

JIT Implementation Manual

The Complete Guide to
Just-in-Time Manufacturing

Second Edition

Volume 1

The Just-in-Time Production System

HIROYUKI HIRANO



CRC Press
Taylor & Francis Group

A PRODUCTIVITY PRESS BOOK

JIT Implementation Manual

The Complete Guide to
Just-in-Time Manufacturing
Second Edition

Volume 1

The Just-in-Time Production System

HIROYUKI HIRANO



CRC Press

Taylor & Francis Group

Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an Informa business
A PRODUCTIVITY PRESS BOOK

Contents

Publisher's Message	ix
Foreword to the Original English Edition	xi
Introduction to the Original English Edition.....	xiii

Volume 1

1 Production Management and JIT Production Management	1
Approach to Production Management.....	3
Overview of the JIT Production System.....	7
Introduction of the JIT Production System.....	12
2 Destroying Factory Myths: A Revolutionary Approach.....	35
Relations among Sales Price, Cost, and Profit.....	35
Ten Arguments against the JIT Production Revolution.....	40
Approach to Production as a Whole	44
Index	I-1
About the Author.....	I-31

Volume 2

3 “Wastology”: The Total Elimination of Waste.....	145
Why Does Waste Occur?.....	146
Types of Waste	151
How to Discover Waste	179
How to Remove Waste	198
Secrets for Not Creating Waste.....	226
4 The “5S” Approach.....	237
What Are the 5S’s?	237
Red Tags and Signboards: Proper Arrangement and Orderliness Made Visible	265

The Red Tag Strategy for Visual Control	268
The Signboard Strategy: Visual Orderliness	293
Orderliness Applied to Jigs and Tools.....	307
Volume 3	
5 Flow Production.....	321
Why Inventory Is Bad.....	321
What Is Flow Production?.....	328
Flow Production within and between Factories.....	332
6 Multi-Process Operations	387
Multi-Process Operations: A Wellspring for Humanity on the Job.....	387
The Difference between Horizontal Multi-Unit Operations and Vertical Multi-Process Operations	388
Questions and Key Points about Multi-Process Operations.....	393
Precautions and Procedures for Developing Multi-Process Operations.....	404
7 Labor Cost Reduction	415
What Is Labor Cost Reduction?	415
Labor Cost Reduction Steps	419
Points for Achieving Labor Cost Reduction.....	422
Visible Labor Cost Reduction	432
8 Kanban	435
Differences between the <i>Kanban</i> System and Conventional Systems...	435
Functions and Rules of <i>Kanban</i>	440
How to Determine the Variety and Quantity of <i>Kanban</i>	442
Administration of <i>Kanban</i>	447
9 Visual Control.....	453
What Is Visual Control?.....	453
Case Study: Visual Orderliness (<i>Seiton</i>).....	459
Standing Signboards	462
<i>Andon</i> : Illuminating Problems in the Factory	464
Production Management Boards: At-a-Glance Supervision.....	470
Relationship between Visual Control and <i>Kaizen</i>	471

Volume 4

10 Leveling	475
What Is Level Production?.....	475
Various Ways to Create Production Schedules	477
Differences between Shish-Kabob Production and Level Production	482
Leveling Techniques	485
Realizing Production Leveling.....	492
11 Changeover.....	497
Why Is Changeover Improvement (<i>Kaizen</i>) Necessary?	497
What Is Changeover?	498
Procedure for Changeover Improvement	500
Seven Rules for Improving Changeover	532
12 Quality Assurance	541
Quality Assurance: The Starting Point in Building Products	541
Structures that Help Identify Defects	546
Overall Plan for Achieving Zero Defects.....	561
The <i>Poka-Yoke</i> System	566
<i>Poka-Yoke</i> Case Studies for Various Defects.....	586
How to Use <i>Poka-Yoke</i> and Zero Defects Checklists.....	616

Volume 5

13 Standard Operations	623
Overview of Standard Operations	623
How to Establish Standard Operations	628
How to Make Combination Charts and Standard Operations Charts....	630
Standard Operations and Operation Improvements.....	638
How to Preserve Standard Operations.....	650
14 Jidoka: Human Automation.....	655
Steps toward <i>Jidoka</i>	655
The Difference between Automation and <i>Jidoka</i>	657
The Three Functions of <i>Jidoka</i>	658
Separating Workers: Separating Human Work from Machine Work	660
Ways to Prevent Defects	672
Extension of <i>Jidoka</i> to the Assembly Line.....	676

15 Maintenance and Safety	683
Existing Maintenance Conditions on the Factory Floor	683
What Is Maintenance?	684
CCO: Three Lessons in Maintenance	689
Preventing Breakdowns	683
Why Do Injuries Occur?.....	685
What Is Safety?.....	688
Strategies for Zero Injuries and Zero Accidents.....	689
 Volume 6	
16 JIT Forms	711
Overall Management	715
Waste-Related Forms	730
5S-Related Forms	747
Engineering-Related Forms	777
JIT Introduction-Related Forms.....	834