

The Regional Rotomolding Business: Quo Vadis?

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My Portfolio of Rotomolding Reports

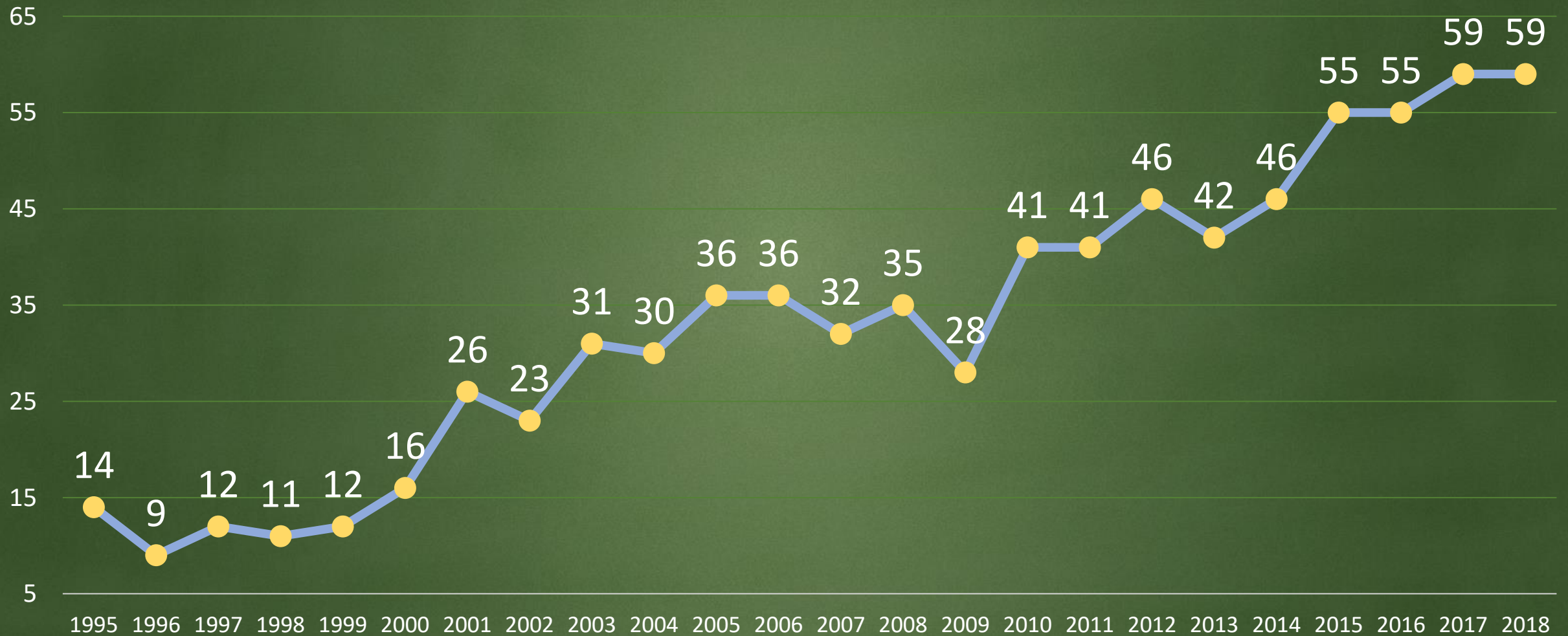
- 1995** - “An Analysis of the North American Rotational Molding Business”
- 1997** - “The Recent Pace and Pattern of Growth in North American Rotational Molding”
- 1999** - “The New Economics of Rotational Molding”
- 2003** - “The New Market Dynamics in Rotomolding”
- 2008** - “Emerging Growth Strategies among North American Rotational Molders”
- 2011** - “The PCRS Guide to North American Rotomolders”
- 2012** - “The Future of North American Rotational Molding”
- 2016** - “The North American Rotational Molding Business: Trends Influencing Strategic Planning”
- 2017** - “The (updated) PCRS Guide to North American Rotomolders”

Sources of Information on N.A. Plastics Processors

- Annual Plastics News surveys of processors
- Other plastics magazines (e.g., Composite Manufacturing, Plastics Technology)
- Plastics conferences such as the annual meeting of the Association of Rotational Molders (ARM) and the biennial Topical Conference (TopCon) organized by the SPE Rotational Molding Division
- My phone-based surveys of processors, suppliers and process-specific analysts and technical experts

The Trend of Plastics News Estimates of Individual N.A. Rotomolder Sales, 1995-2018

(percentage of top 100 companies)



The N. A. Rotational Molding Business: Issues of Interest to an Economist

- The origin of the process
- The evolution of the process
- The current nature and scope of the process
- The size of the business (e.g., number of processors, annual sales, annual volume of material consumed, etc.)
- The nature of the business (shares of custom, proprietary and captive output)
- Industry structure (e.g., geographical concentration, industry concentration)
- The share of rotomolding in a) North American plastics processing and b) the structural plastic part processing business
- Markets and applications addressed
- The trend of sales
- The trend of productivity improvement
- Recent and likely future growth of the business

The Value of Output of the N. A. Rotomolding Business, 1994-2017

(\$ million)



The Trend of Growth of N.A. Rotomolder Sales, 1995-2017

(annual % change)



Source: PCRS

Recent Stages of Growth of N. A. Rotomolder Sales, 1994-2017

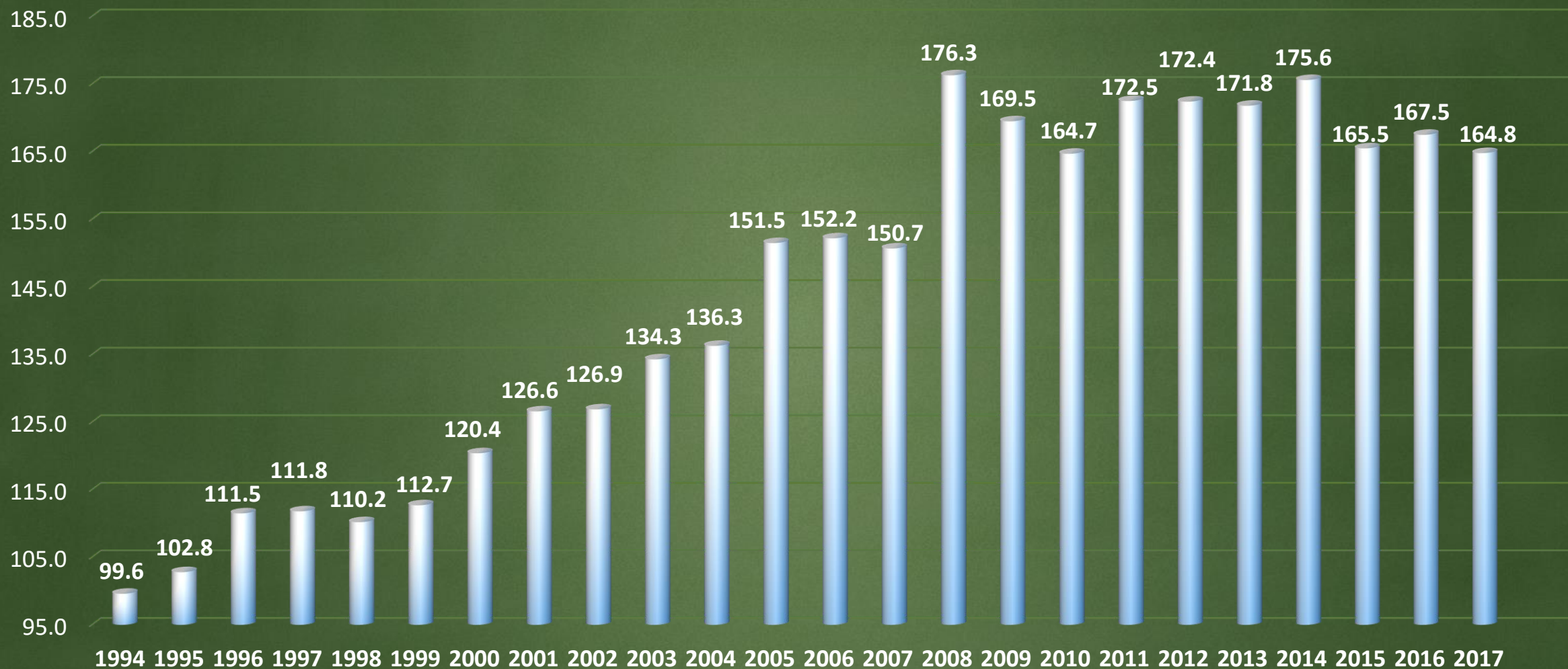
<u>Period</u>	<u>Average Annual % Change</u>	<u>Description of Period</u>
1994-2000	9.0	Strong organic growth
2001	-1.2	U.S. recession
2002-2008	6.2	Recovery from recession
2009	-8.2	U.S. recession
2010-2013	8.1	Recovery from recession
2014-2017	3.1	The “new normal”

Rotomolding – The Supply Side

POTENTIAL GDP = POP + PROD

The Trend of Sales/Employee in N. A. Rotomolding, 1995-2017

(\$ sales/employee)



Source: Plastics News and PCRS

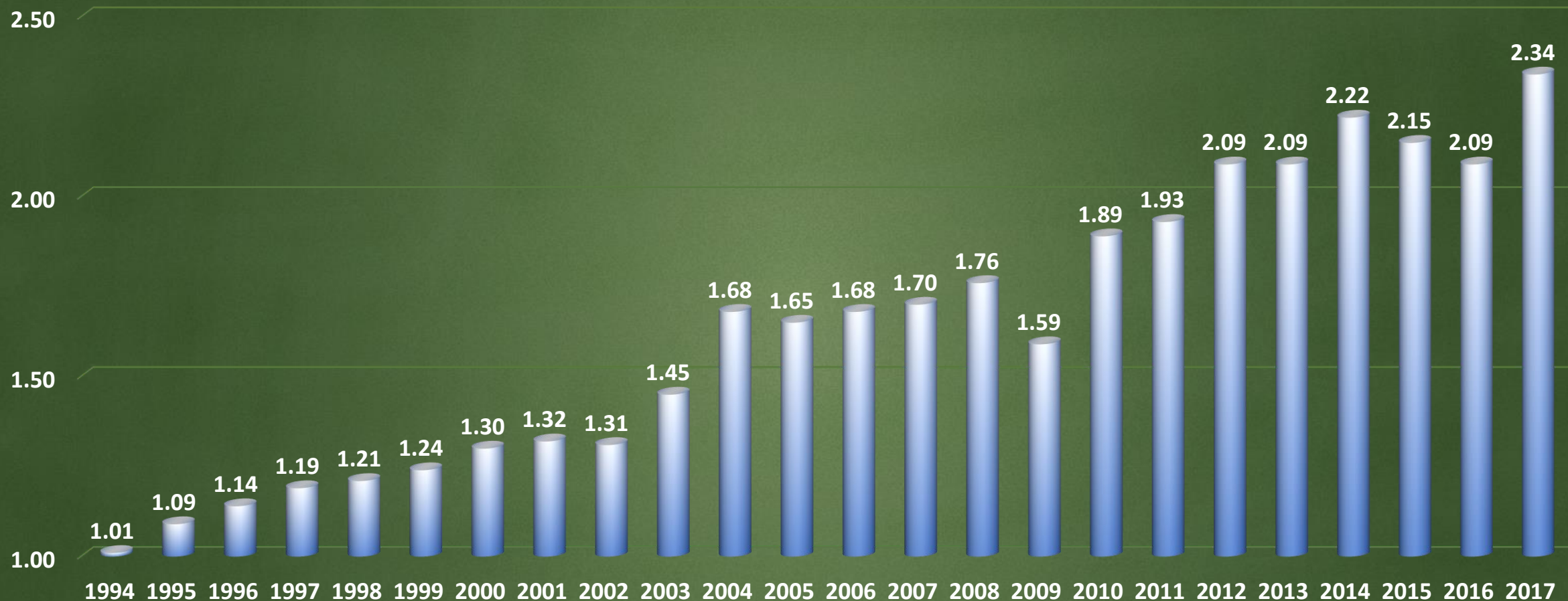
Recent Stages of Growth of N. A. Rotomolder Productivity, 1995-2017

(annual % change in sales/employee)

<u>Period</u>	<u>Average Annual % Change</u>	<u>Description of Period</u>
1995-2000	4.2	Strong organic growth
2001	4.8	U.S. recession
2002-2008	4.1	Recovery from recession
2009	-3.1	U.S. recession
2010-2013	0.5	Recovery from recession
2014-2017	-1.0	The “new normal”

The Trend of Sales/Machine in N. A. Rotomolding, 1995-2017

(\$ million sales/machine)



Source: Plastics News and PCRS

Recent Stages of Growth of N. A. Rotomolder Productivity, 1995-2017

(annual % change in sales/machine)

<u>Period</u>	<u>Average Annual % Change</u>	<u>Description of Period</u>
1995-2000	6.3	Strong organic growth
2001	1.4	U.S. recession
2002-2008	2.8	Recovery from recession
2009	-9.9	U.S. recession
2010-2013	8.1	Recovery from recession
2014-2017	3.1	The “new normal”

Rotomolding Machines in Use, 2013-2018

(machine total at leading rotomolders)

<u>Year</u>	<u>Machines in Use</u>	<u>Percentage change</u>
2013	760	-
2014	754	-0.8
2015	761	0.9
2016	761	0
2017	758	-0.4
2018	760	0.3
2013-2018		0

How should rotomolders address the labor market challenge?

- Raising wages and benefits
- Reducing the work force
- Hiring a human relations manager
- Using temporary services
- Introducing automation
- Implementing lean manufacturing
- Using creative labor scheduling
- Working to reduce labor turnover
- Using an apprenticeship program
- Working with local colleges and technical schools

The Trend of the Labor/Capital Ratio in N. A. Rotational Molding, 1995-2017



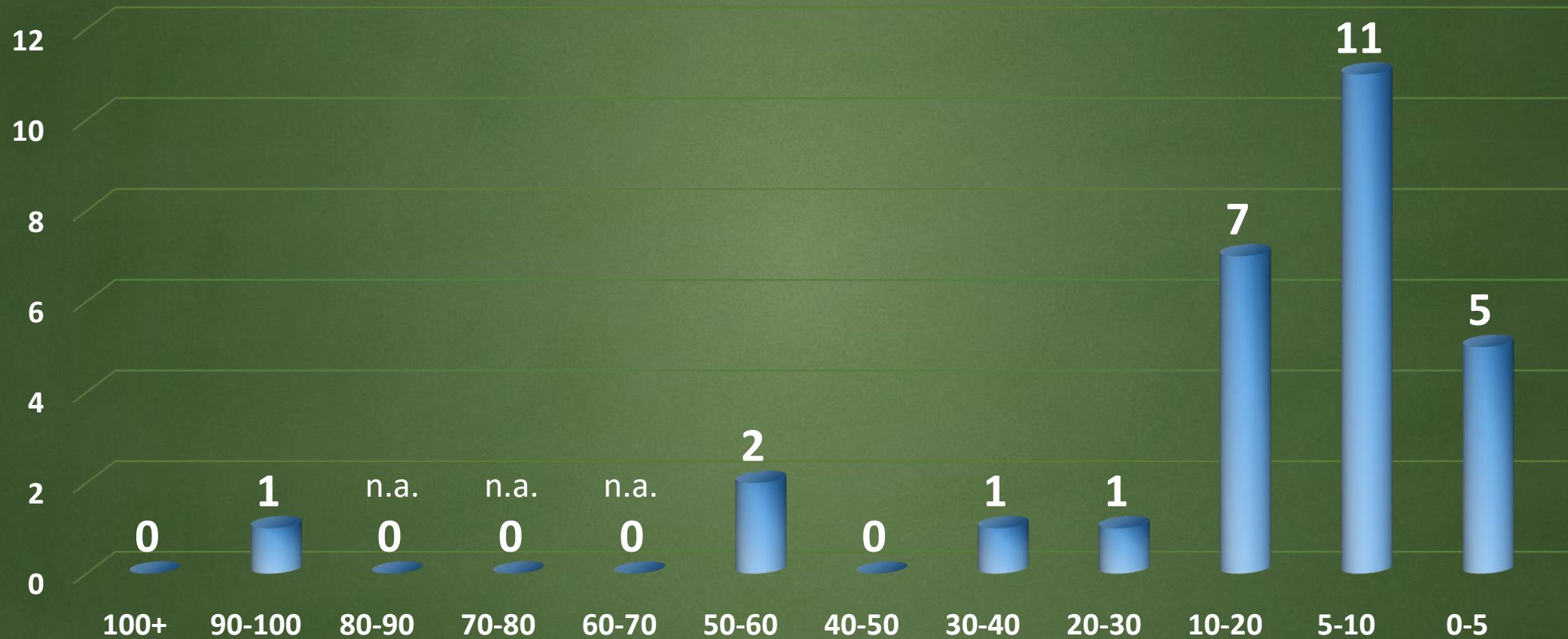
Polypropylene Processing Capability Among Leading North American Rotomolders, 1995-2018

(% of top 100 companies)



Company Size of Rotomolders with Polypropylene Processing Capability, 2018

(\$ million annual sales)



Rotomolding – The Demand Side

Rotomolding Market Options in Plastics News Survey

- aerospace
- agriculture
- automotive
- consumer products
- DOT containers
- electrical/electronics
- food processing
- government/defense
- highway safety
- industrial products
- lawn and garden
- liquid waste
- marine products
- material handling
- medical furniture
- medical waste containers
- recreation/sporting goods
- refuse containers
- tanks
- toys
- transportation (non-auto)

Leading and Lagging Market Options in the 2018 Plastics News Survey

(% of total companies)

Leading Markets		Lagging Markets	
tanks	(72%)	transportation (non-auto)	
recreation/sporting goods	(70%)	marine products	
industrial products	(65%)		
lawn and garden	(59%)		
consumer products	(52%)		

Change in Rotomolder Market Participation, 2008-2018

Leading Markets

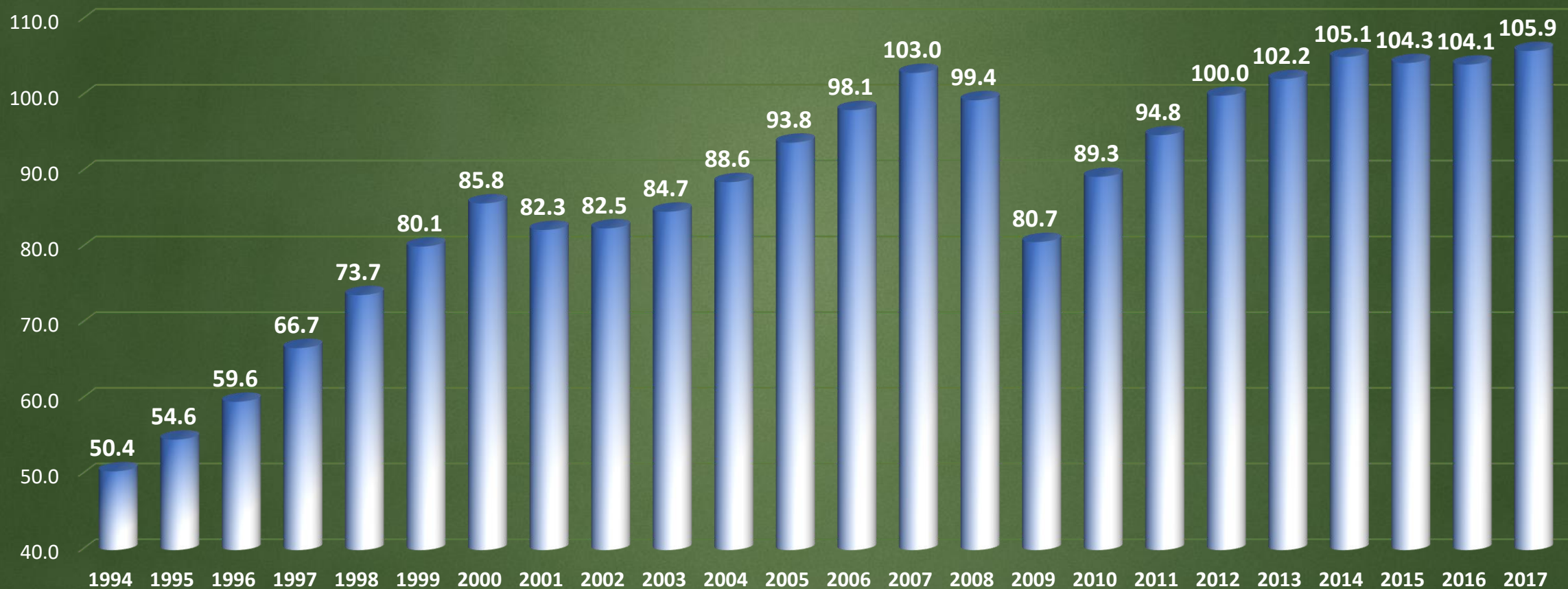
industrial products	(+15%)
food-processing	(+13%)
agriculture	(+10%)
lawn and garden	(+10%)
material handling	(+8%)
refuse containers	(+8%)

Lagging Markets

tanks	(-5%)
government/defense	(-4%)
toys	(+1%)
medical furniture	(+2%)
medical waste	(+2%)

The Trend of Production in U.S. Durable Goods Manufacturing, 1994-2017

(index: 2012=100)



Source: Federal Reserve Bank, "Durable Goods Manufacturing", NAICS GMFD series

Recent Stages of Growth of N. A. Durable Goods Manufacturing, 1995-2017

<u>Period</u>	<u>Average Annual % Change</u>	<u>Description of Period</u>
1995-2000	9.5	Strong organic growth
2001	-4.1	U.S. recession
2002-2008	2.7	Recovery from recession
2009	-18.8	U.S. recession
2010-2013	6.1	Recovery from recession
2014-2017	0.9	The “new normal”

Durable Goods Manufacturing



Recreational Vehicle Shipments



Durable Consumer Goods Manufacturing



Industrial and Other Equipment



Automotive Products



Construction Supplies (ex hi-tech)



Transit Equipment



Medical Equipment and Supplies



Farm Machinery and Equipment



Computer and Electronic Products



Electrical Equipment, Appliances and Components



Summary: Extent of Rotomolder Market Rebound from 2008

<u>Market</u>	<u>% Rebound from 2008</u>
durable products	6.6
durable consumer products	18.6
industrial products	-7.0
automotive products	44.1
computer & electronic products	38.8
recreational vehicles	29.2
transit equipment	26.5
construction supplies	-3.4
medical equipment & supplies	-6.6
electrical equipment, etc.	-9.1
farm machinery & equipment	-19.7

Summary

How do you plan to raise productivity and profitability?

- Investing in automation
- Investing in robots
- Investing in CNC controllers
- Investing in capital equipment
- Raising capital utilization
- Implementing/expanding lean manufacturing
- Implementing worker training
- Stabilizing the workforce; better labor utilization
- Lowering raw material and energy costs
- Lowering the scrap rate
- Improving the condition of molds

Projections for the Future Value of N.A. Rotomolders' Sales, 2018-2020

(\$ million)



The Challenge Going Forward

- i. solve the labor force problem
 - ii. improve all aspects of the process
 - iii. upgrade machinery and equipment
 - iv. introduce robotics and other forms of automation
 - v. make the process – and the pay – more attractive to existing and new employees
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- i. become multi-dimensional plastics processors
 - ii. utilize all resources (e.g., ARM, ARMA, SPE) to promote the process

Thank You!

PPCRS