GCMM'2006 - Global Congress on Manufacturing and Management

MANUFACTURING AND MANAGEMENT FOR GLOBAL PROSPERITY

November 19-22, 2006
Santos, Brazil

BOOK OF ABSTRACTS

Edited by
Claudio da Rocha Brito
Melany M. Ciampi

Council of Researches
in Education and Sciences

GCMM 2006 –Global Congress on Manufacturing and Management – (2006: Santos)

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1.v

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CDD - 370

Message from the General Chair

Along the History it can be seen the human achievements in altering and dominating nature in favor of better ways of surviving. This is how technology was born and prevails improving and now in much sophisticated levels. Men can now more than ever reach levels of comfort, healing of diseases increasing age level expectations, moving around the world, watching the news and communicate in real time. All this thanks to the development of sciences and technology. Engineering all over the world is in many ways shaping a new life style, helping to save lives, making transportation faster and more secure, enhancing communications and etc. This isolated aspect – the development of sciences and technology, helped to make the globalization phenomenon a reality once more in human history. Despite the negative aspects of globalization all the scientific and technological advancements have one main goal: make men's life better. That is why machines were designed - to do the hard work so that men can have more time for other more pleasant work; the search for new drugs to defeat diseases, to live better and more and so on.

Global Congress on Manufacturing and Management has emerged in new times when innovative initiatives like the organization of such events are welcome and make the difference in the promotion of sciences and technology in this mutant world. GCMM comes to add efforts to the widespread dissemination of innovations that improve manufacturing, management, engineering, and technology. It is a major bi-annual international conference devoted to improvements in those areas that counts with the presence of researchers and enterprises of many parts of the globe. It is a forum for sharing ideas, learning about new developments and interacting with other colleagues. We are glad with the quality of articles that were appraised by the international examining committee, all about recent issues, rising up interesting discussions as well as seeking and suggesting innovative solutions on Manufacturing and Management.

This edition of Global Congress on Manufacturing and Management - GCMM'2006 is being organized by COPEC – Council of Researches in Education and Sciences, a council that was established to enhance and to maintain relations between academics, institutions, enterprises and the society of the several countries for the discussion of education, technology and sciences directions. GCMM'2006 has been built around the theme of "Manufacturing and Management for Global Prosperity" and has counted with the contribution of many authors from many parts of the five continents that certainly makes this a great success. The chosen place to accomplish the Congress is Santos one of the most beautiful cities of São Paulo Seashore which is in the Atlantic Forest, a natural reserve in Brazil, a legacy for next generations to come.

This year we are glad to commemorate a great achievement for engineering education in Brazil that is the International Society for Engineering Education - IGIP National Monitoring Committee - Brazil. It was founded on April 17 2005 and it has been busy seventeen months of activities. We believe that it will certainly be another opportunity for dedicated Brazilian teachers to improve the natural vocation to teach. IGIP was founded in 1972 and since then it has been working hard to accomplish its mission to foster the engineering teaching. Always updating it has defined recently new standards for engineering educators' registration, a step forward in the formation of new educator to a new world. The accomplishment of such task is a challenge and at the same time a pleasure for those who believe that education is the key for the development of a new kind of educator more aware of what is coming up in work market of this new global world.

The GCMM'2006 has the Technical Cooperation (in alphabetical order): AAMP (Fishing Museum Friends Society), ABENGE (Brazilian Society for Engineering Education), ASEE (American Society for Engineering Education), ASIBEI (Iberian-American Association of Engineering Education Institutions), IEEE-Ed.Soc. (Education Society of the Institute of Electrical and Electronics Engineers), IGIP (Internationale Gesellschaft für Ingenieurpädagogik), INTERTECH (International Council for Engineering and Technology Education), NBPAS (Brazilian Nucleus of Environmental Researches and Health), Porto Gente (Sea Port and People), RBE (Brazilian Network of Engineering) and SEFI (Société Européenne pour la Formation des Ingénieurs) and Cultural Cooperation of Department of Culture of Santos, Archives and Memory Foundation and Santos & Region Convention & Visitors Bureau.

We can not forget to mention and thank in special our partners and sponsors the FAPESP (State of São Paulo Research Foundation), CNPq (National Council for Scientific and Technological Development) and CAPES (Coordination for Improvement of Personnel of Superior Level).

Many colleagues from many countries have given their support to GCMM'2006 and fortunately the list is vast and so it could not be comprised in a small space so our special thanks to all of them.

We would like to express our gratitude to City Councilor Eng. José Antonio Marques Almeida, Prof. Khalil S. Taraman, who had the idea and who diligently, founded the GCMM, Prof. Prasad Yarlagadda, President of Board of GCMM. We can not forget to mention the political and academic communities of Santos that is always present in the events.

Our very special thanks to Prof. Maria Helena Lambert, Rector of Catholic University of Santos (UniSantos), who supports every activity for the enhancement of Education in the City. We would like also to thank and congratulate the Local Program Committee, which efforts made this event possible and thank Mr. José Luis Blanco Lorenzo of Central de Fretes Travel Agency for his dedication.

Finally my special thanks to the participants whose collaborations have enriched the event.

On behalf of the organizing committee and mine thank you very much.

Prof. Dr. Claudio da Rocha Brito
GENERAL CHAIR

Message from the Technical Program Chair

Manufacturing and Management are without any doubt of high importance for the advancement of our present society once both fields are connected by the dynamic of the application of tools and processes to the transformation of raw materials into finished goods. They are the essence of the producing sector that provides work and makes the economy wealth as well as enhance the service sector providing labor and development of a Country.

Having the importance of such fields for the advancement of sciences and technology it has been equally a challenge and a pleasure to be President of the Technical Program Committee of Global Congress on Manufacturing and Management - GCMM'2006, which provides us a forum for the presentation and discussions of researches, projects and possibilities in Manufacturing and Management fields' worldwide.

The articles brings the best and recent discussions not only focusing the present achievements in these fields but also the formation of next generation of professionals of engineers and business administration who will act in this new challenging business market of 21st. Century.

In this edition we could count with the contributions of authors from many Countries of the five continents not only with good works but also reviewing papers, chairing the sessions and organizing workshops, sessions and panels.

The Book of Abstracts and the Proceedings constitute one contribution to manufacturing and management research to reach the aim of promoting the technological and scientific community.

Very special thanks to all the researchers, authors and participants as well as to all the supporters which efforts have enhanced the success of the Congress. We have also to mention the great job of local committee, the secretariat group, the designers and the University working group. The accomplishment and the success of a Congress is the sum of all these people's efforts.

On behalf of the Technical Program Committee I thank you all,

Prof. Dr. Melany M. Ciampi
TECHNICAL PROGRAM CHAIR

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GCMM'2006 - Global Congress on Manufacturing and Management

MANUFACTURING AND MANAGEMENT FOR GLOBAL PROSPERITY

PROGRAM

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GCMM006 – Program at Glance

	Saturday 18	Sunday 19	Monday 20	Tuesday 21	Wednesday 22	Thursday 23	Friday 24	Time
8:00 am 8:30 am	Registration on to Pre Congress	Registration	Registration	Registration	Registration	Registration to Post Congress		8:00 am 8:30 am
8:30 am 10:00 am	Pre Congress		Opening Session	Plenary Session II	Plenary Session III	Post Congress	Post Congress	8:30 am 10:00 am
10:00 am 10:30 am			Coffee Break	Coffee Break	Coffee Break			10:00 am 10:30 am
10:30 am 12:00 pm			Plenary Session I	Technical Sessions	Technical Sessions			10:30 am 12:00 pm
12:00 pm 1:30 pm	Lunch	Lunch	Award Session	Lunch	Lunch	Lunch	Lunch	12:00 pm 1:30 pm
1:30 pm 3:00 pm	Pre Congress	Workshop		Technical Sessions	Technical Sessions	Post Congress	Post Congress	1:30 pm 3:00 pm
3:00 pm 3:30 pm		Coffee Break	Barbecue	Coffee Break	Coffee Break			3:00 pm 3:30 pm
3:30 pm 5:00 pm		Workshop		Technical Sessions	Technical Sessions			3:30 pm 5:00 pm
5:00 pm 6:30 pm								5:00 pm 6:30 pm
6:30 pm 10:00 pm		Welcome Cocktail Party			Banquet			6:30 pm 10:00 pm

SESSION AND PRESENTATION CODES

Codes are used to determine when and where a paper is presented.

Technical Session Coding

A four- character designator is associated with each technical session, as in **LDTN**
Where:

L – is a letter that designates the language of the session:

E – designates English sessions and papers;
P – designates Portuguese sessions and papers;
S – designates Spanish sessions and papers.

D – is a letter that designates the day of the session:

T – designates Tuesday sessions and papers;
W – designates Wednesday sessions and papers.

T – is a number that designates the time slot for the session:

1 is late morning (10:30am- 12:00pm);
2 is early afternoon (1:30pm- 3:00pm);
3 is middle afternoon (3:30pm- 5:00pm);

N – is a letter that designates the parallel session within any time slot.

A is the first parallel session; B is the second parallel session, etc.

Note.

Five minutes will be allowed for introductions and instructions at the beginning of each session. Each paper will be given 10 minutes for the total presentation, with two minutes for questions. All papers will start in 12 –minutes increments to allow conference attendees to “session hop” hear papers of interest. It there is a no-show author in a session, a 12- minutes break will be called. ***Papers will not be moved up in sessions.***

Papers times for sessions are shown below. (H is a letter that designates hour of the day).

Session Begins	H:30
First paper	H:35
Second Paper	H:47
Third Paper	H:59
Fourth Paper	(H+1):11
Fifth paper	(H+1):23
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Seventh paper	(H+1):47
Session Ends	(H+1):59

Sunday – November, 19

8:00 am – Noon
REGISTRATION

Noon – 1:30 pm
LUNCH

1:30 pm – 5:00 pm
WORKSHOP
PRINCIPLES AND APPLICATIONS OF RAPID PROTOTYPING IN DESIGN AND MANUFACTURING
Dr. Rafiq Noorani - Professor of the Department of Mechanical Engineering at Loyola Marymount University - LMU

Topics

1: Introduction
- What is Rapid Prototyping (RP)?
- Historical Development
- Importance of RP on Product Development
- Development of RP Systems
- Applications in Education and Industry
- Present and Future Trends
- Commonly Used Terms and Terminology

2: Principles of Rapid Prototyping
- The Stereolithography Process
- Solid Modeling
- CAD Data Conversion
- Preparation and Checking of Part
- Building the part
- Software limitations
- Case Studies

3: Classification of RP Systems
- Solid Based RP Systems (FDM, LOM, Model Maker, etc.)
- Liquid Based RP Systems (SGC SCS, SLA, CMET, etc.)
- Powder-Based RP Systems (SLS, DSPC, MJS, etc.)

4: Reverse Engineering
- Background
- Scanning Systems
- Data Conversion Systems
- Future Trends in Reverse Engineering

5. Guidelines for Implementation
- Operating Issues
- Managing Issues
- Service Bureaus
- Rapid Prototyping Consortia
- Future Trends in Rapid Prototyping

6. QuckSlice Software (*Hands-on Training*)
- Introduction to QuckSlice
- Import of STL File to QuckSlice
- Slicing, Roads and Support Creation
- Creation of SSL and SML Files
- Repair of STL File

6:30 pm – 10:00 pm

WELCOME COCKTAIL PARTY

Local: Catholic University of Santos - Campus D. Idilio

Let's start this journey of four days of intense work in a beautiful and inspiring environment. On Sunday at 6:30 pm we will welcome the participants with a nice cocktail party in the Catholic University of Santos - Campus D. Idilio in Santos.

Monday – November, 20

8:00 am – 8:30 am
REGISTRATION

8:30 am – 10:00 am
OPENING SESSION
Chair: **Prof. Claudio da Rocha Brito** – General Chair of GCMM'2006
Prof. Melany M. Ciampi – Technical Program Chair of GCMM'2006
Prof. Khalil S. Taraman – Co-Chair of GCMM'2006
Prof. Prasad Yarlagadda – President of Board of GCMM
Alderman José Antonio Marques Almeida – Honorary Chair of GCMM'2006

10:00 am – 10:30 am
Coffee Break

10:30 am – Noon
PLENARY SESSION I
Chair: **Prof. Claudio da Rocha Brito** – General Chair of GCMM'2006
Title: **GCMM - MANUFACTURING AND MANAGEMENT FOR GLOBAL PROSPERITY**

Speakers: **Prof. Melany M. Ciampi** – Technical Program Chair of GCMM'2006
Prof. Khalil S. Taraman – Co-Chair of GCMM'2006
Prof. Prasad Yarlagadda – President of Board of GCMM

Noon – 1:00 pm
AWARD SESSION
Chair: **Prof. Melany M. Ciampi**

3:00 pm – 11:00 pm
BRAZILIAN BARBECUE
Local: Palmas Island

Let's spend a day experiencing the rich and different gastronomical and social Brazilian life style! It is time to make new friends and enjoy the merciful nature of a paradisiacal island close to Santos appreciating a typical Brazilian barbecue from 3pm until 11pm. On "Ilha das Palmas" we can enjoy the outstanding tropical nature and beauty, surrounded by the blue Atlantic sea. It is a day of nice music, good food and happy people.

Monday – November, 21

8:00 am – 8:30 am
REGISTRATION

8:30 am – 10:00 am
PLENARY SESSION II
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Title: **HEAD INJURY CRITERION (HIC) MODEL AS A FUNCTION OF OPERATIONAL TESTING AND TRIM MANUFACTURING VARIABLES**
Speakers: **Prof. Khalil S. Taraman** – Co-Chair of GCMM'2006

10:00 am – 10:30 am
Coffee Break

10:30 am – Noon
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Chairs
Khalil Taraman
Sanaa Taraman

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Title: **STUDY OF DROPLET BEHAVIOUR IN ACTIVE CONTROL OF METAL TRANSFER**
Speaker: **Prof. Prasad Yarlagadda** – President of Board of GCMM

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THE BANQUET

The Banquet is the last opportunity to enjoy the beauty of Santos and the company of new friends. The “Farwell Dinner” is in one of the best restaurant in town, close to the beach where we can enjoy the wonderful and astonish view of the Bay of São Vicente Island. It is a place to gather and taste once more the typical Brazilian good food. The tickets are available at the reception desk.

GCMM'2006 - Global Congress on Manufacturing and Management

MANUFACTURING AND MANAGEMENT FOR GLOBAL PROSPERITY

ABSTRACTS

November 19-22, 2006
Santos, Brazil

Edited by
Claudio da Rocha Brito
Melany M. Ciampi

Council of Researches
in Education and Sciences

Plenary Sessions

GCMM - MANUFACTURING AND MANAGEMENT FOR GLOBAL PROSPERITY

Claudio da Rocha Brito, Melany M. Ciampi, Khalil Taraman

This work constitutes of a brief presentation about this organization that has emerged, developed and evolved in according to the new demands of a challenging world the GCMM - Global Congress on Manufacturing and Management and its achievements. It also presents the new edition of GCMM'2006 – Global Congress on Manufacturing and Management organized by COPEC – Council of Researches in Education and Sciences, in Santos Brazil. The history shows the great job of many dedicated scientists and professionals who have been working hard with the goal of promoting the development of Manufacturing and Management researches.

HEAD INJURY CRITERION (HIC) MODEL AS A FUNCTION OF OPERATIONAL TESTING AND TRIM MANUFACTURING VARIABLES

W. Jaradat, K. Taraman, S. Taraman, J. Hassan, G. Nusholtz

A model was developed for the Head Injury Criterion (HIC) as a function of two operational testing variables and five trim manufacturing variables utilizing an incomplete block design. An analysis of variance and residual were conducted. Minitab® was utilized to evaluate the main effects on HIC. The significant variables were the dummy head drop calibration (HC), and the dummy head approach angle ($ø_a$). However, packing pressure and injection speed had slight effects on HIC. Since the variables interaction effects were not significant on the analysis of the estimated coefficients, a new mathematical model was developed to include only the significant variables ($HIC = 8.48614x10^7 H_c^{-2.2577} ø_a^{0.35173}$). An optimization of HIC was conducted. The Hybrid III dummy head provides a more robust tool with respect to HIC measurements, and it is suitable for approach angles 5 to 20 degrees.

STUDY OF DROPLET BEHAVIOUR IN ACTIVE CONTROL OF METAL TRANSFER

P. Praveen, P. K. D. V. Yarlagadda, A. Turong

This study reports an investigation in to the oscillation behavior of the droplet in active control of metal transfer. In this study, dynamic detachment model [1] has been fitted to predict droplet oscillation behavior and detachment in active control of metal transfer. The results from model were found to match with experimental results observed in active control method of metal transfer [2]. This model can be used to simulate and understand influence of welding parameters on metal transfer in active control of pulsed gas metal arc welding process.

Session ET1A

INTERIOR TRIM MANUFACTURING AND OPERATIONAL TESTS UTILIZING DESIGN OF EXPERIMENTS

W. Jaradat, K. Taraman, S. Taraman, J. Hassan, G. Nusholtz

Design of experiments (DOE) approach was utilized to develop a mathematical model that describes the relationship between Head Injury Criterion (HIC) and seven investigated variables. Theses variables include two operational test variables and five trim manufacturing process variables. The two operational test variables are Free Motion Head- Form Approach Angle, and dummy Head-Form Drop Calibration. The five trim manufacturing process variables are mold temperature, melt temperature, packing pressure, hold pressure, and injection speed. The tests were conducted to evaluate Head Injury Criterion when a vehicle occupant's head impacts the trim panel according to Federal Motor Vehicle Safety Standard 201 (FMVSS 201), regulated by the National Highway Traffic Safety Administration (NHTSA). An Incomplete Block Designwas utilized to maximize the data generated with very limited number of experiments.

VARIATION ANALYSIS OF THOR-NT VERSUS HYBRID III FOR HEAD INJURY CRITERION

W. Jaradat, J. Hassan, G. Nusholtz, K. Taraman, S. Taraman

This paper evaluates differences between a new dummy head (THOR-NT, Test Devise for Human Occupant) and the current dummy head (Hybrid III) that is commonly used in automotive crash and safety applications. Head Injury Criterion (HIC) is computed. The results describe the response surface of both dummy heads. The data concludes that THOR-NT dummy head needs further development if it is to be used to replace Hybrid III dummy head in FMVSS 201 compliance procedure. THOR-NT does not meet expectation to replace Hybrid III at this time. THOR-NT data shows large variation at all approach angles of the dummy head. THOR's variability would require greater compliance margin. Test variance using Hybrid III heads falls within the normal test variance.

DEVELOPMENT OF A MODEL FOR ULTRAVIOLET CURING OF COMPOSITES UTILIZING DESIGN OF EXPERIMENTS

Christopher P. Pung, Khalil Taraman, Laura Lisiecki, Brian Knouff

Thermoset composites have cycle times on the order of twenty to twenty five minutes. These cycle times must be reduced in order to economically manufacture large volumes of parts. One method of reducing cycle time is to use an ultraviolet (UV) curing process. This applied research was performed to gain knowledge regarding the processing variables for UV curing of composites. Design of experiments was used to investigate the effects of glass weight, speed of traverse, light intensity, percent of photoinitiator, resin temperature and percent thermal initiator for composite processing. The measured responses were temperature for the onset of the glass transition, glass transition temperature, completion of the glass transition, and Barcol hardness. Mathematical models were developed and validated for each of the investigated responses. Tests indicate a possible cycle time reduction of 40% for the composite process.

DEVELOPMENT OF A MODEL FOR ULTRAVIOLET CURING OF PREFORMS UTILIZING DESIGN OF EXPERIMENTS

Christopher P. Pung, Khalil Taraman, Laura Lisiecki, Brian Knouff

Thermoset preforms have cycle times of two to five minutes. These cycle times must be reduced in order to economically manufacture large volumes of parts. One method of reducing cycle time is to use an ultraviolet (UV) curing process. Design of experiments was used to investigate the effects of glass weight, light intensity, percentage of photoinitiator and speed of lamp traverse, as well as blend of photoinitiators. The measured response for this design of experiments was the tensile strength of the preform. A mathematical model was developed and validated for the investigated response.Cycle times for creating preforms and composites may be reduced when compared with current methods of production. Tests indicate a possible cycle time reduction of 30% for the preforming process.

QUICK CHANGING SHAPE MEMORY ACTUATORS FOR SAFETY SYSTEMS IN AUTOMOBILES

Paul Gümpel, Joachim Strittmatter

In the first part of this paper a short introduction to shape memory alloys (SMA) and some examples of different safety systems in modem cars are given. In a second part the material development of an adaptive safety system with shape memory alloys will be described to be functional in automobiles. Through the spontaneous conversion of the SMA when exceeding a critical temperature, a very fast and functional secure linear movement could be performed. The problem of the long time stability of the SMA is actually examined and the results will be presented concerning temperature-time-tests. Through the knowledge gained in this sequential processes it should be possible, to implement alloys that present the long time stability. In a further project step quick heating systems have been developed to enable a quick as possible and safe heating of the SMA elements, with the present current network system on board.

A KNOWLEDGE-BASED SYSTEM FOR THE IDENTIFICATION OF MATERIAL RESPONSE STATES: A PATTERN RECOGNITION AND CLASSIFICATION APPROACH

Yehia M. Haddad

The mechanical response state of an engineering material is determined using non-destructive testing combined with "pattern recognition and classification" methodologies. Stress waves are "simulated" in the microstructure of the material to resemble acoustic-emission waves without a simultaneous application of an external loading. After

propagating through the microstructure, the stress waves are captured, identified, and then classified as belonging to various classes, where each class represents one of different mechanical response states of the tested material. The presented approach has proven to be effective in determining quantitatively numerous mechanical response states of various classes of engineering materials that were subjected a priori to different types of loading.

PRE-SHAPED INPUT LAWS: EXPERIMENTS ON ROBUSTNESS

Rinaldo Garziera, Elisabetta Manconi, Luca Collini

In the automation field is of significant economical value to accomplish accurate and fast positioning of handling devices. Examples are some robot manipulators, disk drive heads, pointing systems in space. Many of them are made of flexible and light structures to handle as quickly as possible. This paper deals with the kinematic and dynamic control in the point-to-point motion of a deformable system. In the article not only the rest condition is considered as a desirable final position, but any (admissible) kinematic condition may be required. The adopted control technique is open-loop and is concerned with the pre-shaping of the input law in the form of a limited number of a piece-wise acceleration/force/torque steps. The work also provides an extension of the previously mentioned approach to add good insensitivity to errors in modelling parameters. An experimental set with results is also described.

Session PT1A

EVOLUTION OF THE PARADIGMS OF MANUFACTURING STRATEGY

Eliciane Maria da Silva, Fernando César Almada Santos

The present paper proposes an evolution framework for the trajectory of the manufacturing strategy based on the grounds of content as well as the formulation and implementation process. Further developments in the field of manufacturing strategy are also presented. The results have revealed that content has already been widely spread and has propagated through three paradigms: i) competitive dimensions; ii) structural and infra-structural issues; iii) best practices. With regard to the formulation and implementation process two approaches can be envisaged: methodologies and models for the manufacturing strategy alignment with the competitive strategies. Recent works on this subject have demonstrated the limitations of the best practice paradigm in manufacturing in the contexts of firms and in the causes of best performance. This article shows that best practices is an ever expanding paradigm and suggests new fields of research to be explored.

GREENING THE FUNCTIONAL PRACTICES OF HUMAN RESOURCE MANAGEMENT

Charbel José Chiappetta Jabbour, Fernando César Almada Santos

This article analyzes the main advantages of aligning functional practices of human resource management with environmental strategy in companies. A theoretical revision of this integration is carried out. Human resource management is considered as a set of the following activities: recruitment and selection, training and development, performance evaluation, job redesign and compensation. Thus, the basics of the conceptual approach are the main contributions of functional dimensions of human resource management to the environmental management in companies, mainly in the area of developing green products and processes. The aim of this article is to contribute to the scarce literature on the integration of the practices of these management areas, such as presenting situations where there is integration between human resource and environmental management.

DESIGN OF TECHNICAL CERAMIC PARTS USING A FUZZY LOGIC APPROACH

Elizangela Rodrigues de Moraes, Rosa Aparecida B. Oliveira, Paulo Ouvera Simoni

This paper presents a fuzzy logic approach to represent knowledge about the influence of the proportion of feldspar and additives on the physical and chemical properties of a fired porcelain part. The proposed methodology has the objective of assisting a technical ceramic design expert to decrease the number of laboratory experimental tests needed during the design of a technical ceramic part. This methodology allows determining in an approximate way the composition of the ceramic mass to be fired, in such a way the porcelain part presents properties close to the desired ones. The methodology was tested in real world situations where customer specifications composed of

constraints on the ceramic physical and chemical properties were input to the program. Ceramic parts with mass composition computed by the program were fired and compared with parts obtained using a usual trial-and-error design process.

FUZZY LOGIC CONTROLLER FOR AN AUTONOMOUS VEHICLE

Giuliani P. Garbi, Victor O. G. Rosado, Francisco J. Grandinetti

Autonomous vehicle have many potential applications in the fields of automation, defense and exploration. The purpose of this paper is to describe the development of a fuzzy logic propulsion and steering control for an autonomous vehicle for collision avoidance. Basically the fuzzy controller contains 2 inputs (ultrasonic sensors) and 2 outputs (engine direct-current), the ultrasonic sensors are responsibility for collision possibility in distance_from_obstacle and the main controller that performs real-time collision avoidance the updated course to be following by the vehicle in vehicle's_speed applied in engines. The Fuzzy control design applicability and implementation is demonstrated through of the theory method in comparison with software's simulations.

INTERFACING INFORMATION SYSTEMS AND NEW PRODUCT DEVELOPMENT THEORY

Dulce Magalhães de Sá

The growing complexity of information systems and temporal limitations to their development period have contributed to reduce the probability of success with the final product. The dynamic of these systems is marked by rapid change and constant alterations. A result of that is the fact that it is not always possible to apply correct development methodologies. This contributes to increase risk factors associated with systems development. Results of research into New Product Development have nonetheless established a connection between reduction in development cycle time and success with the final product. This paper addresses information systems development from the viewpoint of new product development theory. Factors such as clarity of project objectives or adequate requirement specification contribute to reduce both new product development cycle time and information system development risks.

Session PT1B

ORIENTAÇÃO ROBÓTICA POR IMAGEM

Tomás Scherrer, Isaac Newton Lima da Silva, Vinicius Licks, Tiago Leonardo Broilo

Current robotic control systems are based on feedback sensors to close their control loops, in a way that the workstation's environment must be strictly structured to keep the programmed positions. If any of the station process components (parts, tools, raw material, amongst others) were not placed at the very same position told to the controller, due to random or accidental alterations in the workstation, for instance, the process will go wrong. Every time the need to change this environment comes, one will have to reprogram the system so it complies with these changes. The goal of this work was to create a system that guides the machine through the workstation, monitoring it with cameras and image processing algorithms, in order to absorb environment structural changes, both random and non-random ones. The proposed concept successfully was implemented on a robotic workstation, performing an assembly process.

VANTAGENS COMPETITIVAS DA EXPORTAÇÃO POR CONTÊINERES EM COMMODITIES

Reinaldo Batista Leite, Alessandra de Fátima Ferreira

Globalization nowadays is a fact and it is essential for companies and for governments that has benefit with incomes from their exporter companies. In this context, it is not unusual that Brazilian government stimulates companies to export their products. By knowing that the called "Brazil's cost" affects the competitiveness abroad, a good logistic structure and the appropriate adaptation of the companies to their needs can balance some unfavorable characteristics found in Brazil (taxes or infrastructural questions, for example). Brazil places in advantage compared to other countries in what concerns the agro-industrials products and commodities products, mainly when geographical and climatic characteristics are analyzed. This article intends to use the case of the sugar and, specifically, the exportation process using container to show that, even in commodities products, the containers can be a viable alternative for the exportation of products.

GESTÃO ESTRATÉGICA: BALANCED SCORECARD EM EMPRESAS SEM FINS LUCRATIVOS (O CASO DETRAN-RN)

Daniel de Araújo Martins, Dayse da Mata Oliveira Souza, Ana Paula do Egito

The transformations on the market place requires faster and accurate responses from the organizations, so they can take advantage of the new opportunities. Moreover, the search for tools, such as, the balanced scorecard, able to improve the management practices and processes must be the number one administrator priority. However, this has not been an easy task and most of these tools are made to private and profitable companies. On the public organization field, this problem is even worse because the bureaucratic laws go against the resources effective use. The manager should be able to adapt the practices and tools to the reality of their organizations. On this context, this paper shows how this management tools can be used on nonprofitable organization, as well as, the required adaptations. The state Department of traffic of the RN which has been done an effective use of BSC is the investigation ambient.

O USO DE SISTEMAS INTEGRADOS DE GESTÃO EM PEQUENA EMPRESA

Heitor Feitoza Neto, Anna Cristina Barbosa Dias de Carvalho

The small companies are enclosed in the world of the businesses with the same requirements of adaptation and flexibility that the great ones. This provokes a necessity of investment in control processes to facilitate the accompaniment of the productivity and the variables that influence in its competitiveness. One of these systems is known as ERP - Enterprise Resource Planning, that integrates all the areas of the company preventing duplicity of information and making possible a more trustworthy control of the variables as cost, processes, products, supply and products. These systems are already used in wide scale for the great and average companies, but the small ones do not uses yet. Since 2000 appropriate systems had been developed, as much in cost as in structure, for the small companies, increasing with this the use of the same ones.

ANÁLISE DA CAPACIDADE DE PRODUÇÃO DE UMA EMPRESA VIRTUAL UTILIZANDO APS PREACTOR

Tatiana Satie Tanikawa, José de Souza Rodrigues

The work proposes to struture a virtual enterprise on software Preactor, creating conditions to study its production capacity. The enterprise was developed to create a enviroment of studies about various areas of production engineering, using softwares for it. The data supplied by virtual enterprise (processing times, setups, maintenance, energy consume, etc.) will be registered on the software to struture the enterprise production sector. The software allows the production planning with the conditions involved at the production sector, and after, the studies of production improvement.

FERRAMENTA DE SUPORTE A ORGANIZAÇÃO FACETADA PARA SISTEMAS WEB

Douglas Mauricio M. Teixeira, Sofia Mara Sousa, Elysio Mira Oliveira

The knowledge organization systems exist since the remote times. They are presents in all human knowledge areas and propitiate the communication between the user an they information needs. The Indian librarian Shiyali Ramamrita Ranganathan elaborated in 1930 a faceted organization model. This model allows a better visualization of the data in a hierarchic form and she has not applied in web due to inexistence of software that they provide it. This article has as objective to present a tool that allows to the integration of systems web with such standardization, where applied to this context will allow the research through the specific description of the subjects, that in set with proportionate the asynchronous access for technology AJAX (Asynchronous JavaScript And XML) will allow to greater performance in the recovery of the information and visualization of the rank of the knowledge from the election of the user.

A INFLUÊNCIA DA ESTRATÉGIA COMPETITIVA NA GESTÃO DA PRODUÇÃO DAS PEQUENAS E MÉDIAS EMPRESAS

Oscar Dalfovo, Ricardo Alencar de Azambuja, Paulo Roberto Dias

The innovation of the concepts has been a characteristic of the businesses administration in the modern world. The custom have been attracting attention, with the same intensity that the organizations difficulties have in obtain results,

in face of the complexity of the proposed solutions. In this context, the competitive strategy interferes and the use of the information technology (IT) - a group of resources, that if well applied, allows and decreases the distance between the small and the big companies for competition in the global market. Companies of small and medium importance, for possess a decision process more agile, supposedly should possess more flexible market strategies. The conclusion is that the IT it's not an important tool in the planning process and management strategic of the small and averages companies of makings of the Blumenau area.

EXPANDINDO OS LIMITES PARA IMPLANTAÇÃO DA MANUFATURA ENXUTA

Thaís Rohling Girardi, Glauco Silva, Dálvio Ferrari Tubino

It is generally said that Lean Manufacturing with pull system is not applied to cases with many irregular demand items. This statement does not take in consideration that a small group of items can have a concentration in their demand. This article presents two cases where each companies was restricted to the push system due to the great variety of managed items, and from a detailed study of the behavior of this variety of items, by Pareto's Law, the Lean Manufacturing could be successfully implanted with the pull system.

Session ET2A

E-MANUFACTURING USING RAPID PROTOTYPING

Rafiq Noorani, Christof Stotko, Micah Black

E-Manufacturing means the direct, flexible and cost effective production directly from 3D CAD data files. Rapid prototyping is a very efficient way of making e-manufacturing a reality because, the 3D CAD data can directly be fed into different types of rapid prototyping machines for product development. The result of an e-manufacturing process can either be a final product or a tool that facilitates manufacturing the final product In this paper, several case studies such as the manufacturing of a sport helmet, production of combs, cross country ski binding and a complex robot system will be presented. The paper also discusses the relevance of several recent technological innovations in rapid prototyping for e-manufacturing, especially how increasing productivity has increased the range of applications which are cost-effective. All these case-studies have been implemented using EOSINT, Spectrum 510 rapid prototyping machines.

TOPOLOGY OPTIMIZATION OF DISPLACEMENT AMPLIFYING COMPLIANT MECHANISM INTEGRATED WITH PIEZOELECTRIC ACTUATOR

G. Arunkumar, PSS Srinivasan

Compliant mechanisms are the focus of active research because of the stability, robustness and ease of manufacturing endowed by their unitized construction. However, despite significant advances in development of systematic design techniques for these mechanisms, currently compliant mechanisms are not capable of performing certain kinematic tasks that rigid body mechanisms can readily perform. This work explores the various advantages of the compliant mechanism, some of the difficulties in the design of compliant mechanisms and designing a compliant mechanism for displacement amplification of piezoelectric actuator is developed using a topological optimization approach. The overall stroke amplification of geometrical advantage of the mechanism and overall mechanical efficiency of the mechanism is considered as objective functions. The maximization of these objectives is accomplished using optimality Criteria method.

TOPOLOGY OPTIMIZATION OF DISPLACEMENT AMPLIFYING COMPLIANT MECHANISMS - AN OPTIMALITY CRITERIA APPROACH

G. Arunkumar, PSS Srinivasan

Displacement amplifying mechanisms can be systematically designed using topology Optimization. Due to the special need for large displacement amplification of piezoelectric stacked actuators, suitable objective functions should be formulated. This work considers maximum output stroke, magnification factor and mechanical efficiency as objective functions. As the formulation of maximum magnification factor performs better numerically than the rest, it is recommended as a suitable design goal for displacement amplifiers undergoing undamped harmonic response. The

design problem is solved using Optimality Criteria method (OC). Plane stress solid is assumed for the design domain. In this paper Optimality Criteria (OC) has been used for the design of compliant mechanical amplifiers for piezoceramic actuators. In topology optimization approach the objective is to maximize the stroke amplification, and to improve the mechanical efficiency. The topological optimization is done in the Ansys and the shape approximation carryout structural analysis to check the stress and the displacement required.

AN EXPERIMENTAL STUDY OF ELECTROCHEMICAL DISCHARGE MACHINING PROCESS USING VARIOUS TOOL KINEMATICS

Sanjay B. Zope, B. B. Ahuja

Machining with electrochemical discharges is an unconventional machining technology able to machine several electrically non-conductive material like glass and ceramics. The improvement of machining efficiency of the process continues to be a major challenge for researchers. Electrochemical Discharge Machining has its own problem too. Till date, majority of the researchers have used stationary tool only, but the performance of such tool has been reported to be poor. In present work, Electrochemical Discharge Machining has been conducted on indigenously developed set-up, using various tool kinematics such as rotary, vibratory and vibro-rotary, with a view to enhance process performance. Comparison of stationary, rotary, vibratory and vibro-rotary tool have been done in respect of material removal rate. The Electrochemical Discharge process is influenced by various process parameters such as applied voltage, duty factor, current pulse on time and electrolyte concentration, etc. Electrochemical Discharge Machining of glass under varying process parameters has been reported.

CUTTING FORCE MODEL FOR TURNING EN 24 STEEL THROUGH RESPONSE SURFACE METHODOLOGY

Hari Singh, Pradeep Kumar

In this paper an attempt is made to visualize the effect of machining independent parameters such as cutting speed, feed and depth of cut on cutting force while turning En24 steel alloy steel with TiC coated carbide inserts. The response surface methodology (RSM) was used to correlate the process parameters with the cutting force by a mathematical model. The second order response surface was found suitable for the present work. The central composite design was used to plan the experiments.

A NOVEL TOOL FOR SIMULATION OF SELF-ASSEMBLY

S. RajKumar, P. Radhakrishnan

The realistic self-assembly process is very tedious and costlier, hence before going for actual process, simulation is very essential to study the physical and chemical behavior of real nanoscale systems. In this paper we propose simulation software (NaSim-NanoSimulator) for better understanding of self-assembled systems, which follows bottom-up approach mimicking laws of classical mechanics that allows user to engineer and investigate 3D self-assembly behavior of nano-scale systems. This tool can be applied to the analysis, prediction and design of self-assembly behavior of elements from atomic to macro scales. In particular, it will be a platform for developing design techniques that can be implemented in real nanoscale systems to achieve useful structures.

Session PT2A

FERRAMENTA GRÁFICA DE APOIO À VISUALIZAÇÃO E ANÁLISE DE DADOS DO DESEMPENHO NA APRENDIZAGEM

Viviane Araújo Pernomian, Valentin Obac Roda

The objective of this work was to develop a tool of visualization for analysis of the performance of the learning, based on Information Visualization techniques, and statistic Analyses of Variance, Normal Distribution and learnig styles for qualitative and quantitative data analysis. This tool was developed in a graphical environment, that it makes possible to graphically manipulate and to visualize archives of data through the visualization techniques as bars, histogram, clusters, and polylines. When archives of data are inserted in the tool, beyond the analyses of association and organization of these data, also it is made the classification and the mapping of the learning exploitation, or either, in accordance with the

occurrences (average, approval and disapproval index for note, frequency and profiles of learning of the groups and disciplines), is possible to classify exploitation standards, using the technique of Normal Distribution and Learning Styles.

UM MODELO PARA A ANÁLISE E PROGRAMAÇÃO ORIENTADAS A OBJETO

Magda Aparecida Salgueiro Duro, Ana Júlia Ferreira Rocha, Maria do Carmo Bueno de Castro Setti

In this work, a method was developed to create classrooms from the diagram of Entities and Relationships, it is possible to encapsulate the information and its behaviors since the conceptual level until the one of the programming. In the decade one of 70, it had a better conceptualization of the Data Base (DB), it was started to make what was called Modeling of Data. In this modeling, the processes are used only as references, in generic way. The Relation Data Bases had come to give impulse to this modeling, therefore the data are stored in simple way, they are expandable and therefore they can be shaped and be implemented independently of the applications.

DISCUSSÃO TEÓRICA SOBRE A APLICAÇÃO DE MÉTODOS TRADICIONAIS DE GESTÃO DE ESTOQUES E O USO DA SIMULAÇÃO

Gisele Castro Fontanella Pileggi, Juliana Veiga Mendes, Ana Lúcia da Fonseca Bragança Pinheiro

Inventories are organization actives that must be sustained in order to ensure the commercialization of their products and/or services or to supply the stuffs demanded by the productive process. They can represent up to 60% of the total actives of the company so that they must be efficiently managed. Despite that inventory are expensive and require a considerable investment in capital, they increase the confidence level in complex and uncertain environment. Different methods are available in literature for inventory management. However, the hypothesis assumed by these methods, frequently, results in models that are distant from the reality, thus resulting in low reliable and confident models to help in the decision making process. In this context, simulation is an alternative approach to substitute these models. This work presents a review of traditional methods and simulation in inventory management.

METODOLOGIA DO PROJETO NA ÁREA DE GESTÃO E APLICAÇÕES GRÁFICAS

Ricardo Simões Gonçalves

This study is directed to drawing and architectonic project education, as communication tool, in the formation of a civil engineer. This work has the objective to high-light the importance of the graphic representation and the architectonic project in the conceptual planning for other knowledge fields. As a method for projects teaching, it permits the student to improve its creative capacity by learning how to visualize the three-dimensional, generating subsidies for its development, and inducing him to search for adequate solutions for integrated features into the project.

A APLICABILIDADE DO TRATAMENTO DE ESGOTO POR MEIO DE LAGOAS DE ESTABILIZAÇÃO NO REÚSO DE ÁGUAS

Ana Maria Campiglia Babbini Marmo, Raquel Cymrot

A treatment should be carried out before releasing the sanitary sewage into any body of water, once it is extremely necessary to prevent hydro transportation disease dissemination caused by pathogenic microorganisms, as well as to conserve water supply sources; therefore, ensuring environment preservation. Moreover, the treatment quality and efficiency may make the reuse of the effluent treated feasible, inserting such practice in the context of hydro resource preservation and conservation. This study aims at analyzing the sanitary sewage system treatment by means of stabilization lagoons, through a survey of the data of a program in use by Companhia de Saneamento Básico do Estado de São Paulo (São Paulo State Sanitation Company - SABESP), in the city of Salesópolis, as well as performing an adequate statistic treatment of DBO5 and N-total parameters. The efficiency of the sanitary sewage treatment and treated water re-use will be focused in this work.

A IMPORTÂNCIA DE ECONOMIZAR ENERGIA, POUPAR RECURSOS NATURAIS E TRAZER DE VOLTA AO CICLO PRODUTIVO O QUE É JOGADO FORA

Ana Júlia Ferreira Rocha, Fábio Raia, Kauê Fakri, Magda Aparecida Salgueiro Duro, Marcio Glaucio Ribeiro, Marco Aurélio Gattamorta

This alert study concerned to the necessity of the awareness of the population for an Ambient Education in daily activities and to manage the garbage that was generated in its origin. In the nature nothing is lost. The selective garbage collection consists of the separation of the recycled dry garbage from the remain one . It is a project that promotes the education of the population and this process promotes an easy action for selection and recycling. This procedure is already a practical daily for the case of the industrial residues, ally the domiciliary selective collection and detaches the importance to save energy, to save natural resources and to bring in return to the productive cycle that is threw away. This article focuses the recycling as way of the reuse of material.

O PAPEL DO EXECUTIVO PRINCIPAL NA APRENDIZAGEM ORGANIZACIONAL

Raquel Blay Leiderman, Marco Aurélio Morsch

This article pretends to analyze and understand the role of CEOs in the building and development of organizational learning. Nowadays, in the uncertain, ever changing and hyper-competitive business environment, specific competencies and new skills are required for the organizational leadership in the task of leading the firm effectively thru the daily challenges. Based upon the theories of organizational learning and managerial competencies, as well as a brief bibliographic research of well-known practices and cases of transformational-coachs CEOs, this work explores the crucial role that a CEO can play in the managing of organizational knowledge towards building a continuous and systematic process of learning in the firm.

Session PT2B

A GESTÃO DO CONHECIMENTO MELHORA A GESTÃO DA CADEIA DE SUPRIMENTOS COM AUXILIO DO RFID

Oscar Dalfovo, Ricardo Alencar de Azambuja, Paulo Roberto Dias, Denise Carla A. Zeindin

The Supply chain management has been problem for the organizations. Researches indicate that the companies that has a program of the knowledge management inform: 78% of the levels of the consumer's satisfaction got better and about 59% took the innovation in the products or services. Any authors affirm that the adoption of technology identification for Radiofrequency-RFID and the pattern EPC, will allow the integration of the supplies chain, besides benefits as: win of productivity by suppliers, efficiency in the storage process and stockpiling of products, mainly the perishable ones. The reduction of the lines in the supermarket and the stocks gondola integration and of the deposit, will allow the generation of fast information and services quality. This work presents a bibliographical revision that justifies the use of programs of knowledge administration, and allows the implantation of RFID program as a support tool of the supply change management.

SID - SISTEMA DE INDICADORES DE DESEMPENHO: UMA IMPLEMENTAÇÃO DE BALANCED SCORECARD APOIADA POR TECNOLOGIA COMPUTACIONAL

André Marcos Silva, Edgar Gomes

This article involves a study of indices point analysis based on Balanced Scorecard. To improve this process in organizations is proposed a computer technology support. The implementation and validation of this goal, the system development is matched with a real firm.

AUDITORIA COMO FERRAMENTA DE GESTÃO DE FORNECEDORES DURANTE O DESENVOLVIMENTO DE PRODUTOS

Giovani Faria Muniz, Jorge Muniz, Eduardo Carneiro Leão

The main goal of this paper is to present the supplier’s management analysis during development phase of products, applying qualitative evaluation on the efficacy of the quality audits. In order to achieve the proposed goal of this paper, it is assumed that quality audits, in the development phase, have the following objectives: to identify and evaluate risks for supply; to propose joint action plans to get a better development of the products and process; and to analyze periodically the supplier’s performance. In the end, if those quality audits during development phase be effective, it is expected that in the beginning of the series production, the supplied parts can be mature, manufactured by defined process and have

known and stable performance parameters. This paper is based on research-action, where the 1st author is quality auditor and works with supplier's development for products under development and in series production.

ANÁLISE DO USO DE MÉTODOS QUANTITATIVOS DE APOIO À DECISÃO EM ENGENHARIA DE MANUFATURA E ADMINISTRAÇÃO DE EMPRESAS NO BRASIL

Hélio M. Cosentino, André C.F. Costa, Cláudio O. Ribeiro, Therezinha J. Masson

The correct approach of administrative sciences and technology, from a qualitative or quantitative point of view, is one of the most relevant themes in the scientific community. It originates in criticism concerning the lack of strictly scientific methods used or in the use of "technique by technique", which would distance us from an appropriate understanding of the phenomena studied. The objective of this paper is to summarize the principal methodologies utilized in the articles presented at ENANPAD 2004, with the specific purpose of contributing to the didactic planning of the Quantitative Method disciplines in graduate courses in Business Administration and Engineering.

USO DE PLANILHA ELETRÔNICA NA RESOLUÇÃO DE PROBLEMAS DE GERENCIAMENTO DA PRODUÇÃO

Paulo E. Polon, Luiz M. de M. Jorge, Paulo R. Paraíso, Cid M. G. Andrade

The administration of the production is one of the main factors of the industrial productivity. The problems involved in the taked of decision can being of Linear Programming (LP) or the Mixed Integer Linear Programming (MILP). Usually these problems are resolved using commercial softwares. Here we showed to be possible solve using them her the electronic spreadsheet Excel, with his tool solver.

APLICAÇÃO DO 6SIGMA PARA A REDUÇÃO DE PERDAS NUM PROCESSO DE MANUFATURA

Antonio Batocchio, André Celso Scatolin, Diego de Carvalho Moretti

This work aims to show the effectiveness of Six Sigma Methodology application in reducing waste of a manufacturing process. Improving methodologies applied every since had reduced significantly the waste level but a different approach was needed to reduce it even more. Following the Six Sigma Methodology, a team was formed to focus the whole attention on reducing this waste and breaking the paradigm which inherent waste of a process cannot be eliminated. The main results were obtained by six sigma methodology: through an addition of a new process step in order to reprocess the all of it was recovered, keeping the same characteristics of raw fiber, manufacturing cust reduction, training and cultural change improve team qualification and, increase team engagement.

A GERAÇÃO DO CONHECIMENTO A LUZ DOS MODELOS DE ORGANIZAÇÃO DA PRODUÇÃO: ESTUDO COMPARATIVO ENTRE A PRODUÇÃO TRADICIONAL VERSUS PRODUÇÃO JIT

Alexandre Magno Ferreira Diniz, Cícero de Alencar Leite, Maria do Socorro Márcia Lopes Souto, Ronaldo Landim Leite

In the current time, where the knowledge prevails, the organizations need to generate technological innovations with more frequency to grow. In the organizations, the knowledge become in a valuable asset, used for to learn, to resolve the problem and to generate another knowledge. This article consists of presenting a comparative between the generation of the knowledge in the model of traditional production versus the model of production JIT. The research of the generation of the knowledge in the two models of production considers the aspects in the structure of organization, in the work forms, in the types of production, in the quality system, in the politics of human resources, in the participation and autonomy of the worker. It is verified that the model of the traditional production wastes the capacity of the contribution of the worker, not being desired for the current reality, in a contrast with the model JIT.

Session ET3A

CORBA OVER CAN COMPARED WITH DEVICENET AND CANOPEN

Osvaldo Clúa, María Feldgen, Martín Rouaux

Fieldbuses like CAN are widespread in industrial networks. Some object oriented application middleware is available using CAN as a transport agent. CANopen is an example of such middleware where devices are active objects described by profiles stored in a device dictionary. DeviceNET is other of such implementations where each device is a composite of abstract objects. DeviceNET is indeed a framework made of these classes and associated services. A prototype implementation of CORBA over CAN was developed by one of the authors. In this paper we compare the CORBA over CAN implementation with both, CANopen and DeviceNET. Comparison is made using each Object Model, communication strategy, transport agent, session and presentation layer and the meeting of CAN requirements.

SOME ISSUES ON AN IMPLEMENTATION OF CORBA OVER CAN

Maria Feldgen, Osvaldo Clúa, Martin Rouaux

In an industrial automation environment, devices and controllers are interconnected by an adequate communication system to accomplish with real time specifications. Fieldbuses, as CAN (Control Area Network), are in use for this purpose. CORBA is an application layer middleware that includes a real time part. It is a non-proprietary solution with several open-source implementations. CORBA also supports several programming languages and interoperates with legacy non-object oriented applications. In implementing CORBA on a CAN networks several issues must be considered. CORBA does not provide neither for a master slave nor for a producer consumer mode of operation. It also lacks from group communications, features widely used in an industrial networking environment. In this paper we describe some of the issues found in implementing CORBA over a CAN Network.

CAD/CAM INTEGRATION AT AFFORDABLE BUDGET FOR SMALL SIZE ENTERPRISES

Roberto S. Apóstoli, Pedro Rosales, Alejandro Laffaille

This paper shows some experiences learned with Cad/Cam integrated systems intended for small size metalworking enterprises. The project started with the design and construction of two CNC mills: the 4 axes ELINON I and the 5 axes ELINON II, which belong to the CELFLEX manufacturing cell. The CNC are DOS, Windows 98/DOS & XP, and Linux RH based. The first integration comprises Autocad 14-HPGL file and the Indexer LPT CNC under DOS. Later on, the Bridgeport DOS CNC was modified for connecting the Windows 98 O.S. to a Ethernet 10 Based 2 . Now the Turbocnc Windows 98- DOS, the Mach 2-3 Windows XP and the Linux Red Hat are being tested.

CELFLEX - EXPERIMENTAL MANUFACTURING CELL

Roberto S. Apóstoli

The development of an experimental flexible manufacturing cell “Celflex” is exhibited, which is integrated by: two CNC milling machines Elinon I and Elinon II, two robots RSA-1 and RSA-2 and two warehouses one rotational and one belt driven. For the simulation, modeling and control of the Cell real time tools have been used such as Petri Nets, Turbo-Prolog, Virtual Reality, and the expert system Gensym G2. The computer environment involved the Digital UNIX platform, the mimic´s Linux RH interfase based, the CNC controls implemented with Linux, the robots control based on C and Visual Basic and the integration of the system with Ethernet connected to a broadband Internet through a Linux Coyote server. Students and professors of the National Universities from Córdoba, Cuyo, San Luis, and Technological of Córdoba and also 18 S&MSE are participating in this project.

SALES AND OPERATION STRATEGIES CONSIDERING DIFFUSION OF INNOVATIONS

Clovis E. Hegedus

Company strategies includes many aspects, one of them is production and sales strategy. Know market response to new products, innovations, is an important point to be considered by managers. The article is a result of a research of the diffusion of some innovations among private homes in Brazil during the last 30 to 40 years. The discussions include some home appliances diffusion and acceptance, including some suggestion to identity and anticipate consumer behavior, being useful to support some decisions about first market to be explored, production increment. Some results of the research are made available allowing some conclusions about Brazilian responses to innovations.

UTILIZAÇÃO DE MODELO DE GESTÃO DE PRODUÇÃO BASEADO NO CONHECIMENTO OPERÁRIO EM FÁBRICAS DO SETOR AUTOMOTIVO (USE OF PRODUCTION MANAGEMENT MODEL BASED ON THE BLUE COLLAR KNOWLEDGE FROM AUTOMOTIVE PLANTS)

Jorge Muniz, Edgard D. Batista Jr., Paulo T. M. Lourenção

This article presents a qualitative study in different transnational automotive plants, in São Paulo State, Brazil, during the 2005´year. The analysis is grounded in the Production Management Model, which integrates the concepts of Knowledge Management (KM), Production Organization (PO) and Work Organization (WO). The adopted Model seeks the "joint optimization" between the needs of operators and productive system, and promotes a favorable context to the incremental innovation. The study has shown similar plants operating system, emphasizing the factors related to WO (training and communication), PO (standard operating procedures and problem solving method) and KM (socialization, externalization and internalization). The research contributes to integrate the manufacturing and knowledge management focusing in the integrated application of the three concepts: KM, PO (mass and lean manufacturing) and WO (enriched and semi-autonomous models) in the shop floor environment.

Session PT3A

THE VISUAL ART OF JAPANESE COMICS: JAPANESE MANGA MADE IN BRAZIL: EDREL, 1969-1973

Flávio Mario de Alcantara Calazans

The first country to produce and publish Japanese comics (Manga) after Japan was BRAZIL. A historical research identifies the origins of this semiosis, sign use, in the mangas published by EDREL, by Claudio Seto, Fernando Ikoma and other designers in São Paulo, Brazil.

RAIZES MÁGICAS DO RETRATO
CONTRIBUIÇÃO AO ESTUDO DAS IMAGENS FOTOGRÁFICAS DE RETRATO.

Ivany Sevarolli, André Lopez A. Rodrigues

Nowadays the portrait is the most common photographic shape from amateur to publicity picture and is also the shape that has been practiced through the years. That's why we believe that it shapes our way of working with technical images. Understanding the message in the portraits makes us able to deal with the community of the machine produced images.

REDE DE NEGÓCIOS NO VAREJO FARMACÊUTICO: AS ESTRATÉGICAS MERCADOLÓGICAS EMPREGADAS NO VAREJO SEM LOJA NA COMERCIALIZAÇÃO DE MEDICAMENTOS

Roberto Bazanini, Denis Donaire, Ernesto M. Giglio, Mauro Neves Garcia, Sérgio Antonio Sperandio

From the first half of years 90, in virtue of the vertiginous growth of the technology of the communication, the connections between companies had started to characterize different structures as business-oriented nets, productive chains, clusters and productive arrangements, having as result the sprouting of innumerable companies in all the sectors of the economy that take care of to the retail without possessing store, consisting me significant competitive advantage when endorsed in well structuralized internal processes. By means of exploratória research of qualitative nature, this article analyzes the strategies of vendas used by the three main pharmacy nets that act with the retail without store for the commercialization of medicines to the consumer in São Paulo. The gotten results had allowed to evaluate the situation of the attendance to the customer in the pharmaceutical branch and the future perspectives gifts in the activities of marketing.

DAIMLERCHRYSLER EM BUSCA DA GERAÇÃO MÍNIMA DE RESÍDUOS EM SEUS PROCESSOS PRODUTIVOS

Sergio Antonio Sperandio, Denis Donaire, Roberto Bazanini

From the decade of 80, an intensification of the ambient questions, supported in its bigger part, by means of the pressure of ONG' s and the civil society. As consequence of this concern, we had the sprouting of 14000 norm ISO

and the implantation of the process of ambient management, that has been adopted for thousand of companies in Brazil and the world. One of the points that must be considered, is that from the moment that the company implants the ambient management, also it will be able to occur to the adoption of the concept of cleaner production. The objective of this article is to show some actions that are being developed for Daimlerchrysler company in Brazil and that they signal a sufficiently significant advance in the search of the reduction, reuses or recycling of the diverse materials used in the production processes that its generate in its products.

ESTUDO COMPARATIVO ENTRE A PRODUÇÃO BRASILEIRA DE HISTÓRIAS EM QUADRINHOS E A PRODUÇÃO ESTRANGEIRA VEICULADAS NO PAÍS, ENTRE 1934 E 1970

Ricardo Bruscagin Morelatto

The research plan or initial proposal settled a comparative view of quantitative and comparatives rates of domestic comics compared with the foreign material diffused into editorial market. It focused at the comics statistics analysis and index searching published in Brazil between 1934 and 1970. Primary sources were consulted, adopting as main document of it the study and index of this comics accomplished by Mário Tabarin, Enrique Lipsick and Álvaro Moya at the International Comics Exibithion – MASP – in 1970. (Tabarin, 1970). This document allowed numeric graphics and comparatives tables production associated with comics development and evolution, limiting quantitative oscillations occurred during the period, referring to domestic production and publishing in relation to its foreign correspondent. Throughout these graphics, it was observed periods of quantitative rising related to domestic production as well as editorial market, characterizing in that way a specific scene, supporting several approachs to be exploited during this work Index.

DESIGN, ARTESANATO E CULTURA

Henrique Cunha Junior, Marizilda dos Santos Menezes

Search for both handicraft and ethnics products is growing in national and foreign markets. Products production which express cultural diversity are encouraged, valorizing handicraft activities in several peoples and cultures. Non Government Organizations have spread these products and many governments had modified laws to provide its exporation. Exportable craftsmanship is not anymore naive and rustic product, and it asks for professionals' design intervention to manager update and adaptation products processes. It needs quality to match international rules and to allow entrace in new markets. Match between handicraft or ethnics products which attends to specifications, with quality needs of international design, it demands cultural interpretation. Both answer cultural needs and they are inserted in traditional and post-modern cultures. This paper discuss cultural links with productive and market processes aiming at production and export of handcraft or ethnic products and introduces researches results of interaction between agents of these processes.

RESPONSABILIDADE SOCIAL: O DESAFIO E OS RISCOS DE SUA DISSEMINAÇÃO PELA PUBLICIDADE

Nilton Marlúcio de Arruda, Dália Maimon

Publicity, an important contemporaneous business communication tool brings with it a challenge, besides increasing products and services selling it warns people against the risks that our planet undergoes if we continue using the consuming model we have nowadays. To discipline is credited a significant responsibility upon the knowledge people have about sustainability and social responsibility. Yet more paradoxical is that we notice in publicity language strategies focusing only on the reinforcement of the trade mark, without compromising with the transforming function that is expected from the business social responsibility. The aim of this article is to analyse part of the results of the research applied to communication professionals, with the intention of discussing methodological proposals that include in the firms propaganda strategy the increasing of relationship with their stakeholders. The first analyses show some sectors already use this new publicity language based much more on human values than commercial appeal.

Session PT3B

APLICAÇÃO DA TEORIA DAS RESTRIÇÕES PARA DETERMINAÇÃO E TRATAMENTO DE ÁREAS DE INTERVENÇÃO EM UMA CADEIA DE SUPRIMENTOS

Daniel de Araújo Martins, Christiane Maria Leite Pereira

With the increase of the global markets integration, the competitive advantages have become smaller than before. The increasing hiper-competition promoted by the globalization, has forced the companies to seek new competitive advantage sources. This advantage can emerge from a good supply chain management that has the objective of obtaining synergetic results and constrains elimination. Looking forward to accomplish these results, the research brings up a conceptual and technical relation between the supply chain management and the theory of constrains (TOC). This relation allows a framework proposition capable to detect and eliminate constrains of a supply chain through the application of the TOC by two perspectives: the macro and micro applications of the TOC.

ESTUDO DE OTIMIZAÇÃO DE PROCESSOS EM UMA INDÚSTRIA DE REDES

Anselmo Ramalho Pitombeira Neto, Anna Cristina Barbosa Dias de Carvalho, Carlos Roberto Oliveira Cardoso

Discrete-event simulation is a valuable tool to address issues in designing and evaluating the structure and behavior of a system. Human behavior most times inserts a considerable amount of variability to the system, so that it is highly important to model contingencies for the analysis to be valid. This paper considers the modeling of a sewing sector from a textile factory. It approaches the effect of the actual and alternative workflow designs on key performance indicators, and how effective policies on the scheduling of operators can considerably improve system output. It is also investigated the general phenomenon that human beings may concede to the system a high degree of flexibility, yet partially at the expense of reliability and predictability. This may represent an advantage in comparison with rather fixed automated systems.

IMPACTOS DA DEMANDA NA INTEGRAÇÃO E GERENCIAMENTO DO SISTEMA LOGÍSTICO

Jociane Rigoni Viante, Olga Regina Cardoso, Daniele Mudrey

Issues such as economic opening, resulting from globalization; more efficient management systems; organizations partnerships; more flexible negotiations, changing in the consumers patterns of acquisition, among other factors make competitiveness even more demanding, and organizations have to find mechanisms of competitive differential. This article aims at demonstrating the impacts of demand and the difficulties generated for the logistic management, facing this environment with so many transformations. It establishes the conceptual contour of competitiveness, market, logistic perspective, among others. It also attempts to identify the main factors that hamper the logistic development generated by changes in the demand . A descriptive exploratory study of a qualitative nature with content analysis was carried out. The study presents the main implications regarding logistic management based on demand, and presents the proposition of a set of strategic competences necessary for demand management.

ANÁLISE DO IMPACTO DO USO DE DIFERENTES COMPILADORES E OTIMIZAÇÕES DE COMPILAÇÃO NO DESEMPENHO DE UMA CARGA DE TRABALHO REAL EXECUTADA EM PROCESSADORES DA FAMÍLIA IA-32

Bernadete Maria de Mendonça Neta, João da Rocha Medrado Neto,
Nesley J. D. Oliveira, Carlos Augusto Paiva da Silva Martins

This work has for purpose to show that is possible to obtain a performance in a Pentium II or in a Pentium III better or close to a performance in a Pentium IV, starting from a real workload, just varying the compiler and your optimization options. For that, it was developed programs in C language dividing our workload in sub-groups, to permit a better behavior analysis of our system. The combination of the metric in the obtained results through experimentation showed us that, in some cases, Pentium II obtained a performance three times and a half better than the one of Pentium IV. Thus we could show that is possible to obtain profits of performance, using the available computational resources, just varying the compiler and its optimization options.

UM PROTÓTIPO DE SISTEMA DE EXECUÇÃO DA PRODUÇÃO (MES) PARA MÉDIAS EMPRESAS

Fabio José Pandim, Fabrício Guermandi dos Santos, Néocles Alves Pereira, Paulo Rogério Politano

The majority of ERP systems utilized in manufacturing industries, in special small business enterprises that have in your production process the goal of your business, doesn't have a specific module for manufacturing data acquisition and validation, like the notes of the number of parts that have been produced in certain workstation, with the goal of compare the what have been planning with what have been executed. This paper has the objective to present a prototype of a manufacturing execution system (MES) that uses palmtops and wireless networks that, integrated with a ERP system and in real time, can receive information about what, where and when to produce (loading and

scheduling) and also makes notes, by the operator, of quantities has been produced, then send the data acquired to the ERP system. Also are discussed applicability aspects and the benefits of the system in a furniture factory.

SISTEMA DE APOIO À DECISÃO BASEADO EM LÓGICA FUZZY PARA A PROGRAMAÇÃO DA PRODUÇÃO

Jean C. Domingos, Cláudio V. Rodrigues, Stella J. Bachega, Paulo R. Politano, Néocles A.Pereira

Due to flexibility, the Decision Support Systems (DSS) are more and more indispensable in the daily management. These systems can be used in several organizational functions, of among them it manufactures, which possesses one complex activity: the scheduling. This paper presents a DSS for scheduling of the production, which supplying scheduling models that can be applied in a simulation environment and evaluated by means of measures of performance and graph of Gantt. The system approaches the scheduling models based on priority rules and fuzzy logic. The scheduling based on fuzzy logic allows the model of the expert's knowledge in a simple way, so that strategies of scheduling they can be represented and evaluated in a simulation environment. A study with a production environment was accomplished with the objective of verifying the applicability of the proposed DSS.

MEDIDAS DE ACOMPANHAMENTO E CONTROLE APLICADAS AO DESENVOLVIMENTO DE SOFTWARE

Adriano C. Santana, Fabrício A. Braz, Luis F. R. Molinaro, Roberto M. Zucca

The foregoing article considers a set of measures applied to the accompaniment and control of software development, having at its foundation a firm command of project management principles as recommended by the Project Management Institute - PMI. It also proposes that a flow of activities be applied on each iteration based on the areas of project planning processes, monitoring and control of the project and the measurement and analysis as foreseen in the Capability Maturity Model Integrated - CMMI, taking into consideration the process of development of iterative and incremental software. Moreover it presents a practical application with the suggested measures of software, as well as the results of the analyses in each one of them.

Session EW1A

DESIGN OF A COMPUTER AIDED SURGICAL NAVIGATION SYSTEM BASED ON C-ARM

Jianxi Yang, Prasad KDV Yarlagadda, Ross Crawford

Though the conventional C-arm fluoroscope is used in bone surgeries for decades, two outstanding disadvantages remain. One is that it is not well adapted to the image-guided orthopaedic surgery procedures. Another is exposure of patients and surgeons in the radiation environment are harmful. At present, computer aided surgical navigation system is more and more used in surgery, but it is only connected to MRI (magnetic resonance imaging) or CT (computerized tomography). This research addresses these issues. Using the C-arm and binocular spatial position system to navigate, with the help of the computer, is studied in our laboratory. The new system is called CASNC (Computer Aided Surgical Navigation system based on C-arm). This system has not only potential to maximize the advantages of the conventional C-arm and accuracy of drilling, but also reduce surgeon and stuff in the operating theatre, especially patients suffering the X-ray radiation exposure.

DESIGN AND DEVELOPMENT OF COMPUTER AIDED KNOWLEDGE BASE SYSTEM FOR NON-SYMMETRICAL SHEET METAL FORMING PROCESS

Prasad KDV Yarlagadda, Praveen Posinasetti, Lin Ma, Jee Aik NG

A computer aided knowledge base system for non-symmetrical sheet metal forming process has been designed which helps selection and optimal process planning for non-symmetrical sheet metal operations. The software has three main modules, which are: three-dimensional modelling module, blank design module and process planning module. Furthermore, the system provides appropriate instruction in guiding process plan for non-symmetrical sheet metal as well. Yet, the system has some limitations in terms of consistency, flexibility and user friendliness for non technical background users. This paper also describes the methods which can improve the system consistency, flexibility and integrate program interface as well. Few approaches are carried out in order to customise and enhance its native ability. Since the existing system is operating in AutoCAD, mark-up and programming languages such as HTML, AutoLISP and VBA are implemented in order to solve these problems.

PEELING PUMPKIN USING ROTARY CUTTER

Bagher Emadi, Prasad K.D.V. Yarlagadda

A new approach to peeling vegetables, pumpkin as a case study, by using rotary cutter has been investigated. Rotary cutter of circular shape with triangular side section was used to prevent clogging and improve the capability of peeler tool to follow the surface unevenness of irregular shape of produce. The criteria of experiments were even peeling effect at concave and convex areas with minimum peel losses. Those response variables were measured for a combination of three levels of each dependent variable including the angular velocity of peeler head (p. speed), the angular velocity of vegetable holder (v. speed), the position of peeling on vegetable (location), and applied force (force) for pushing rotary cutter towards pumpkin. Estimated results on optimum conditions showed a possibility of peeling effect at concave and convex areas equal to 36.66 and 45.27 %/min respectively at 0.74 %/min peel losses.

LEANING AND RECOGNITION ALGORITHM OF INTELLIGENT AGV SYSTEM

Suthep Butdee, Anan Suebsomran

A learning algorithm of a mobility behavior of vehicle is to generally use in AGV system. Learning algorithm of AGV system is proposed in this paper. By finishing the AGV with learning ability, the AGV performs more intelligently and flexibly to apply in factory. Before learning process, the AGV moves directly to destination point by humans teaching. The sensors are used with this system such as vision, odometer, safety switching, lamp etc. These inputs are the information used for training the intelligent AGV system. Before learning process, the AGV moves directly to destination point by humans teaching, when the AGV detects a change of information obtained from sensors either onboard or outboard, the AGV arks for instruction from a trainer to avoid crashing with external obstacles. After being taught, the AGV learns and recognizes to move between station to load and unload the object by its learning experience of job processing. By teaching an AGV with series of instructions until destination point, the robot learns gradually to move to the destination point. The recognition architecture uses the feed forward neural network to training AGV system. The inputs to the recognize network are the sensor patterns derived from encoder sensors, whereas the output action represents the action executed by AGV when the AGV finds the sensor pattern stored in the same value.

CASEXPERT SYSTEM FOR LEATHER GOOD FASHION DESIGN

Suthep Butdee

Leather fashion design is the one of the main project for Thailand. The objectives are to improve skills of people, improve the Bangkok city to be fashion city and improve industry to be competitiveness. Fashion is a concept of a fast change and short life cycle of product as well as various styles. Fashion is combined between lifestyle and engineering in order to meet human requirements and market constraints. Three criterions are commonly concerned. They are low cost but high price, fast production and high quality. Therefore, good knowledge and experiences are needed. However, human experts in this field are rare and very expensive. The new effective concept that is used to replace the traditional method is intelligent system in order to capture industrial knowledge, formulate, manage and use the knowledge. CaseXPert system is presented. Database of products and processes of leather good fashion design are created and stored with existing data in the library. The new product design is asked to get the requirements from the system. It is then matched and retrieved the most similar previous products. The similarity percentages are shown. One of the shown products is selected to modify according to the customer's requirements which is followed up with the verification. The satisfaction product is indexed and stored in the library for the future used. The system is successfully tested.

PRODUCTIVITY IMPROVEMENT BY ASSEMBLY LINE BALANCING

S. Narayanan, B. Baskaran

Assembly Line Balancing (ALB) is a dominant technique for mass production industries like automobile manufacturing and consumable items manufacturing industries. In this work, an attempt has been made to review some of the methods available in the literature for Assembly Line Balancing and develop a new heuristic called Composite Weight Factor with Neural Network approach which is an efficient method for balancing the lines of mass production industries, by which they can improve their productivity. This proposed heuristic comprises the following:
1) Modification of Composite Weight Factor (CWF) by using Artificial Neural Network (ANN)
2) Single layer feed forward neural network gives weightage to different priority rules used for Assembly Line Balancing problems.

Software in Visual Basic is developed for the computation of 1) Scientific weightage given by ANN. 2) Composite Weight Factor, CWF. 3) Balancing efficiency in percentage. Sample problems are being generated and are tested using Composite Weight Factor heuristics with Neural Network approach.

EVALUATION OF CIRCULARITY ERROR BY MINIMUM ZONE METHOD USING MINIMAX CRITERION

Karnam Jaya Krishna, G. Srihari, A. Venu Gopal

Accurate measurement of circularity error is very critical because most mechanical parts comprise circular elements both internal and external and these parts are associated in assembly of functional units providing relative motion. Various standards define circularity error based on the concept of minimum zone, but do not prescribe the methods for its determination. In this work an attempt has been made to obtain circularity error using minimax criterion under minimum zone concepts and a comparison is made between minimum zone and least square approaches, for which the experimental observations were obtained using a Mitutoyo CMM. In the present approach simple algorithms were developed for evaluating circularity error in both minimum zone and least square methods. The comparison of results of minimax criterion with the methods proposed by earlier researchers and also with that of CMM is done in order to evaluate the best method for measurement of circularity error.

Session PW1A

RAPID PROTOTYPING AND COMPOSITE MATERIALS: A LINK BETWEEN DESIGN AND MICROSTRUCTURES

André Luiz Jardini, Rodrigo Alvarenga Rezende, Luiz Carlos Vincentin, Suzimara Andrade, Rubens Maciel Filho

The emergence of microstructure and design generation by rapid prototyping can be of significance for new and challenging micro electro mechanical systems (MEMS) applications. Currently MEMS are mainly built from silicon. Ceramics or composites can be incorporated into microscopic devices to yield novel properties, such as increased toughness, high mechanical properties, high deflection temperature, high chemical resistance, low thermal expansion, magnetism and high electrical insulation. In this work, a novel Thermolithography process, the composite material was introduced to fabricate 3D structures using CO^2 laser. With silica particles dispersed in the epoxy matrix, the study of the material behavior of composite layers was analyzed by a scanning electron microscopy (SEM) and differential scanning calorimeter (DSC). Finally, 3D structures in the rapid prototyping process were fabricated.

IMPROVING A CUTTING PROCESS OPTIMIZATION EXPERT SYSTEM

Nivaldo Lemos Coppini, Raphael Furlan Grivol, Elesandro Antonio Baptista

Cutting process optimization could be considered in different levels and approaches. How to select tools and how to take care about evident loose time and costs can not be considered as a competitiveness market factor any more. Everyone responsible for cutting process planning must be up to date with these procedures and the tool makers are ready to help their costumers. Otherwise, after the best selected tool and cutting conditions are settled and the process is running in shop floor many things could be done to go more deep in the cutting process optimization. In the last five years, an expert system called "MOS" was developed to support an optimization methodology that could change cutting parameters to adequate them to reference cutting speeds. The purpose of this paper is to discuss, the addition of new features to this expert system, so it can become more flexible and user friendly.

STRATEGIC MANUFACTURING AND THE THEORY OF CONSTRAINTS

Humberto Rossetti Baptista

Most improvement initiatives in manufacturing do not take in account the effect of manufacturing improvements in the company as a whole. Therefore after the initial benefits the process stagnates and dos not form a positive cycle of growth. Theory of Constraints offers a unique view of the relation of parts of the company to the whole. Therefore it serves as a gauge of manufacturing improvement initiatives and their expected benefits, as well as, helps in establishing a process of ongoing improvement. In this article we explore how can the improvement be evaluated both in terms of financial impact and competitive advantages in building commercial offers. In what way can these

improvements be sustained over time. Also how to focus initiatives like Lean or TQM to achieve the best impact on the shop floor and how to link the improvements in production with other parts of the company.

USE OF CASE TOOL BASED IN SOFTWARE ENGINEER IN THE SUPPORT TO DEVELOPMENT AND MANAGEMENT OF T.I. PROJECTS – "VIRTUAL MANAGER OF PROJECTS"

Marcos A F Ferronato, Marcelo Silva, Robson Santos

IT Projects come being target of studies in the direction to conceive standards and techniques, in function of complexity, so that the development and manages has more quality. The quality is cited here accomplishes all in the project, cycle of life, and the quality perceived to the end. IT Projects are not only technician, a series of administrative activities must be played correctly, in the certain moment to reach this so desired quality. This work aims at to supply to standards in a tool Development and Management IT Projects, based in the disciplines of the PMI, in the concepts of quality the CMMi model and metrics for measurement with Function Point Analysis, generating knowledge base and assisting in this difficult task that is a IT Project, improving and increasing the number of projects without that the Companies and the professionals don't lose precious hours with the administration the same ones.

Session PW1B

COMPETÊNCIAS E INTERDISCIPLINARIDADE NA EDUCAÇÃO PROFISSIONAL TECNOLÓGICA: A EXPERIÊNCIA EM UM CURSO SUPERIOR DE TECNOLOGIA EM MECATRÔNICA

Carlos Antonio Berto Jr., Flávio Henrique dos Santos Foguel, Sérgio Ricardo Lourenço

The recent period of industrial restructure marked by technological improvement in both products and production process due to microelectronics innovations and information technologies. Technological Graduate Courses have proved to contribute to these areas, thanks to their development in professional competencies to achieve specific needs for labor market, which also stimulates production and scientific-technological innovation and to be applicable to the labor market. It is fundamental both the creation and application of teaching methods that priorize know how to do and interdisciplinary studies for the professional competencies required by a technician. This paper deals with technological professional education, interdisciplinary studies, and the development of competencies, by showing the importance of methods focused on how to do and the interdisciplinary areas on technological professional education, showing our experience developed by professors and students in the Graduate Course of Mechatronics.

FORMAÇÃO DO ENGENHEIRO ELÉTRICO PARA ATENDER AOS DESAFIOS DA ATUALIDADE

Sandra Maria Dotto Stump, Yara Maria Botti Mendes de Oliveira, Alfredo Davis Namias Lewin

The amount of information required for the engineering education grows every day by virtue of the technology development. For the appropriate engineering education, it is suggested a division of skills in essential basic contents to the formation of engineers in their particular areas, in this case, Electric Engineering and updatable contents. The aim is to reach the functional rationale of basic contents, as well as to stimulate the rational thinking of students. The proposal to attend this need requires the development of methodologies to teach with the use of instruction and virtual labs and it arises from an existence of an ample available material, providing to the student an easy way to know and understand technologies. Moreover, resulting in a better motivation for faculty and student staff as players of the educational process, and as a concession that provides formation for engineering professors, supplying resources for teaching and learning.

A DIALÉTICA DO ENSINO E APRENDIZADO NOS CURSOS DE ENGENHARIA COM A APLICAÇÃO DE DOIS SOFTWARES DE DESENHO

Maria do Carmo J. P. Palhaci, Roberto Deganutti, Marco Antônio Rossi, Claudemilson dos Santos

In 2002 and 2003 we apply in our discipline Drawing Basic Technician, a methodology differentiated through the education of AutoCAD software to the pupils of the course of Electric Engineering with excellent results. In 2004, we initiate the study of software Solid Edge with the intention of applying in the same one discipline and to compare the

results. The plane table still will be used parallel to the use of software . Two important reasons still in compel them to use the traditional instruments: the fact of the pupil to enter in the university without notion some of use of drawing instruments, not possessing manual dexterity and presenting an infantile development practically of tracing. As the reason is the fact not to obtain to only keep our lessons in laboratory, since many are the users of the same and we do not have it the disposal in all the lessons.

O PROCESSO DE ADAPTAÇÃO ESTRATÉGICA DE UMA ORGANIZAÇÃO DE ENSINO TECNOLÓGICO PRIVADA

Sandro Murilo Santos, Wilson José Mafra

The purpose of the present paper is to show the process of the strategic adaptation process experienced by SOCIESC-Sociedade Educacional de Santa Catarina, an educational institution in Santa Catarina, which has been acting during 47 years predominantly in the technological areas, with a professional way of management. This institution acts in elementary, high school and college (graduation and post graduation) and also develops specialized technical assistance. The institution has no profitable aim besides being managed by results. Its board of directors responds to an advisory panel which is constituted by a body of regional entrepreneurs and businessmen. The research was carried out inside the SOCIESC considering internal and external variables which have influenced the changes, as well as the identification of the corresponding strategic model. Historical organizational case study was the used methodology; the data collection has been held through no structured interviews, documentary analysis, observation and triangulation.

EXPERIMENTO PARA QUANTIFICAR A EFICIÊNCIA DE ASPERSÃO DE LÍQUIDOS: APLICAÇÃO EM DISTRIBUIDORES ESPINHA DE PEIXE

M. S. Moraes, D. Moraes Jr., L. R. Bastos Lia, J.R.B. Lima, S.M. Pizzo

This paper describes a device developed on the pilot scale and a simple approach to compare liquid distributor efficiencies. The technique consists basically of analyzing the mass of the liquid collected in 21 vertical pipes measuring 52 mm in internal diameter and 800 mm in length placed in a quadratic arrangement and positioned below the distributor. A 50-mm thick acrylic blanket that does not disperse liquids was placed between the distributor and the pipe bank to avoid splashes. Assays were carried out with ladder-type distributors equipped with 4 parallel pipes each for a column measuring 400-mm in diameter as an example of the application. The number (n) of orifices (95, 127, and 159 orifices/m^2), orifice diameter (d) (2, 3, and 4 mm) and the flow (q) (1.2; 1.4; and 1.6 m^3/h) were varied. The best spread efficiency, which presented the lowest standard deviation, was achieved with 95 orifices, 4mm and 1.4m^3/h. The pressure (p) at the distributor's inlet for this condition was only 0.01 kgf/cm^2, while the average velocity (v) was 1.5 m/s in each orifice. These results show some limitations of the practical rules used in distributor designs.

ENSINO, PESQUISA E EXTENSÃO EM LABORATÓRIO MULTIDISCIPLINAR

Deovaldo de Moraes Júnior, Luis Renato Bastos Lia, Marlene Silva de Moraes

The activities of education, research and training of the Santa Cecília University Chemical Engineer's Laboratory are presented in this paper. The unit operations laboratory with mulipropósal features, was developed in the nineties and now has more than fifty experimental modules applied not only for the undergraduated education but also for research and development activities support and general services.

IDA – INCLUSÃO DIGITAL PARA AUTISTAS

Vera R. Niedersberg Schuhmacher, Simone Müller De Faria, Maria I. Castiñeira

Nowadays individuals have they cultural environment encircled by technology and computers, but that practice must be available also for not healthy individuals. In Brazil about 10% of the population is carrying some special necessity. Those people have the same right to participate having an inclusion and interacting with the society. The autism is one of these illnesses. The autist has his psycho-neurologic, social and linguistic development injured. Individuals with autism could use technologies supporting its inclusion in the society. This project describes the elaboration of technological materials to support autists children learning. The conception of that material was attended by parents, psycho-pedagogues and autists children who participated of pro-active form during this project.

Session EW2A

FMS ROBUST DESIGN: A SIMULATION METAMODELING APPROACH

Wa-Muzemba Anselm Tshibangu

This paper analyzes an FMS and presents a new scheme that finds an optimal compromise between two conflicting performance measures (throughput rate and mean flow time) using an off-line model that combines discrete-event simulation and robust design principles. The research then suggests a two-level optimization procedure that uses an empirical process followed by an analytical technique. In a first level, the empirical approach serves to derive the near-optimal values of the two individual performance measures of interest. These values are then used as targets in the second level of the optimization procedure which is an analytical multiple optimization technique. The approach uses the FMS mathematical model derived through simulation-meta-modeling to find the optimal operating parameters setting that compromises the two conflicting targets by minimizing the loss (cost) incurred to the overall system. This loss is expressed as a multivariate quadratic loss function, derived from the traditionally known Taguchi loss function.

APPLICATION OF LASER ASSISTED TECHNOLOGIES FOR RAPID MANUFACTURING FROM METALLIC POWDER

Bernard Laget, Philippe Bertrand, Igor Yadroitsev, Igor Smurov

Laser Assisted Rapid Manufacturing (LARM) is the enabling technology for a knowledge-based manufacturing economy. It is a computer automated manufacturing process based on melting / sintering of metallic / ceramic powder by laser beam to construct parts that are used directly as finished products or components. LARM eliminates the need for tooling, such as moulds or dies, including related manufacturing processes such as machining, milling and grinding. This is especially relevant for production from a single part to thousands of parts.

COMPETENCY-BASED CURRICULUM DEVELOPMENT VERTICAL MODULARISATION AND MULTI-CYCLED TRAINING IN THE SPIRIT OF QUALITY MANAGEMENT

István Lük

It should not be proved, that competency or module is one of the most often used terms in the field of education. For almost every school level, today it is a widespread “fashionable” trend usage, and a curriculum developing principle, which explanation and usage is studied by several researcher in Hungary and abroad as well.(1) In the following part, I would like to show relations–without completeness- that can help to clarify the terms, throughout firstly in the curricular, structural and developing work of vocational training and higher education.

STEP PDM SCHEMA REPRESENTING EXTERNAL PART SHAPE PROPERTIES FOR EXPLICIT ASSEMBLY MODELING

V.K. Janardanan, P. Radhakrishnan

Product Structures are the principal relationships that define assemblies and product configuration. The STEP PDM Schema supports explicit hierarchical product structures representing assemblies and the constituents of those assemblies. This paper presents the STEP PDM Schema to define the external part shape, i.e., the geometric shape property for explicit assembly modeling. Part geometry is defined in the PDM Schema as representation of a property of part definition. The part geometry is defined in STEP format and EXPRESS entities and attributes are used to support the requirements of shape property identification. This paper also presents the methodology to extract the transformation function from an implicit model to an explicit model. Such a transformation to geometrically relate the representation of the part shape is essential in order to relate the shape of components in an assembly structure for digital mockup applications.

TRADE-OFF BETWEEN CRASHING COSTS, PROJECT COMPLETION TIME AND SUNK COSTS: CONTRIBUTIONS TO THE PROJECTS MANAGEMENT

Márcio Botelho da Fonseca Lima

Whittington (2002) presents four generic approaches of strategies. In this paper it is just commented the following approaches: the classical approach bases on methods of rational planning predominant in the books, with the objective of maximizing the long term profits; the evolutionary approach considers that the nature dynamic, hostile and competitive of the markets implicates that the lingering survival cannot be drifted and it assures that only the companies that discover the strategies of maximizing the long term profits will survive; the theorists of the approach of process accede to the evolutionists that the planning of long period is innocuous, but they are less pessimistic on the destiny of the companies that don't optimize their environment.

TECHNOLOGICAL POLICIES OF JAPAN AND BRAZIL AND MANAGEMENT OF COMMUNICATION AND INFORMATION TECHNOLOGIES

Márcio Botelho da Fonseca Lima

This paper will seek to establish a comparative approach of the technological policies of Japan and Brazil, in the recent past. The structure of this paper will be based on a concept map. According to Lundvall (1997), the Communication and Information Technologies (CITs) can be considered by different perspectives, whose emphasis focuses on the CITs potential in reinforcing human and interactive learning. Here the focus is not on the ability of the CITs of substituting tacit knowledge, but on how this kind of knowledge can be supported and stimulated. The use of multimedia communication can become useful in transferring tacit knowledge elements, for instance, in the combination of voice and images interactively.

Session PW2A

APRENDENDO A DESENVOLVER UM PROJETO DE UM MODO PRÁTICO

Anna Cristina Barbosa Dias de Carvalho, Daniel Thomazini, Maria Daniela S. Cavalcante, Maria Virgínia Gelfuso

The students of Engineering need to be trained to develop its managerial function. However, just the time of the classroom is not sufficient in order to develop the abilities necessary for an Engineer. During the theory information lectures is given, but the practical sides to deal with teamwork, resources, time and practical the taking of decisions are not something concrete. One of the possible options to stimulate the growth of these abilities is work activities extra class that have been suggested by the Diretrizes and Base Law of the Ministry of Education. The Course of Engineering Control and Automation is a new course in the State of Ceará, it was created in the year 2001, and the first class was graduated in 2005. The present work has as objective to present the experience of developing a project extra class made by some students of the course in the conception and elaboration of a warrior robot.

AS PARCERIAS PÚBLICO-PRIVADA (PPPS) E A LEI DE RESPONSABILIDADE FISCAL (LRF)

Erika Monteiro de Souza e Savi, Daisy Ap. do Nascimento Rebelatto, Antonio Francisco Savi

This article analyzes the necessity in obtain a cooperation structure between public and private sectors, in special the Public Private Partnerships (PPPs). The establishment of instruments which facilitate Public Government in getting resources and improve the elevation of increase indices in Brazil, in general actions and incentives (tax or not), develop this growth, in special the infra structure sector. To be successful on this, is necessary make some changes and break paradigms objecting alternatives in which build possibilities in return to the progress with so limited public resources, one of the alternatives is the public private partnerships, which initiatives aims to obtain this growth. In Brazil, such a measured ones need if it frames to the established limitations for the Fiscal Law of Responsibility that establishes norms of public finances gone back to the responsibility in the administration fiscal.

FERRAMENTAS DE APOIO À TOMADA DE DECISÃO BASEADA EM TECNOLOGIA DA INFORMAÇÃO PARA ORGANIZAÇÕES CUJO OBJETIVO É SOCIAL

Miguel Arantes Normanha Filhol, Marise de Barros Miranda

The third sector has been an alternative for many private companies, in relation to its social responsibility actions on several segments such as socio-cultural area on communities, environmental and sustainable development.

The discussed question gives a north to entities capacities: private sector companies and NGOs which objective is social, to manage and create politics strategies, on organizational ambit, middle and long term to sustain the social actions continuity evaluating its efficiency and aims reach by performance mensuration system on valor creation. This proposition associate Projects Management according to PMBOD - Project Management Body of Knowledge procedures and the BSC - Balanced scorecard methodology on the creation of information system tool used on activity which objective is social and specific, the social gerontology, dealing with management and mensuration of services related to the attention process of population ageing and of organizations that acts to third age.

ESTUDO DA CONTAMINAÇÃO DOS SOLOS EM ÁREAS DE FUNDIÇÃO DEVIDO AO ARMAZENAMENTO DE RESÍDUOS AO AR LIVRE

Carlos Alberto Klimeck Gouvêa, Maria Inêz Reinert, Rosane Mebs

This research analyzed the concentration of metals in the soil in areas of disposition of solid residues of foundry industries. The study was accomplished at two different ranches and eleven metals were meditated. The choice of these metals was based, of a part, in the origin of the residues disposed in the soils and, of another part, in the environmental impact that the metals can cause. In the sequence, it is not more possible to observe a standard behavior. Being compared the concentrations, in matter, of the iron and of the aluminum in the two ranches with each one of their samples pattern, it was verified that the ranch B possesses much higher concentrations.

VIABILIDADE DE IMPLEMENTAÇÃO DE UMA RECICLADORA DE PET EM BLUMENAU

Elcio Schuhmacher, Deoclesio Cabral e Silva

This work approaches a very important aspect of the administration system that is the indicator. The importance of an indicator is to guide entrepreneurs to make decision on investment. The indicators could help in the planning function-orientating and allowing us to deduce possible consequences of any decision and the better results for the company. In this way, this piece of work analyzes the viability of investment in a recycling PET company in Blumenau. The analyzed criteria are technical, economical and financial. For the analysis were used two economical financial indexes: return on investment and Minimum Interest rate. In the financial indexes was used Return internal rate, Cash Flow to analyze the project's capital inflow and outflow and Sensitivity Analysis to be able to see how sensitive the project in the acquisition of raw material is.

EMPREENDEDORISMO E O PROCESSO DE FORMAÇÃO DE EMPRESAS DA CIDADE DE ITAJUBÁ

Vanessa Romancini Pereira Gomes, Valéria Fonseca Leite

The purpose of this paper is to identify characteristics that drive individuals to create their own business. After a literature review to gather information about entrepreneurship a research questionnaire was prepared. The study was done with entrepreneurs from Itajubá, Minas Gerais, due to this it can have limitations concerned to owner’s answers. It furnishes information about possible causes for why individuals open a firm. The results can suggest that the main motivation to entrepreneur is unemployment allied to creation and property necessity.

A INOVAÇÃO TECNOLOGICA COMO FATOR DE DESENVOLVIMENTO ECONÔMICO E SOCIAL DE REGIÕES PRODUTORAS DE CALCÁRIO LAMINADO

Alexandre Magno Ferreira Diniz, Cícero de Alencar Leite, João Tercio Fontenele Ribeiro, Ronaldo Landim Leite

The present article intend to tell as is being conducted the actions of development of a region of the Ceará, with low index of human development and difficulties of diverse natures. The actions are come back toward the APL of the calcareous rock of the region of Cariri, directed to organize the micron and small companies (MSC). The actions are concentrated in the cities of Farias Brito and Altaneira where there is predominance of the extraction of the calcium hidroxido and, in Nova Olinda and Santana do Cariri that they extract blocks of rock for manufacture of paving-tiles for the civil construction. The strategy to promote the development economic and social, it involves three institutions, CETEM, CENTEC and SEBRAE, with financial support from the government organisms. The project is directed the introduction of technological innovations, for the competitiveness of the MSC of the extraction of the calcareous rock.

Session PW2B

MODELO BASEADO EM DIAGRAMA DE SEQUÊNCIAS DE UM SISTEMA DIGITAL DE CLASSIFICAÇÃO DO COURO BOVINO

Marcelo Nogueira, Mario Mollo Neto, Oduvaldo Vendrametto, Eduardo Cabral de Souza

The companies of development of systems have its material and human resources in such a way how much overloaded, ahead of the demand submitted it. However not the adoption of processes of visual modeling as critical factor of success in the development of software, or due to culture or even for unfamiliarity of its existence, still more leads projects of utmost relevance to failure and increasing the amount of cases of the unfinished systems, consequently wasting financial time, resources and not taking care of the necessities of the customers and nor of the developer. To describe the operation process, the diagrams of Sequence are used, where the procedures of software are described.

DESCRIÇÃO DAS ATIVIDADES DE UM SISTEMA DIGITAL DE CLASSIFICAÇÃO DO COURO BOVINO “WET-BLUE” ATRAVÉS DA UML

Marcelo Nogueira, Mario Mollo Neto, Oduvaldo Vendrametto, Raoni Paiva Bernardes

The development of systems of information for support to the decision, must, to follow a reference model to be compatible with the majority of the architectures of existing systems. In contrast, the computational methodologies and its notations to provide ways for the construction of systems of information, but do not take as reference models for its construction. The diagrams of UML (Unified Modeling Language) are applied to represent points of view. Language UML became standard for the development of systems and was promoted the technology that allows to help in the solution of some problems in the software industry. This profile is important contribution to the harmonization of a set of points of view for the elaboration of a system specialist to determine the quality by means of classification, leather “WET-BLUE”.

DESCRIÇÃO DAS FUNCIONALIDADES DE UM SISTEMA DIGITAL DE CLASSIFICAÇÃO DO COURO BOVINO COM CASOS DE USO

Marcelo Nogueira, Mario Mollo Neto, Oduvaldo Vendrametto, Raoni Paiva Bernardes

The companies of development of systems have its material and human resources in such a way how much overloaded, ahead of the demand submitted it. However not the adoption of processes of visual modeling as critical factor of success in the development of software, or due to culture or even for unfamiliarity of its existence, still more leads projects of utmost relevance to failure and increasing the amount of cases of the unfinished systems, consequently wasting financial time, resources and not taking care of the necessities of the customers and nor of the developer. To initiate the acculturation process, the diagrams of use case are used, where the functionalities of software are described.

MODELO BASEADO EM DIAGRAMA DE COMPONENTES DE UM SISTEMA DIGITAL DE CLASSIFICAÇÃO DO COURO BOVINO

Marcelo Nogueira, Mario Mollo Neto, Oduvaldo Vendrametto, Eduardo Cabral de Souza

The development of software for support to the decision, must, to follow a reference model this compatible being with the majority of the architectures of existing systems. The diagrams of components of UML (Unified Modeling Language) are applied to represent the abstraction of the systems. Language UML became standard for the development of systems and was promoted the technology that allows to help in the solution of some problems in the software industry. This profile is important contribution to the harmonization of a set of points for the elaboration of a system classification specialist of the leather.

REPRESENTAÇÃO DA ESTRUTURA ESTÁTICA DE UM SISTEMA DIGITAL DE CLASSIFICAÇÃO DO COURO BOVINO COM DIAGRAMAS DE CLASSE

Marcelo Nogueira, Mario Mollo Neto, Oduvaldo Vendrametto, Renato Yoshio Murata

The directed companies are each time more to the information. With this, the volume of these information comes growing and nor always it can yourself be removed competitive advantages, due to uniformity lack with that they are posts. The development of systems must follow the constant mutation of the information and for this, it is necessary to construct more flexible applications and with lesser tax of maintenance. So that this occurs, it is necessary to adopt a work methodology that if more than approaches the reality of the company, that is, that it obtains to describe its operational flows, portraying in fact all its conception. For in such a way the Diagrams of Classroom that allow to the static structure and the interaction of the data to be kept and manipulated, specifically for a digital system of classification of the leather exist.

DESCRIÇÃO DOS ESTADOS DE UM SISTEMA DIGITAL DE CLASSIFICAÇÃO DO COURO BOVINO ATRAVÉS DA MODELAGEM ORIENTADA A OBJETOS

Marcelo Nogueira, Mario Mollo Neto, Oduvaldo Vendrametto, Renato Yoshio Murata

The companies of development of software since the decade of 60, search a model ideal to carry through its processes of software production. Ahead of the increase of the complexity and the necessity of the information each faster time and of relevance, the better development continues searching to use a collection of practical in order to get success in the development. With the adoption of the paradigm of the Orientation Objects that are a process that if it uses of a modeling that focus the specification of the business as a whole, facilitates the understanding of the flows, and allows the accomplishment of a project of software for the classification of the leather next to the necessities.

MODELO BASEADO EM DIAGRAMA DE SEQUÊNCIAS DE UM SISTEMA DIGITAL DE CLASSIFICAÇÃO DO COURO BOVINO

Marcelo Nogueira, Mario Mollo Neto, Oduvaldo Vendrametto, Eduardo Cabral de Souza

The companies of development of systems have its material and human resources in such a way how much overloaded, ahead of the demand submitted it. However not the adoption of processes of visual modeling as critical factor of success in the development of software, or due to culture or even for unfamiliarity of its existence, still more leads projects of utmost relevance to failure and increasing the amount of cases of the unfinished systems, consequently wasting financial time, resources and not taking care of the necessities of the customers and nor of the developer. To describe the operation process, the diagrams of Sequence are used, where the procedures of software are described.

MINERAÇÃO DE DADOS GERANDO ÁRVORES DE DECISÃO PARA A CONSTRUÇÃO DO MOTOR DE INFERÊNCIA DE UM SISTEMA DIGITAL PARA CLASSIFICAÇÃO DO COURO WET-BLUE

Marcelo Nogueira, Mario Mollo Neto, Oduvaldo Vendrametto

The purpose of this paper is to present the research and build of an automated inspection system to classify the wet blue leather, using a fast Fourier transform algorithm in the image processing whith filtering technics, detecting and counting defective points, generating a database classified by Knowledge Database Discovery to reach a decision tree for the system quality control guiding rules.

Session SW3A

MÉTODOS PARA LA SINCRONIZACIÓN LOCAL Y GLOBAL DE SISTEMAS PRODUCTIVOS

Eusebio Jiménez López, Luis Reyes Ávila, Francisco Galindo Gutiérrez, Efrén Rúelas Ruiz, Luis Ignacio Lie López

This article presents two methods to locally and globally synchronize serial productive systems. The first is called “vortex method” and is used to locally synchronize productive modules based on the unitary production time (UpT). The second method is called “Operational Referential Binary Code” (ORBC) and is used to globally synchronize productive systems. This article is a technical proposal to help to plan sensor distribution along a production line. To achieve global synchronization is necessary to build a super module which integrates all the productive modules superimposed, and then the super module is synchronized to UpT. We take the results from local synchronization in order to generate the ORBC, which represents machine operational modes and the sensor system of the whole production line. To finish we analyze the ORBC to generate the functional ladder diagram and code it into a PLC.

CARACTERIZACIÓN DEL DOMINIO DE MANUFACTURA DE PLANOS DE FABRICACIÓN Y APLICACIONES AL MODELADO DE PRODUCTOS

Eusebio Jiménez López, Luis Reyes Ávila, Baldomero Lucero Velásquez, Luis A. García Velásquez

This article presents a characterization of a manufacturing primitives' domain, the domain is composed by five families: raw materials, prepared products, added or extracted materials (operations), subproducts and final products. To determine the cardinality of the primitives' domain and its families the work area is restricted, cardinalities are functions of the number of main manufacturing operations printed in a fabrication plan. The applications derived from the characterization are represented by constructing product's models. The primitives' domain and a representation model based on them (called Modified Volumes' Equation) are presented in a case study and the manufacture's domain is extended to others domains.

LA POLÉMICA SOBRE LA TEORÍA DE LA ADMINISTRACIÓN: MORGAN VERSUS PAVESI

Fernando Gache, GermánKraus, Zulma Cataldi, Fernando Lage

The present work has by purpose of placing diagonally in the controversy Burell & Morgan versus Pavesi respect to the Theory of the Administration. The same one arises as a result of the work from Pavesi [1] in which it basically raises that the Administration is being eroded by other disciplines with roots supposedly scientists or that they are not own, for which makes reference to the communications of Morgan [2], that raises that the different theories from the organization have been structured in the paradigms or superior marks of understanding. As a contribution to the dialogue we consider the existence of a “supervenience” relation between the Administration and the Theory of the Organization. One concludes that does not exist sufficient epistemological sustenance with respect to the attack of the Administration by the Theories of the Organization.

LA SUPERVENIENCIA COMO CONCEPTO CLAVE EN LA CONSTRUCCIÓN DE ESTRATEGIAS DE NEGOCIO

Fernando Gache, Pablo García, Germán Kraus, Zulma Cataldi, Fernando Lage

The present work has by purpose to analyze the existence of the free behavior, understood this concept as the possibility of driving freely in decision making, within a SME. It can say that the decision making is a process that begins with a necessity, and the success of the strategy to solve it, is function of the relation that binds the key elements that define the armed one of tactics in an organization. The notion arises then from “superveniencia”, like the type of relation that keeps these key elements from the process and which they are triggered from the governing force. From her they will be followed one another other landmarks in the construction of the objectives, as well as the understanding of the strengths, weaknesses, opportunities and threats. For the analysis are taken as basis the works of García–Talak [1] and Gache-Otero [2].

SIMULACIÓN DE UN PROCESO DE APLICACIÓN DE SILICÓN A PLANCHAS DOMÉSTICAS USANDO UN ROBOT DE 3 GDL MODELADO CON EL ÁLGEBRA DE QUATERNIONES

Eusebio Jiménez López, Luis Reyes Ávila, Francisco Javier Ochoa Estrella,
Francisco Galindo Gutiérrez, Esteban Soto Islas

The computer simulation of manufacturing systems is a powerful tool to design production lines. This paper presents a simulation of a silicon application process to domestic irons done by a RRR robot of three degrees of freedom (DOF) which imitates the first three links of an IRB 2400/16 ABB industrial robot. Process and control restrictions were provided by an enterprise soliciting the service. The final model consisted in a 6x6 equations’ system for the inverse kinematical problem and in a 3x3 system for the direct problem. Robot’s rotations were modeled using Quaternions’ algebra and coded into Mathematica Software to simulate them.

DISEÑO PARAMÉTRICO INTEGRADO AL ANÁLISIS CINEMÁTICO DE UN DISPOSITIVO DE SUJECIÓN ACCIONADO A VELOCIDAD UNIFORME

Mauricio A. Giordano, Fernando Cappellari, Pedro Staffolani, Luis A. Lifschitz, Héctor Brito

The aim of this project is to describe an integrated technique between designing and structural calculus applied, for instance, in a subjection and controlled liberation device, under microgravity tests conditions. A virtual model of the

design will be made under parametric form with a computer assisted software. This particularity will allow us the correction, actualization and the arrangement of the associated physical-mathematical models, considering a few specifications of the experiment to practice, until reach a conformity with the definitive functional and design specifications. “Solid Edge” parametric software will be used, where the free design variables will be relationed with calculus software.

LA DEBACLE ÉTICA DEL NEOLIBERALISMO GLOBALIZADO

Fernando Gache, Germán Kraus, Zulma Cataldi, Fernando Lage

The present work is centered in the ethical break down of the neoliberalism and in special the Gómez´s [1] proposal in “Neoliberalismo globalizado: Refutación y Debacle”, that make respect to the poverty and in the difficulty of determination of real levels in each person in the case of extreme poverty. This way it incorporates the concept of endogenous and exogenous variables and the relation of “supervenience” that exists between both. On the other hand, one is capitalism like a proposal that can help to satisfy the necessities with the poor men through the investigation and the innovation of the processes, without leaving of side the auto sustainability criterion, being the position that contemplates to the human like aim of all the efforts the one that more approaches to give solution to the problem of the poverty.

ANALISIS DE ESTRATEGIAS PARA EL INTERCAMBIO DE LOS MENSAJES DE ALARMA RESPUESTA EN APLICACIONES INDUSTRIALES AUTOMATIZADAS CON REDES DE COMUNICACIÓN

Fabiana Ferreira, María Feldgen, Osvaldo Clúa

Industrial Automation Systems evolved using local communication networks, and becoming distributed automation systems. Communication networks impact in these systems is usually addressed only under normal functioning state. However, in fault states, a great number of messages can be produced incrementing the communications load. In this work we present a test case simulation of some exchange strategies and analyze the impact on the response time.

LA FORMACIÓN DEL INGENIERO Y LA EDUCACIÓN TECNOLÓGICA

Ana Ferraro de Velo, Alicia S. Martínez, Florencia Pollo, Estela Meier

Technological education is based on the understanding that science, technology, education and production—as minified ways of apprehending and elaborating knowledge—subordinate to and take as reference work as an activity of production and reproduction of de economic and social structure. Thu, such social instances make use of work—as an activity and accumulation of learning—in order to produce and reproduce. As a result, technological education becomes an educational process related to the training of the subject who is being educated, an who is a creative and critical subject, specifically in the case of an engineer who must have access to fundamental theoretical aspect in depth in his university setting, so that he may approach every present situation in an intelligent way and future techniques and technologies may represent a recreational challenge which will allow him to satisfactorily continue growing both personally and professionally.

Session PW3A

REGRAS PARA ARMAZENAMENTO DE INFORMAÇÕES DE DFA (DESIGN FOR ASSEMBLY) BASEADA EM CASOS (RBC)

Antonio Francisco Savi, Eduardo Vila Gonçalves Filho, Erika Monteiro de Souza e Savi

One of the most important sources of competitive advantage, for a lot of organizations in the world, is the capacity to create products on an uncomplicated way. The usual characteristic to make products is typical complicated. To solve this problem, this study analyzes the necessity to composed products in a small number of parts and on an easy assembly without leaving support to the consumer's and maintain their expectations, denominated approach of DFA (Design for Assembly). The difficulty exists on classifying those approaches, witch means, any type of rules doesn't exist for his/her storage. This article also suggests rules of storage information of DFA (Design for Assembly) based on cases (CBR – Case-Based Reasoning).

ABSTRAINDO A CAMADA GRÁFICA NA AQUISIÇÃO DE HABILIDADES DE VISUALIZAÇÃO EM ENGENHARIA

Thiago Matias Busso, Maria Alice G. V. Ferreira

Graphical and visualization techniques are an intrinsic necessity of Engineering. Researchers of the education area classify those necessities in two domains: general use graphics - used also by professionals of other areas - and graphical engineering - responsible for the communication of ideas. This domain demands that engineers have a clear understanding of space geometry and visualization in 2D/3D, which are the basis of developing CAD/CAM systems. In order to acquire those abilities, it is recommended that they develop graphics using VRML, OpenGL or DirectX. However, the architecture of the modern systems is very sophisticated. This paper proposes the use of an intermediate layer between the geometry of the applicative (nucleus of knowledge) and the low-level graphical libraries, in order to facilitate the reuse of the student's knowledge concerning the graphical environment. Finally, it is proposed a pattern to disconnect the graphical API to make a more flexible architecture.

USINAGEM COM REDUÇÃO DA QUANTIDADE DE FLUIDO DE CORTE: UMA ALTERNATIVA INTERESSANTE

Rodrigo Panosso Zeilmann

Manufacturing industries are constantly searching for ways to improve the manufacturing processes and reduce costs. In machining processes, drilling is one of the most frequent operations and is one that involves severe cutting conditions. Furthermore, the abundant application of cutting fluid is still widely practiced, despite the harmful effects that cutting fluid can cause to the environment and to the health of the machine operator. However, the world-wide trend for reduction or elimination of machining cutting fluids is also motivated by the desire to reduce total manufacturing cost. This work presents a study for drilling with Minimal Quantity Lubricant application.

PROTÓTIPO DE UM ROTEIRIZADOR PARA MILK RUN DIÁRIO USANDO ALGORITMO GENÉTICO

Evandro Bittencourt, Wallace do Valle Barros

This work aims at to inside mount a daily script of a weekly demand of collections in suppliers in the Milk Run system using genetic algorithm for solution. The systems based on the Just in Time philosophy need frequent deliveries of the suppliers throughout one week. Aiming at the transport economy it is adopted the same technique of a collection in diverse suppliers for transport. Called technique of Milk Run, remembering the way them milk deliveries of door in door. Determined the suppliers for one determined day, it is looked to make the best route, in terms of distance, or the route fastest, in terms of trip time. The routing, depending on the number of involved places, is a problem with complex solution, had the combinations of scripts. Adding it difficulty to solve the script we also have the diverse possibilities of combination of collections during the week. For the solution of the NP-hard problem, the Genetic Algorithm was used. In this way it was possible to adequately determine a division of daily scripts during one week.

DESIGN HOUSES E O PROGRAMA NACIONAL DE MICROELETRÔNICA NO BRASIL

Elizabeth F. Rodrigues, Marcelo de S. Nogueira, Miriam C. M. da N. Pacheco, Roberto P. Justa

It´s a common sense that technological capacity accumulated of a nation and its possibility of diffusion between diverse sectors of economic activity are essential for its economy and social development, therefore provide to greaters chances of job, a fair income distribution, increase of productivity and its insertion in the international scene. The Economic Theory credits to the technological progress a significant superiority in what she says respect to the economic growth of a country. This analyzes is made to the light of the modern Evolutionary Theory in innovation, the segment of Design Houses in the electronic industry of the National Program of Microelectronics of the Ministry of Science and Technology developed in December of 2002 during as the mandate of president Fernando Enrique Cardoso and also to verify if the related theory is in agreement with the governmente program, or if this presentes some tradicional of the technological development area.

APLICAÇÃO DE VISÃO ARTIFICIAL EM SISTEMA DE CONTROLE DE QUALIDADE DIMENSIONAL

Daniel Lenz Costa Lima, Auzuir Ripardo de Alexandria

This work is about a study for the implementation of an Artificial Vision based System for optimizing the dimensional control process of a local industry. It is the theoretical basis for a equipment capable of doing the quality and

dimensional control in this company, optimizing it's resources and productivity. Through the study, the company is introduced, questions regarding quality and dimensional control and Artificial Vision issues are dealt, leading to the development of the SCCE software, a prototype capable of analyzing the concentricity between the two pieces of a gear block. At the conclusion, the concept of a industrial Artificial Vision System, based on the SCCE is presented, as well as some preliminary results. These parts are produced separately and then assembled together into a gear block. From this study, we are able to verify the concentricity between the tow parts, and can analyze many different models of gear. The software uses a region-growing algorithm to find the outer board of the gear, en then the it's center through the momentum of the figure within it. The same process is applied to the inner part of the gear block, verifying if their concentricity is within the acceptable limits.

DETECÇÃO DA QUEIMA SUPERFICIAL NO PROCESSO DE RETIFICAÇÃO PLANA UTILIZANDO REDES NEURAIS ARTIFICIAIS

Ricardo Robles Leite, Paulo Roberto de Aguiar, Eduardo Carlos Bianchi,
André Jordan Botaro de Lima, Carlos C. P. Souza

Several monitoring systems utilizing force or power and acoustic emission sensors have been evaluated by researchers on detecting and controlling workpiece burn in grinding. However, such techniques still fail in certain conditions where the changes of the phenomenon are not yet fully captured by the signals employed. The aim of this work is to investigate the existing relationships between the workpiece surface quality and the behavior of the statistics obtained from the digital signal processing of the raw acoustic emission and cutting force signals in surface grinding by further employing artificial neural networks. The results show success for all of them in classifying the burn for various structures of neural networks studied, which demonstrated the input variables utilized are great tools to be implemented into practice.

Session PW3B

DESENVOLVIMENTO DE UMA SOLUÇÃO DE APOIO Á GESTÃO DO CONHECIMENTO: UMA INTEGRAÇÃO DE ABORDAGENS DE DFA (DESIGN FOR ASSEMBLY)

Antonio Francisco Savi, Eduardo Vila Gonçalves Filho, Erika Monteiro de Souza e Savi

The organizations expand simultaneous with high taxes of technological innovation and get higher competitiveness level. Indeed, these challenges, are necessary witch remained in permanent improvement, operating dynamically as the technological evolution in its branch of activity. An important source of competitive advantage for many organizations in the world is the capacity to create products projects composites by a small number of parts and easy assembly, called DFA - Design for Assembly. These justifies the project product and identify that idea projects can increase the productivity of the organization. To center this information or boarding in average on small organizations it is necessary to create a tool of aid by low cost. Therefore the objective of this article is to demonstrate a tool of cooperation about information witch focus the low cost to small organizations regarding DFA boarding.

AVALIAÇÃO DA VARIÁVEL MANIPULADA PARA SISTEMAS INTEGRADOS EM MASSA

Wagner A. S. Conceição, Luiz M. de M. Jorge, Paulo R. Paraíso, Cid M. G. Andrade

Recycle it of mass does part of the modern industry that looks for the decrease of costs more and more, of generation of residues and the increase of the efficiency of the process. This turns the process difficult to control. The objective of this work is to investigate the option for the choice of the flow of the current of I recycle as manipulated variable, as well as the influence of the level of I recycle of mass in a controlled system of reactors in serie, relating his acting through the indicators of Controlability-C and Resilience-R. The acting of the global system is evaluated according to ISE. It is ended that the indicators of C and R can foresee the acting of the systems of controls, and that the option for manipulating the flow of the current of I recycle to cause in an improvement of performance of the system.

IMPLEMENTAÇÃO DE UMA PLANTA DIDÁTICA PARA PROCESSOS INDUSTRIAIS AUTOMATIZADOS

Francisco S. Rangel Filho, Marilza Antunes de Lemos, Galdenoro Botura Junior

This paper describes the modeling of Petri nets, the programming and the operation of a didactic production line composed of five manufacturing stations controlled by programmable logical controllers. The stations are formed by several electro-pneumatic elements, sensors, a cartesian handler, a small conveyor belt, and other mechatronic components. The product is obtained by the automatic execution of a sequence of basic operations determined by the functionality and arrangement of each station: Distribution, Test, Processing, Handling and Sorting Station. A communication model in Petri nets was built and implemented through a Profibus network to integrate the subprocesses executed by the manufacture stations.

ANÁLISE DE DESEMPENHO DE PROTOCOLOS EM REDES ETHERNET PARA APLICAÇÕES EM TEMPO REAL

Raimundo Viégas Jr., Ricardo A. M. Valentim, Luiz Affonso Guedes, Adauto L.T.B. Fonseca

The Ethernet technology dominates the market of computer networks. However, it was not been established as technology for industrial automation yet. Because of its characteristics, Ethernet was initially developed for office nets, where the requirements did not demand determinism and real-time performance. Many solutions have been proposed to solve the problem of non-determinism, which are based on TDMA (Time Division Multiple Access), Token Passing and Master-Slave. This paper realizes performance measurements comparing implementations of data package communication with UDP and RAW Ethernet protocols, identifying the most viable alternative to support the development of a solution based in TDMA for industrial network using Ethernet technology.

ANÁLISE ESTATÍSTICA DE REGISTROS DE OCORRÊNCIA COMO FERRAMENTA NA GESTÃO DE SEGURANÇA

Rafael Massao Tiba, Marisa Masumi Beppu

In chemical industries, there is a widely spread safety procedure that concerns the registration of all potentially hazardous operations and registering disruptions whenever it occurs. Despite the fact that a good amount of information is available at the company's database, few companies take advantage from this powerful information source. Usually the information is just part of the documentation process. In this paper, the use of these data is studied in order to identify the trends and profiles related to accidents and, consequently, to use this kind of analyses as a tool to select and justify investments in the company´s safety plan. The study includes stratifications in graphical and statistical analyses aiming at the influence of factors as Month, period of the day and work shift as well as the productive areas and products mostly affected by events, focusing on improvement opportunities hidden from the usual safety management tools.

ANÁLISE QUALITATIVA VIA MODELAÇÃO EM CFD PARA PROJETOS DE COMPONENTES DE UM CARRO DE COMPETICÃO TIPO FORMULA SAE®

Eudes José Arantes, Alexandre Botari, Hélio Bertoncello Neto, Gerson Brand, Danilo Vieira Castejon, Claudio da Rocha Brito, Melany M. Ciampi

This work propose the use of CFD tools for hydrodynamics aspects simulation for car components type Formula SAE®. The air admission system for the engine, the radiator, the fuel tank and the car aerodynamics aspects were studied and simulated. The results of the simulation were analyzed and considered in the final project of those components. This way can be concluded the CFD tool is very useful for the conception of those components making possible the optimization and the resolution of problems and cost reduction in terms of prototypes.

ANÁLISE DOS MÉTODOS PRIME E SOLA DE ACOPLAMENTO PRESSÃO - VELOCIDADE PARA VOLUMES FINITOS

Alexandre Botari, Eudes José Arantes, Claudio da Rocha Brito, Melany M. Ciampi

This paper proposes a numeric solution using the method of the finite volumes applying the pressure-velocity coupling SOLA and PRIME in a laminar, incompressible, bi-dimensional and permanent flow regime. It was considered an isotropic and Newtonian-Stokesian fluid, inlet a domain between two plate planes, long, parallel, horizontal and the negligible thickness. The objective is verifying the methods SOLA and PRIME in obtained the discretization equations for a numeric solution for finite volumes as example for the teaching of numeric analysis in fluid dynamics. The results obtained through the SOLA method were satisfactory. It was possible to determine the length in that the flow is fully developed. The PRIME method of the pressure-velocity coupling is reasonably simple; however showed difficult in the stability and convergence.

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