



# How to Implement Quick Response Manufacturing

February 1-2, 2011

DoubleTree Hotel

Madison, Wis.

*University of Wisconsin-Madison Center for Quick Response Manufacturing*

## Learn how reducing lead times can lower costs, improve quality and grow market

### Implementation Results

#### Alexandria Extrusion

Full-service provider of precision aluminum extrusions

- Reduced average value-added throughput time from 35 days to 18 days
- Reduced quoted lead times from 30 days to four days
- Reduced extrusion-only customers lead time from six weeks to five days – with no additional inventory for most customers

#### P&H Mining

Manufacturer of surface and underground mining equipment

- Reduced lead time for pinions from 44 to 22 days
- Reduced lead time for office cell by 56% while increasing output by 300%
- Reduced lead time for large round parts by 50% while increasing output by 50%

Many manufacturers face a growing trend: customers increasingly request highly customized products at short lead times. Companies that have responded to this challenge have seen growth in profitability and market share. The key to success: reducing lead times to eliminate waste such as expediting, excess inventories and high overhead.

Quick Response Manufacturing (QRM) provides a time-tested set of principles and tools to reduce lead time throughout your extended enterprise and build a strong foundation for long term growth. QRM has helped companies reduce lead times by over 80%, reduce costs by 20-40%, and substantially increase market share.

If you manufacture low-volume, high-variety or custom-engineered products, join us for this hands-on workshop and learn how Quick Response Manufacturing can give you a strong competitive advantage and put your company in a position to compete with low-wage countries.

### Presenter: Ananth Krishnamurthy

Ananth Krishnamurthy is the Director of the Center for Quick Response Manufacturing and serves as an Associate Professor in the Department of Industrial and Systems Engineering at the University of Wisconsin-Madison.

Involved with the QRM Center for a decade, he has conducted numerous training events in the United States and Europe earning him worldwide recognition as an expert in the theory and practice of QRM.

Krishnamurthy has consulted for numerous companies and has authored various publications in international journals. Prior to returning to UW-Madison, Krishnamurthy was an Assistant Professor at Rensselaer Polytechnic Institute.



“Quick Response Manufacturing will change the face of manufacturing as we know it.”

— Greg Renfro

VP Global Manufacturing Strategy  
National Oilwell Varco, Orange,  
Calif.

# Compete on Speed

**The ability to adapt — to be agile and fast — can give you a competitive edge, especially when your markets expect customized products in a hurry.**

Reducing your lead times throughout the enterprise — from order entry and engineering through manufacturing and shipping — is the most effective way to use speed as a competitive advantage.

While JIT and Lean manufacturing methods work well for high-volume, repetitive

production, QRM provides an additional set of tools and methodologies specifically designed for highly customized products with varying demands.

QRM can help you take a giant step forward in your company's quest to become more competitive. Shorter lead times can not only reduce cost and increase profitability, they also enable you to grow your company's market share and compete with low-wage countries.

## QRM - A Tried and Tested

### Approach to Lead Time Reduction

**QRM gives you a set of principles, methods and tools to reduce lead time in all your operations.**

Companies that compete through QRM capture market share not only by filling customer orders faster than others, but by rapid development and introduction of high-quality, low-cost products.

While Lean manufacturing techniques can be powerful in certain situations, companies making custom-engineered products in low or varying volumes often struggle to apply Lean in all aspects of their operations.

For these companies, QRM provides an enterprisewide approach. Using QRM principles and tools, companies can go beyond Lean manufacturing principles and maintain the edge over their competition.

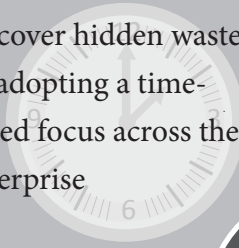
---

**This two-day course will benefit senior executives, managers, and staff in multiple areas: marketing, sales, accounting and finance, purchasing, materials, design engineering and manufacturing.**

---

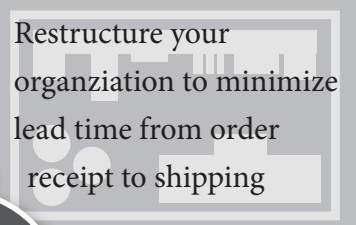
## THE POWER OF TIME

Uncover hidden waste by adopting a time-based focus across the enterprise



## ORGANIZATION STRUCTURE

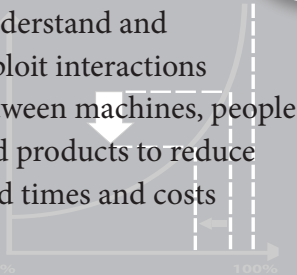
Restructure your organization to minimize lead time from order receipt to shipping



**4**  
CORE  
CONCEPTS

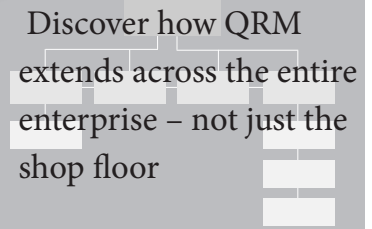
## SYSTEM DYNAMICS

Understand and exploit interactions between machines, people and products to reduce lead times and costs



## ENTERPRISEWIDE APPLICATION

Discover how QRM extends across the entire enterprise — not just the shop floor



Center for  
**Quick  
Response  
Manufacturing**

University of Wisconsin-Madison

The QRM Center is a partnership between companies, faculty and students at the University of Wisconsin-Madison, dedicated to the research and implementation of lead time reduction principles.

Since 1993, the Center has worked with more than 200 companies worldwide and from a wide variety of industries to implement and refine QRM principles with a focus on real-world challenges.

---

## Upcoming QRM Center Events

**How to Design Office Cells** // March 14, 2012  
Engineering Centers Building (Madison, Wis.)

**How to Implement POLCA** // April 11-12, 2012  
DoubleTree Hotel (Madison, Wis.)

*For more information, check [www.qrmcenter.org](http://www.qrmcenter.org) or join our QRM LinkedIn group.*

# Learn to Apply QRM Across the Enterprise



## POWER OF TIME

- Hidden costs of long lead times and the power of short lead times
- Pitfalls of traditional methods and how QRM provides a new approach to lead time reduction



## PRODUCTION

- Defining product families and implementing cells for low-volume or customized production
- QRM and Lean: where they should be used and how they work together
- Determining optimum batch sizes and resource utilization



## OFFICE & ENGINEERING

- Defining product families for office operations
- Reducing timelines for quoting and order processing
- How to create office cells to streamline cost estimating, product engineering and design



## MATERIAL PLANNING & POLCA

- High-level MRP scheduling
- Limitations of takt time and kanban pull in high-mix settings
- POLCA – a card-based visual capacity management tool for QRM



## PURCHASING & SUPPLY MANAGEMENT

- Limitations of traditional purchasing policies and QRM solutions
- Using Manufacturing Critical-path Time (MCT) to improve supply chain performance
- Total cost of sourcing strategies



## METRICS & ACCOUNTING

- Quick and accurate ways to measure lead time with QRM's Manufacturing Critical-path Time (MCT) metric
- How to justify QRM financially and ways to quantify the benefits
- Impact on quality, cost and delivery

## PRACTICAL AND TO THE POINT

Every year the QRM Center and its member companies conduct several implementation projects. As a result, real-world industry challenges and ways to address them are an integral part of this workshop.

## CONQUERING OBSTACLES

In group discussions and exercises, participants will learn to identify obstacles to implementing QRM and how to overcome them.

## REAL WORLD EXAMPLES

Throughout the workshop, attendees will examine case studies and examples to see how other companies have used QRM to their advantage.

## IMPLEMENTATION ROADMAP

Workshop participants will take away a tried-and-tested roadmap for successful QRM implementation, based on hundreds of QRM projects.

## FEES

**Course fee:** \$995

**Discounted fee for**

**QRM Center members:** \$595

*(QRM member firms may enroll up to five people at the member rate.)*

Course fee due by registration deadline of January 26, 2012. Cancellations after deadline will be assessed 25% of enrollment fee. Fee covers workbook; Rajan Suri's book *Quick Response Manufacturing: A Companywide Approach to Reducing Lead Times*; continental breakfasts and lunches both days, and reception after the first day's session.

## SCHEDULE

### DAY 1:

Continental breakfast and check-in from 7:30 a.m.

Course from 8:00 a.m. to 5:00 p.m.

Networking reception from 5:15 to 7:00 p.m.

### DAY 2:

Continental breakfast from 7:30 a.m.

Course from 8:00 a.m. to 4:00 p.m.

## LODGING

### DoubleTree Hotel

525 W Johnson St,  
Madison, Wis. 53703

Call 800.222.8733 or go online by January 2

Request Group Code

**IQR.**

## REGISTER


Call us at  
**608-262-4709**  
or go to  
**qrmcenter.org** for  
online registration.


REGISTRATION DEADLINE:  
**January 26, 2012**

HOW MUCH COST CAN WE SAVE BY CUTTING ALL THIS WAIT TIME?



Only 17 hrs touch time in 7 weeks lead time (< 5%)!

 = TOUCH TIME

 = WAIT TIME



# How to Implement Quick Response Manufacturing

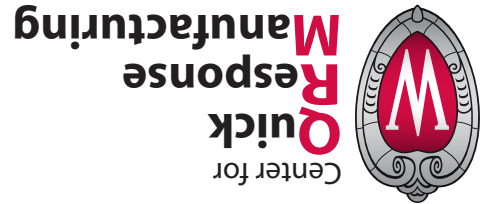
February 1-2, 2011

DoubleTree Hotel

Madison, Wis.

www.qrmcenter.org  
608.262.4709  
Madison, WI 53706  
1550 Engineering Drive  
3160 Engineering Centers Building

University of Wisconsin-Madison



Presented by the University of Wisconsin-Madison Center for Quick Response Manufacturing

Madison, Wis.

DoubleTree Hotel

February 1-2, 2011

# How to Implement Quick Response Manufacturing

In most companies the amount of time a product is actually worked on accounts for less than 5% of lead time.

The rest is spent waiting.

Join us for this workshop on QRM and learn how to reduce lead time in all operations, reduce costs and improve profitability.