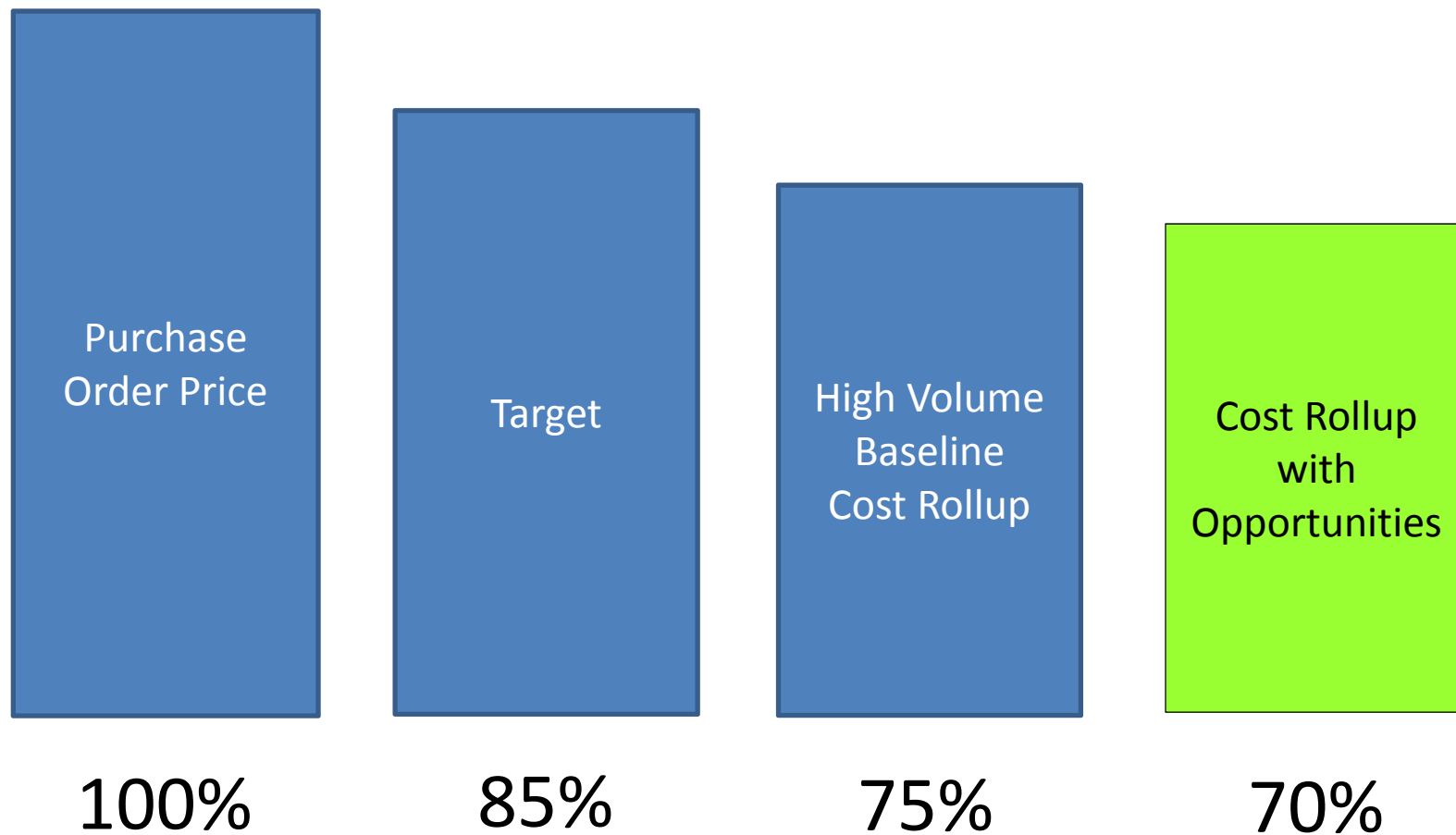


Monday, March 25, 2013 10:01 AM
High Volume Baseline

High Volume Baseline.dfa
Product: High Volume Baseline_original

Per Product data		HIGH VOLUME BASELINE	HIGH VOLUME BASELINE-REVISED
Entries (including repeats)	Component parts	72	43
	Subassemblies partially or fully analyzed	6	4
	Subassemblies not to be analyzed (excluded)	0	0
	Standard and library operations	91	91
	Total Entries	169	138
Labor Time, s	Component parts	219.950	130.050
	Subassemblies partially or fully analyzed	10.350	10.350
	Subassemblies not to be analyzed (excluded)	0.000	0.000
	Standard and library operations	425.000	425.000
	Total Assembly Time	655.300	565.400
Labor Cost, \$	Component parts	0.998	0.590
	Subassemblies partially or fully analyzed	0.047	0.047
	Subassemblies not to be analyzed (excluded)	0.000	0.000
	Standard and library operations	1.929	1.929
	Total Assembly Cost	2.975	2.566

The Opportunities



Next Steps

- Executive Approval
- Value Engineering Workshop
- DFA analysis