Manufacturing Readiness

The Six Pillars of Operational Excellence

Operational Clarity. Strategic Confidence. Measurable Results.

Agenda

Manufacturing Readiness · Six Pillars of Operational Excellence

SIX PILLARS AT A GLANCE

I ◆ Process Excellence

II ◆ People & Capability

III ◆ Industrial Engineering

IV ◆ Supply Chain Readiness

V ◆ Quality Management

VI ◆ Facilities & Maintenance

AGENDA

"True readiness requires strength across all six pillars — weakness in one undermines all others."

MARK DYDYK CONSULTING LLC

Operational Clarity. Strategic Confidence.

Executive Summary

20–35%
OEE IMPROVEMENT IN HIGH-READINESS PLANTS

15–25%
REDUCTION IN TOTAL OPERATIONAL COSTS

30–40%
FASTER NEW PROGRAM LAUNCH CYCLES

> *The manufacturers that thrive will be those with the highest degree of operational readiness — not simply those with the most sophisticated technology.*

Manufacturers face an unprecedented convergence of pressures — supply chain volatility, skilled labor shortage, Industry 4.0 adoption demands, and relentless margin compression. The **Six Pillars framework** provides a proven diagnostic lens and structured improvement roadmap across the dimensions that matter most to long-term competitiveness.

- Supply Chain Volatility
- Skilled Labor Shortage
- Industry 4.0 Pressure
- Margin Compression

THE CASE FOR MANUFACTURING READINESS

Why Readiness Matters Now

RESHORING & NEARSHORING

Largest U.S. manufacturing investment wave in history; customers demand evidence of readiness before awarding programs.

INDUSTRY 4.0 ADOPTION

Digital transformation is a present-tense competitive differentiator; integrated MES, OEE, and predictive maintenance separate leaders from laggards.

SKILLED LABOR SHORTAGE

2M+ manufacturing jobs could go unfilled by 2030; knowledge-transfer crisis threatens process consistency and institutional capability.

ESG COMPLIANCE

Environmental and governance requirements shifting from voluntary to supply chain mandates, requiring embedded operational systems.

SUPPLY CHAIN REGIONALIZATION

Dual-sourcing, buffer stock, and supplier qualification absorbing management bandwidth at unprecedented levels.

Each force independently demands operational excellence — together, they demand it urgently.

THE SIX PILLARS OF MANUFACTURING READINESS

The Cost of Unreadiness

OPERATIONAL RISK

THE RISK	THE IMPACT
Unplanned Downtime Equipment failure & process breakdown	**$125K – $2.3M per hour in lost production** Cascading costs across labor, expediting, customer penalties, and recovery overtime *Siemens 2024 | Fluke 2025: avg $207M/week impact across industrials*
Quality Escapes Defects reaching customer or field	**Warranty claims, re-sourcing risk & COPQ spikes** End-of-line inspection plants escape more defects at higher cost — sorting is not quality control
Failed Program Launches APQP/PPAP failures & ramp-rate misses	**Revenue loss from launch failures & future award risk** Inability to ramp at required rate jeopardizes both current and future program awards from customers
Talent Attrition Skilled workforce & knowledge drain	**$30K – $50K+ per replacement — but true cost is far higher** Institutional knowledge loss routinely exceeds the quantified replacement cost; rebuilding takes years

> *Most manufacturers don't fail because of bad products — they fail because of broken systems, misaligned people, and invisible processes.*

The **Six Pillars** of Manufacturing Readiness

FRAMEWORK OVERVIEW

OPERATIONAL EXCELLENCE

GROWTH

I — PROCESS EXCELLENCE

Standardized, documented, continuously improved operations

II — PEOPLE & CAPABILITY

Right skills, right roles, succession depth, CI culture

III — INDUSTRIAL ENGINEERING

Methods-engineered, time-studied, OEE-adjusted capacity planning

IV — SUPPLY CHAIN READINESS

Qualified suppliers, risk mitigation, disciplined inventory

V — QUALITY MANAGEMENT

Quality at source via APQP, FMEA, SPC, control plans

VI — FACILITIES & MAINTENANCE

Preventive/predictive maintenance, 5S, capacity aligned to demand

OPERATIONAL FOUNDATION · SYSTEMS · CULTURE · DATA

True readiness requires strength across all six *— interdependencies mean that weakness in one pillar undermines the performance of all others.*

PILLAR I

Pillar I: Process Excellence

WHAT READINESS LOOKS LIKE

- Every critical operation **documented in current standard work** — accessible and enforced at point of use.
- Deviations are **visible and escalated immediately** — not discovered at end-of-line or by the customer.
- **CI mechanism (Kaizen / Six Sigma) embedded in daily management** — not event-driven; improvement is a rhythm, not a reaction.

TOP FAILURE MODES

1. **SOPs exist but are outdated or inaccessible** at point of use — compliance theater without operational impact.
2. **No formal change management** — process drift remains invisible until a quality escape surfaces the gap.
3. **CI is reactive and event-driven** rather than embedded in daily routines — improvement halts between scheduled Kaizen events.

DIAGNOSTIC QUESTIONS FOR LEADERS

- Q Can **any operator on any shift** produce identical output to the same documented standard?
- Q What is our **process confirmation frequency** — and who specifically owns accountability for it?
- Q How quickly can we **update and redeploy a standard work instruction** after a confirmed process change?

"Process readiness correlates directly with first-pass yield, schedule attainment, and OTD performance."

- FIRST-PASS YIELD
- SCHEDULE ATTAINMENT
- ON-TIME DELIVERY

Pillar II: People & Organizational Capability

READINESS DEFINITION

- **Structured skills matrix** mapped to each role — identifying required competencies at every position
- **Competency-verified training** with demonstrated proficiency standards — not simply attendance records
- **Succession depth** in critical technical and leadership roles — bench strength visible and maintained

KEY INDICATOR
Every critical role has a verified, trained backup with documented competency sign-off

TOP FAILURE MODES

- Skills matrices used as **compliance documents**, not operational tools — reviewed at audit, ignored in practice
- Supervisors promoted for **technical skill** with no leadership development — executing, not leading
- No mechanism to capture **retiring workers' institutional knowledge** — expertise walks out the door permanently

RISK SIGNAL
Replacement cost: $30K–$50K+ per employee — institutional knowledge loss exceeds this figure

DIAGNOSTIC QUESTIONS

Q1 What **% of critical roles** have a qualified, independent backup who can perform the job without supervision?

Q2 How do we measure training effectiveness — **seat time or demonstrated competency** with verified sign-off?

Q3 Which **5 people**, if they left tomorrow, would create the greatest operational risk — and what is the mitigation plan?

LEADERSHIP ACTION
Answer these three questions honestly — the gaps reveal your people readiness score

> *Plants with high people readiness absorb turnover without disruption and sustain improvement through leadership transitions.*

Industrial Engineering & Capacity Planning

WHAT READINESS LOOKS LIKE

- Every operation methods-engineered and time-studied — standards current, validated, and operationally active
- Capacity commitments built on OEE-adjusted demonstrated throughput — not theoretical nameplate rates
- Formal methods improvement process active on the floor — cycle time reduction is systematic, not incidental

TOP FAILURE MODES

1. Labor standards set at line design and never updated — scheduling becomes disconnected from floor reality over time
2. Capacity models use rated capacity, not demonstrated OEE-adjusted output — delivery commitments fail under sustained production
3. No formal methods improvement process — cycle time savings left to individual operator habits and tribal knowledge

DIAGNOSTIC QUESTIONS FOR LEADERS

- Are labor standards current, validated, and actively driving scheduling decisions on the floor today?
- When quoting new capacity, are we using OEE-adjusted demonstrated output or theoretical throughput?
- What is our formal methods improvement process — who owns it, how often does it run, what has it delivered?

IE & CAPACITY KEY METRICS

OEE
BASIS FOR ALL CAPACITY COMMITMENTS

15–30%
TYPICAL GAP: RATED VS. DEMONSTRATED THROUGHPUT

≤1 yr
TARGET FREQUENCY FOR LABOR STANDARD RE-VALIDATION

"Capacity commitments built on theoretical throughput consistently fail to deliver — and damage customer relationships in the process."

THE SIX PILLARS OF MANUFACTURING READINESS

Pillar IV: Supply Chain & Materials Readiness

PILLAR IV

READINESS DEFINITION

What Supply Chain Readiness Looks Like

- Qualified dual-sourced suppliers in all critical spend categories with validated backup protocols
- Disciplined inventory managed via min/max/kanban — not spreadsheets or tribal knowledge
- Accurate, stable demand signals communicated consistently to the supply base
- Proactive disruption risk management with documented contingency plans by category

TOP FAILURE MODES

Where Supply Chains Break Down

- Single-source dependency with no validated backup — one disruption halts the line
- Inventory managed by tribal knowledge — simultaneous stockouts and costly excess on the shelf
- Supplier qualification with no ongoing scorecard, audit, or re-qualification process in place

DIAGNOSTIC QUESTIONS

Ask These to Reveal Hidden Risk

- What % of active part numbers are single-sourced, and for how many is there a validated alternative?
- How often are shortages caused by our forecast accuracy vs. actual supplier performance failures?
- When was the last supplier risk assessment conducted across your top 20 spend categories?

Key Insight: Supply chain performance is a two-way street — your **demand signal quality** directly determines your supplier's ability to plan, buffer, and deliver on time.

PILLAR V

Pillar V: **Quality Management Systems**

WHAT READINESS LOOKS LIKE

- **Quality at source** via APQP, FMEA, control plans & SPC — not end-of-line sorting
- **QMS integrated** with production operations — not siloed in the quality department
- **Operators empowered** to apply defined reaction plans without engineering escalation
- **COPQ measured** as a strategic leadership metric — full cost visibility, not just scrap

TOP FAILURE MODES

1. FMEAs & control plans completed for launch but **never updated** — rendered historical rather than living operational tools
2. Quality decisions **escalate to engineers** because operators lack empowerment or training on defined reaction plans
3. COPQ **partially tracked** (scrap/rework only) — appraisal, warranty, and expediting costs remain invisible

DIAGNOSTIC QUESTIONS

- Q What is total **COPQ as % of revenue** — does it meet the 1–3% world-class benchmark?
- Q Are **control plans reviewed** at a defined frequency with clear ownership and version control?
- Q What formally **triggers an FMEA update** — process change, escape, customer feedback, or nothing?

1–3%
WORLD-CLASS

World-class COPQ target: 1–3% of revenue. Most unready plants operate at **5–10%** without knowing it — because appraisal, warranty, and expediting costs are never fully captured.

5–10%
UNREADY PLANTS

Pillar VI: Facilities, Equipment & Maintenance

Protecting Assets · Enabling Availability · Sustaining OEE-Adjusted Capacity

PILLAR VI

READINESS DEFINITION

- **Preventive & predictive maintenance** program protecting asset availability — not reactive firefighting
- **5S embedded** as a daily, audited discipline with clear ownership and measurable standards
- **Capacity planning reflects OEE-adjusted** demonstrated capability — not theoretical nameplate
- Maintenance function **shifted from reactive to predictive** — maximizing uptime and asset life

85%+ Target OEE for high-readiness plants

TOP FAILURE MODES

1. **PM programs deferred** under production pressure — accumulating maintenance debt that surfaces as costly unplanned downtime
2. **Capacity models use rated/theoretical throughput** — not demonstrated OEE-adjusted output — causing delivery commitment failures
3. **5S treated as a one-time event** — regresses within 6–12 months without embedded daily auditing and accountability

Deferred maintenance never disappears — it compounds and surfaces at the v

DIAGNOSTIC QUESTIONS

ASK THESE OF YOUR LEADERSHIP TEAM:

Q1 *What **% of maintenance labor hours** are emergency/reactive vs. planned preventive?*

Q2 *What is our **PM schedule compliance rate**, and who owns accountability for it?*

Q3 *Does our new **capacity quote model reflect OEE-adjusted demonstrated capacity** — or theoretical throughput?*

PM SCHEDULE COMPLIANCE TARGET ≥ 90%

Reactive — World-Class

KEY INSIGHT: Plants in reactive maintenance mode spend 3–5× more on maintenance labor than plants operating structured PM programs.

MANUFACTURING READINESS

Manufacturing Readiness Maturity Model

MATURITY SCALE: REACTIVE → PREDICTIVE/ADAPTIVE

LEVEL 1 — Reactive

- Ad hoc firefighting — no standard operating processes
- High unplanned downtime; management by exception only
- No formal CI mechanism; quality reactive, not preventive

OEE BENCHMARK
Not Tracked

LEVEL 2 — Defined

- Processes documented but inconsistently followed on the floor
- SOPs outdated; tribal knowledge dominates key operations
- Low PM compliance; CI activity sporadic and event-driven

OEE BENCHMARK
Typically <60%

LEVEL 3 — Managed

- Key metrics tracked; digital tools actively being piloted
- CI events at least monthly; ERP/MES partially deployed
- Supervisors aware of standards; inconsistent enforcement

OEE BENCHMARK
>65%

LEVEL 4 — Optimized

- Data-driven decisions; fully integrated ERP/MES/QMS ecosystem
- PM schedule compliance >90%; structured succession planning active
- COPQ <2% of revenue; continuous improvement embedded in culture

OEE BENCHMARK · COPQ
>80% · <2%

LEVEL 5 — Predictive / Adaptive

- AI-enabled self-correcting systems; digital twin deployed
- Near-zero unplanned downtime; top-quartile retention rates
- Autonomous quality detection; demand-signal-driven supply chain

OEE BENCHMARK
>90%

LOWEST MATURITY — PEAK OPERATIONAL EXCELLENCE

⚠ RISK ALERT Organizations scoring Level 1–2 across 2+ pillars are at significant operational risk. Stabilize before attempting transformation or technology deployment.

Your Path Forward: The Manufacturing Readiness Assessment

CONSULTING ENGAGEMENT

1 PHASE 1

DAYS 1 – 30

Diagnostic

- On-site assessment across all Six Pillars
- Structured leadership interviews
- OEE, quality, maintenance & supply chain data review
- Pillar-by-pillar maturity scoring with supporting evidence

2 PHASE 2

DAYS 31 – 60

Gap Analysis & Roadmap

- Prioritized gap analysis ranked by impact & urgency
- Identification of 90-day quick wins
- 12-month transformation roadmap with KPI targets
- Executive package for board-level communication

3 PHASE 3

ONGOING

Implementation Support

- Embedded consulting support on the floor
- KPI dashboard development & tracking
- Change management at supervisory & operator level
- Monthly steering committee reviews

NEXT STEP

Request a Manufacturing Readiness Assessment

- Pillar-by-Pillar Readiness Report
- Prioritized Transformation Roadmap
- Executive Presentation Package
- Estimated ROI Projections

GETSTARTEDTODAY

