



# APCOMS 2009

The 2<sup>nd</sup> Asia-Pacific Conference on Manufacturing System

Reconfigurable Manufacturing System for Facing  
Turbulent Manufacturing Environment

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## PROCEEDING BOOK

NOVEMBER 4<sup>th</sup>-5<sup>th</sup>, 2009

YOGYAKARTA, INDONESIA



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## FOREWORD FROM ORGANIZING COMMITTEE

Distinguished Rector of Universitas Islam Yogyakarta, Dean of Faculty of Industrial Technology, ITB, keynote speakers, participants of Asia Pacific Conference on Manufacturing Systems and National Seminar on Production Systems, Ladies and Gentleman,

Welcome !

This is the second conference for Asia Pacific Conference on Manufacturing Systems, known as APCOMS 2009 and the ninth conference for the National Seminar on Production Systems, known as SNSP. These joint conference is held biannually. At the beginning we start the conference for the national scope and strated from two years ago we extend this national seminar regionally to Asia and Pacific regions.

The conference main objectives are firstly to make a forum for exchanging research results on manufacturing systems; secondly to facilitate discussions among researchers and academicians for better understanding of current challenging issues on manufacturing system research as well as manufacturing practices; and lastly to strengthen the research network around Asia-Pacific.

Today and tomorrow, we will have 58 papers to be presented at APCOMS and 22 papers to be presented at SNSP. I' m expecting that all papers will stimulates critical discussion and provides interesting time for all of you during your stay in this joint conference.

Moreover, Yogyakarta is also an interesting historical city. As one of the main tourist destination in Indonesia, I do hope that besides of spending your time for discussion, you can spend your time to enjoy the Javanese food, traditional, and culture in Yogyakarta.

I would like to thanks to all of conference participants for your paper contribution. To both keynote speakers, I would also like to convey my gratitude for your interesting speech. Lastly, I think, we would not be able to make this conference happened without all hard works and extra efforts contribute by the reviewers and others member of organizing committee. May I take this opportunity to thanks you all for the efforts you shown.

Thank you and pleased do enjoy this conference. ●

Dr. Ir. TMA Ari Samadhi  
Prof. Dr. Ir. Chairul Saleh  
Organizing Committee Chairs  
2<sup>nd</sup> Asia Pacific Conference on Manufacturing Systems  
9<sup>th</sup> National Seminar for Production Systems

## FOREWORD FROM DEAN OF FACULTY OF INDUSTRIAL BANDUNG INSTITUTE OF TECHNOLOGY

First of all, allow me to extend our warmest welcome to all distinguished delegates to the 2<sup>nd</sup> Asia Pacific Conference on Manufacturing Systems (APCOMS 2009) organized in conjunction with the 9<sup>th</sup> National Seminar on Production Systems. Welcome to Yogyakarta, a historic city and one of the popular tourist destinations in Indonesia. It is our utmost pleasure to be given the honor to host a regional conference and a national seminar, referred to as a joint conference, simultaneously.

The development of manufacturing sector in one country is believed to be one critical factor in the growth of nation's prosperity as has been shown by developed countries like USA, Japan, Korea, Australia and many European countries. Therefore, all initiatives on research and development of methods, tools, and practices for design and operation of manufacturing system are expected to contribute significantly to the development of manufacturing system. This, in turn, would assist the advancement of manufacturing sector.

Moreover, the development of manufacturing system indicates the trend toward a wide network information system, a robust process and intelligent control system, and the globalization of production as well as the development of virtual manufacturing network. This challenges academicians and practitioners to cope with current and future competitive environments.

I have learned from the Organizing Committee that more than 70 papers will be discussed in this joint conference, in which APCOMS 2009 will discuss more than 50 papers submitted by authors from several countries. I do believe that this conference will provide you a stimulating environment to share experiences and discuss your research findings in addressing the current issues on manufacturing system. This joint conference also functions as a means for strengthening research network across Asia Pacific region.

This joint conference would not have been possible without a strong collaboration between Manufacturing System Research Group, Faculty of Industrial Technology, Institut Teknologi Bandung and Industrial Engineering Department, Universitas Islam Indonesia and generous supports from the Association of Institutions of Industrial Engineering Higher Education in Indonesia (BKSTI) and Ikatan Sarjana Teknik dan Manajemen Industri (ISTMI). I would like to take this opportunity to express my sincere gratitude to all of them. My special thanks go to keynote speakers, reviewers, authors and all delegates to this joint conference. I should also be grateful to all sponsors for financial supports and, of course, to the Steering Committee and Organizing Committee for working very hard in preparing and organizing this joint conference.

I wish you a fruitful and productive conference. Have a pleasant stay in and explore the fascination of Yogyakarta.

Dwiwahju Sasongko

Dean, Faculty of Industrial Technology, Institut Teknologi Bandung

## FOREWORD FROM RECTOR OF ISLAMIC UNIVERSITY OF INDONESIA,

Distinguished Professors, Participants of 2<sup>nd</sup> Asia Pacific Conference on Manufacturing Systems and 9<sup>th</sup> National Seminar on Production System, Ladies and Gentleman,

*Assalamu'alaikum warahmatullah wabarakatuh,*

It is a great pleasure for me to welcome you to this conference and to Yogyakarta, one of the main tourist destination in Indonesia that rich with Javanese Culture, the city that is part of our nation development history, and also the education city. I do hope that your two days stay here in Yogyakarta will bring you an enjoyable and memorable experience since you are not only sharing knowledge, experience and building network of research on manufacturing system, but you are also stay in a warm and friendly atmosphere.

I'm also want to express my sincere joyful, that Universitas Islam Indonesia be able to cooperate with Institut Teknologi Bandung, along with the Coordinating Body of the Industrial Engineering Education in Indonesia (BKSTI) and Ikatan Sarjana Teknik dan Manajemen Industri (ISTMI), to host this 2<sup>nd</sup> Asia Pacific Conference on Manufacturing Systems in conjunction with the 9<sup>th</sup> National Seminar on Production System. I will sincerely hope that this cooperation will continue in the future.

This conference is a good opportunity for all of you to share your research results, to communicate with other researcher across Asia Pacific, to build network of researchers and academicians which then will provides you with capabilities to create new knowledge. I do hope the seminar will be stimulating, interesting, beneficial and give you enjoyment.

The conference would not have been possible without your contribution as well as the support from steering committee, organizing committee, key note speakers, and others parties. I would like to express my sincere appreciation to all of them. Again, please enjoy your stay in Yogyakarta.

*Wassalamu'alaikum Wr. Wb.*


Yogyakarta, November 4, 2009

Prof. Dr. Drs. Edy Suandi Hamid, M.Ec.  
Rector, Islamic University of Indonesia

► Detail

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Artikel dalam koleksi ini

1.  [Analysing the Correlation between Individual Tacit Knowledge and the Company's Competitive Advantage](#), halaman VII.39-46
2.  [Pengaruh Pengambilan Keputusan Strategik Berdasarkan Intuisi Terhadap Performansi Industri Kecil Menengah Batik](#), halaman XV.30-37
3.  [Penerapan Konsep lean Manufacturing Untuk Perancangan Tindakan Perbaikan Sebagai Upaya Eliminasi Pemborosan \(Studi Kasus PT S\)](#), halaman X(V).20-28
4.  [Analisis Ergonomi Sepeda UI terhadap Pengendara Pria dengan Metode Posture Evaluation Index \(PEI\) dalam Virtual Environment](#), halaman X(V).14-19
5.  [Analisis Ergonomi Sepeda UI terhadap Pengendara Wanita dengan Metode Posture Evaluation Index dalam Virtual Environment](#), halaman XV.8-13
6.  [Transfer Pengetahuan Oleh Universitas Sebagai Langkah Peningkatan Pengetahuan Industri Kecil](#), halaman XV.1-7
7.  [Simulator Perencanaan Kapasitas Berbasis Spread-Sheet untuk Mendukung Penerapan Lean Manufacturing di Industri Obat Over-the-Counter \(OTC\)](#), halaman XIV.37-41
8.  [Algoritma Heuristik Untuk Menyelesaikan Container Loading Problem](#), halaman XIV.26-36
9.  [Perancangan sistem perencanaan proses berbantuan komputer \(computer aided process planning\) dengan metoda variant](#), halaman XIV.18-25
10.  [Perancangan strategi pemilihan hardware dan software dalam pembentukan automated traffic identification system](#), halaman XIV.10-17
11.  [Simulasi usulan peningkatan performansi dengan pendekatan penjadwalan produksi stinson heuristic \(Studi Kasus: PT. Indomobil Suzuki International Plant Tambun II\)](#), halaman XIV.1-9
12.  [Penggunaan algoritma active scheduling dan aggregate machining assembling scheduling dalam pembuatan jadwal induk produksi](#), halaman XII.31-35
13.  [Minimasi waktu tinggal pengerjaan pesanan menggunakan metode penjadwalan batch](#), halaman XII.23-30
14.  [Efficiency Improvement Design Of Working Process For THK Workshop - Makassar](#), halaman I.1-I.7
15.  [The Shift Pattern Effect On Work Capacity Based On Ergonomics](#), halaman I.8-17
16.  [The Design of an Ergonomic Lightweight Folding Chair](#), halaman I.18-26
17.  [Facility Design Ergonomically Method Using Quality Function Deployment \(QFD\) In Small Food Industry In Municipality Medan North Sumatra](#), halaman I.27-35
18.  [Ergonomic Assessment Factors in Reconfigurable Assembly Workplace](#), halaman I.36-41
19.  [A Framework for Quality Culture Implementation](#), halaman I.42-48
20.  [Effects of Various Cooling Strategies on Cutting Performance for Ball End Milling](#), halaman II.1-7
21.  [Study on Tool Life and Tool Wear of Coated Carbide Inserts When Turning Inconel 718 in Dry Machining](#), halaman II.15-23
22.  [Surface Finish of Titanium Alloy Ti-6Al-4V ELI During Machining Using Carbide Inserts Under Dry Cutting Condition](#), halaman II.8-14
23.  [The Development of 3-D Scanner Hardware by Using Dual Laser Pointer](#), halaman II.24-30
24.  [Automated Quality Control System Design Based On Computer Vision System For Beverage Product](#), halaman II.31-38
25.  [Optimizing Process Selection For MTO Manufacturer By Considering Design Cost And Cost Of Conformance](#), halaman II.39-43
26.  [A Two-Echelon Supply Chain Inventory Model For Single Vendor and Multi-Buyer With Common Replenishment Epoch](#), halaman III.3-6
27.  [Designing Enterprise Resources Planning Application for Integrating Main Activities in a Simulator Model of SCM Network Distribution](#), halaman III.7-14
28.  [The Role of Core and Non-Core Functions in Outsourcing Decision: A Case of the Malaysian Food Processing Industry](#), halaman III.14-22
29.  [Designing And Programming Web-Based MRP System For Make-To-Order Manufacturing \(Case Study at SP Guitar\)](#), halaman III.23-30
30.  [Developing an Integrated Network Model of Forward and Reverse Logistics for Multi Product in a Supply Chain](#), halaman III.31-38
31.  [Selective Price Discount in Single-Vendor and Multi-Buyer Inventory System with Common Replenishment Epochs](#), halaman III.39-46
32.  [Decision Support System for National Rice Logistics System](#), halaman IV.1-8
33.  [A Buffer Stocks Model for Stabilizing Price in Duopoly-Like Market](#), halaman IV.9-16
34.  [Modelling Logistic Policy Of Traditional Markets For improving theirs Competitive Advantage: A System Dynamic Approach](#), halaman IV.17-22
35.  [Optimization of the Use of Railway Track Bearing Waste for Lighting Production](#), halaman IV.23-30

36. [Solving Vehicle Routing Problem with Multiple Trips, Multiple Depots and Heterogeneous Fleet of Vehicles based on Set Partitioning Problem Formulation](#), halaman IV.31-36
37. [A Model to Control Availability and Price of White Sugar by Considering Inter Regional Trade Flows](#), halaman IV.37-43
38. [Prioritizing Healthcare Service Attributes: Comparing Importance Performance Analysis and KANO's Model](#), halaman V.1-8
39. [Gram Optimization using Taguchi Method of Parameter Design and Neural Network Process Model in Packaging Industry](#), halaman V.9-16
40. [Integrating Balanced Scorecard and Malcolm Baldrige National Quality Award: A Case Study in a Distribution Company](#), halaman V.17-25
41. [A Model for Technical Requirements Determination to Optimize Customer Satisfaction](#), halaman V.25-29
42. [Quality Function Deployment Implementation Based On Fuzzy Kano Model An Application On Product Green Life Cycle Engineering](#), halaman V.30-37
43. [Line Assembly Performance Improvement Through Cellular Manufacturing : A Case Study In PT. X](#), halaman VI.1-7
44. [Simulation Methods for Improving Manufacturing System Performance Based on Optimum Downtime in Billet Steel Plant, Krakatau Steel Industry](#), halaman VI.8-13
45. [Lean Manufacturing through Value Stream Mapping and Simulation](#), halaman VI.14-25
46. [Mating Interface Methods of Assembled Modules in Reconfigurable Machine Tool](#), halaman VI.26-30
47. [Using Ant Colony Algorithm to Optimize Assembly Line Balancing Problem](#), halaman VI.31-35
48. [Manufacturing Strategy Implementation And Its Effect On The Growth Of Small And Medium Enterprises \(SMEs\)](#), halaman VII.1-11
49. [Product Design Development For Modular Computer Table To Support Green Lifecycle Engineering](#), halaman VII.12-23
50. [Modelling Auto Component Industrial Cluster in Sidoarjo, East Java](#), halaman VII.24-29
51. [Literature Review of Industrial Cluster Development Study](#), halaman VII.30-38
52. [Model of Knowledge Co-Creation Performance in New Product Development](#), halaman VIII.1-12
53. [The Role of Shape and Brand in Product Image](#), halaman VIII.13-18
54. [An Integrated Approach Involving Reliability Improvement and Servicing Strategy For Warranted Products](#), halaman VIII.19-24
55. [A Hybrid Minimal Repair and Age Replacement Policy for Warranted Products](#), halaman VIII.25-30
56. [Heuristic-based Facility Layout Design in Virtual Factory Simulation](#), halaman X.1-7
57. [Development Of Spreadsheet-Based Production Scheduling Model At Furniture Manufacturing Company \(Case study at Sinar Laksana Jaya Company\)](#), halaman X.8-16
58. [An Ergonomic Scheduling of Laboratory Management: A Framework for Understanding](#), halaman X.17-22
59. [Development Of Business Intelligence Modules For Open Source DBMS](#), halaman X.23-30
60. [Flow Shop Batch Scheduling for Single Item with Increasing Processing Time to Minimize Total Actual Flow Time](#), halaman X.31-37
61. [Applying Project Management in Ameliorating Precise Delivery](#), halaman IX.1-7
62. [Application of Data Mining to Predict Credit Status Using Fuzzy Classification Method](#), halaman IX.8-14
63. [Solving Container Loading Problem Using Genetic Algorithm](#), halaman IX.15-20
64. [Two-Dimensional Loading Problem: Four Corner's Heuristic Algorithm For Multiple Bins](#), halaman IX.21-26
65. [Matched Pattern System of Jatropha curcas Fruits by Using Back Propagation \(BP\)](#), halaman IX.27-33
66. [Traffic Information Service Design For Radio's Customer Based On Automated Traffic Identification System](#), halaman XI.1-7
67. [Automatic Feature Recognition for Milling Process Features with 2D Drawing Input](#), halaman XI.8-15
68. [Implementation of Optimal Control based Dynamic Scheduling in Syrup Production System](#), halaman XI.16-26
69. [Development of Real-time Control of Parts Input in Flexible Production Systems by Analogy Process](#), halaman XI.27-34
70. [Mobile Agent for Sales and Stock Control in a Supply Chain System](#), halaman XI.35-38
71. [Usulan Penjadwalan Produksi dengan Menggunakan Modifikasi Algoritma Genetika \(Studi Kasus : PT. SERVVO Fire Indonesia\)](#), halaman XII.1-6
72. [Model Penjadwalan Job Shop dengan Kelompok Mesin Paralel Menggunakan Greedy Randomized Adaptive Search Procedure untuk Minimisasi Makespan](#), halaman XII.7-14
73. [Penjadwalan Batch Pada Sistem Perakitan Dua Tahap Untuk Meminimasi Total Actual Flow Time](#), halaman XII.15-22
74. [Model Keterkaitan Antara Faktor Keunggulan Bersaing dan Kinerja Industri Kecil Gambir Sumatera Barat](#), halaman X(V).38-48
75. [Perancangan Tata Letak pada Lingkungan Dinamis dengan Pendekatan Modular Layout \(. Studi Kasus PT. X \),](#) halaman XIII.1-9
76. [Perbaikan Rancangan Tata Letak Fasilitas Pabrik Berdasarkan Algoritma Simulated Annealing Di PT ABC](#), halaman XIII.9-16
77. [Model Keseimbangan Lintasan Perakitan Paralel Dengan Jumlah Operator Minimum](#), halaman XIII.17-22
78. [Perancangan Intelligent Inspection System Cell Untuk Produk Percetakan](#), halaman XIII.23-30
79. [Pengembangan Algoritma Minimasi Perpindahan Robot Pada Gantry Dua Sumbu](#), halaman XIII.31-39
80. [Pengembangan Metode Taguchi-Principal Component Analysis Studi Kasus: Pengelasan GTAW Di PT. Dirgantara Indonesia](#), halaman XIII.40-54

[Edit Artikel](#)

[Opini Anda](#)

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