Getting Started Manufacturing in China

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Overview

- Why China?
- Current manufacturing landscape
- Selecting the right manufacturing partner
- Controlling cost, schedule and quality
- Protecting IP
- Upcoming challenges

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Reasons to Manufacture in China

- COGS Sensitivity
- Manual Labor
- Production Volume
- Leverage existing Manufacturing Technology
- Tolerance for Supply Chain and Logistics
- Robust IP

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Typical Communication Challenge

Product Designed in USA

Database Sent to China

Tooling Manufactured

Parts Molded

Product Assembled

Final Inspection & Shipping

Current Manufacturing Landscape in China

- Lead Paint + Economy + Labor Laws => Dominance of Top Tier Contract Manufacturers (CM)
- Greater selectivity by CMs
- Risk averse credit and payment terms
- Importance of relationships

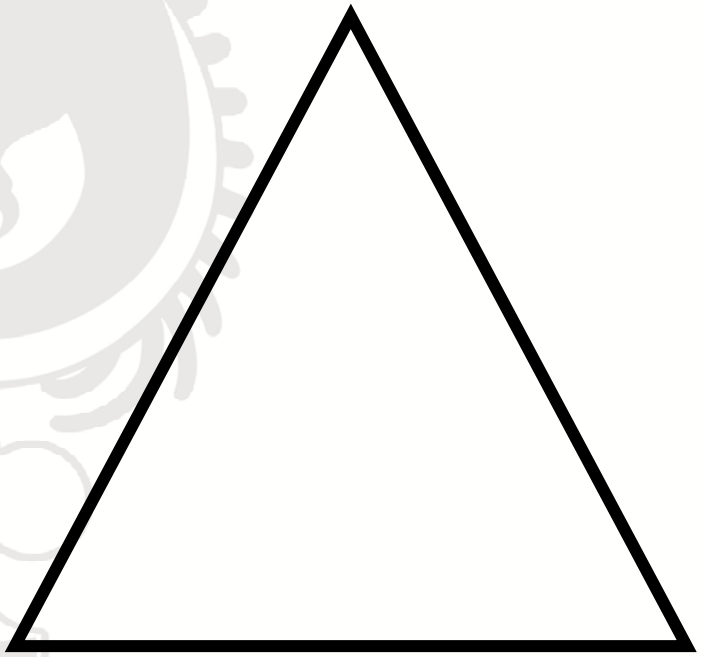
How to Select the Right CM

- Relationships
- Similar products
- Team Skills
- Manufacturing Capability
- Fish vs. Pond Sizing
- Access to Top Management
- Stability
- Working Capital
- Business Terms
- Costing
- Quality
- IP Protection
- Strong Code of Conduct
- Location
- Hunger
- Financing Opportunities
- Government Relationships

RFQ Process

- Select four to six CMs
- Release RFQ Package Containing:
  - Company Overview, Management Bios, Funding, Sales and Marketing Plan, Product description.
  - Questions for CM's response: team, why a good fit, describe similar projects, engineering input, payment terms, NRE, etc.
  - BOM Template: make transparent. Plastics (shot weight, resin cost, cycle time, mold tonage, etc), EE cost, lead time, separate into under USD 1 and over USD 1. Labor, markups (std, special, consigned). Push for open book costing.
  - Schedule (fill in the blanks)
- Compare Results "Apples to Apples"
  - Margins (std, special, consigned)
  - Normalized COGS (remove special components with high price variability).
  - Payment Terms
- Follow Up
  - Clarify any incomplete answers
  - Push for lower margins and better terms
  - Component pricing: push for lowest common denominator pricing

Control the Manufacturing Triangle



Control Costs

1. Disassemble BOM into the most basic elements
2. Separate special components and apply separate markup
3. Ensure mathematical transparency
4. Compare to standards
5. Negotiate inclusions (“free” samples, etc).

Control Schedule

- Back out schedule from required in-store date
- Track and correct with small milestones
- Shorten lead-times, use buffer stock
- Plan contingency
- Use onsite intelligence to avoid surprises

Control Quality (1)

- Definition:
  - Quality = Customer Satisfaction = Performance – Expectations
  - Fitness for Use
- Will make or break a product … and a Company!
- Strong indicator of long term success of a product.
- Rarely considered in the engineering phase by startups due to schedule, cost and technical pressures.
- Be aware of the “unknown unknowns”.

Control Quality (2)

- Incoming Quality Control: Use a reputable factory and start with good ingredients.
- Build and test along the way. Use sub-components.
- Use Statistical Process Control (SPC) / Yield. Find out now, not later.
- Sample Testing: Temp/Humidity; Transportation; Drop; T/T; Small Parts; Heavy Metals; Compliance; Functional; Life. How do tests match reality?
- Final Inspection / Acceptable Quality Levels (AQL)
- Have an onsite presence.

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Protect IP

Sources of Leaks

- CM
- Industrial spying by competitors
- Reverse engineering by competitors

Protection

- Work with reputable factories
- Work on a “Need to Know” basis
- Apply common sense
- Protect a critical component
- Pay NRE
- Split manufacturing
- Work with a factory with strong ties to the local government
- File patent protection

Upcoming Concerns

- Currency Exchange Rate / RMB float
- Exponential Labor Cost: 20-30% increase yoy
- Price of Oil impacts shipping
- Politics: Growing tension between the US & China. Potential tariffs, etc.
- Acts of God: Environmental and Health

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Reference Material

Typical Milestones

- Hand Over / Kick-Off
  - Form CM Team
  - Contact Lists / Roles and Responsibilities
  - ME and EE File transfer
  - Works Like / Looks Like Samples
  - CM trip to the US if possible (access to models and team, relationship building).
  - Factory Input
- Components
  - Engineering
  - Quality
  - Production Planning (interface with Sales)
  - Sourcing / MA / Costing
  - Logistics
  - Process / Procedure
  - Financial (modeling and payments)
- Pre-Production Milestones
  - Tool Release
  - Tool Start (TS)
  - First Shots (FS)
  - Engineering Pilot 1 (EP1)
  - EP2
  - EP3
  - Final Engineering Pilot (FEP)
  - Production Pilot (PP)
- Production
  - Production Start (PS)
  - Ramp
- Engineering Change Notice (ECN)
- Sustaining (Quality Up / Cost Down)
- Sunset

Why Many Companies Fail in China

- Do not know the right people
- Pick the “wrong” factory
- Lack of Trust
- Failure to communicate

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