



*Università
degli Studi
di Cassino*

ING-IND/17 Research Team

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XVI Summer School "Francesco Turco" Impianti Industriali Meccanici
Abano Terme (Padova, Italy) - 14-16 September 2011



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Teaching Activity

Ingegneria Meccanica

- *Impianti Industriali*
(laurea triennale, 9 cfu)
- *Progettazione e gestione degli Impianti Industriali*
(laurea magistrale, 9 cfu)
- *Logistica*
(laurea magistrale, 9 cfu)
- *Gestione della qualità*
(laurea magistrale, 9 cfu)

Ingegneria Elettrica

- *Gestione della qualità*
(laurea triennale, 3 cfu)
- *Gestione della sicurezza*
(laurea triennale, 3 cfu)

Ingegneria Gestionale

- *Impianti Industriali*
(laurea triennale, 9 cfu)
- *Gestione dei progetti*
(laurea triennale, 6 cfu)
- *Gestione della sicurezza*
(laurea triennale, 3 cfu)
- *Metodi numerici per la gestione e il miglioramento dei processi produttivi*
(laurea triennale, 3 cfu)
- *Tecniche avanzata per la progettazione e gestione dei sistemi produttivi*
(laurea triennale, 3 cfu)



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Teaching Activity



Corpo delle
Capitanerie di
Porto -
Guardia Costiera

Master "Gestione dei servizi portuali"

Master "Tecnologie e sistemi avanzati per la nautica"



inpdap

Istituto nazionale di
previdenza per i
dipendenti
dell'amministrazione
pubblica

***Master "Management della Sicurezza e del Benessere Organizzativo
in Contesti Produttivi e Logistici"***



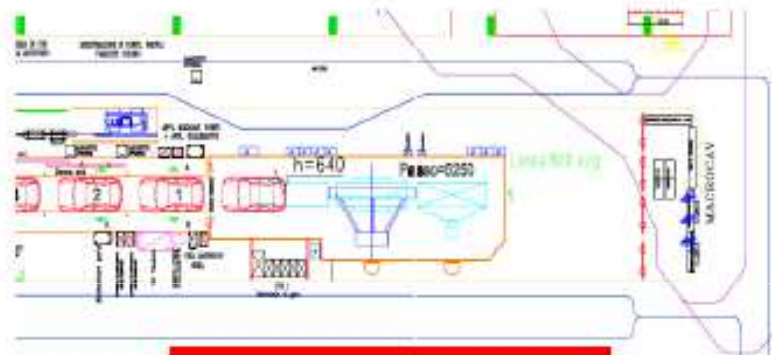
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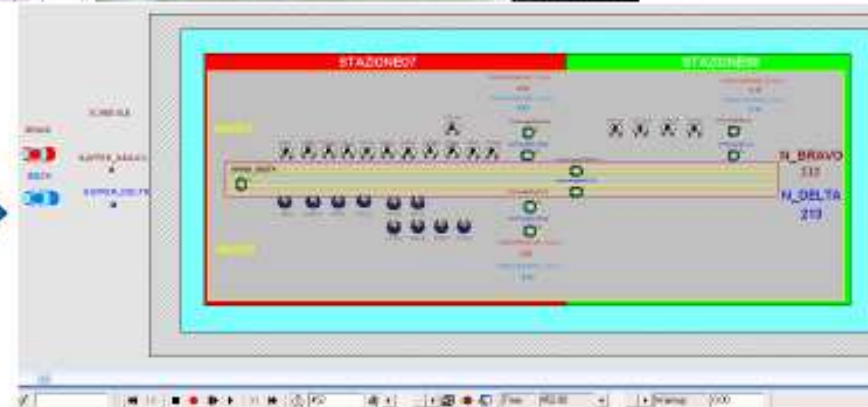
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MODELLING AND SIMULATION

Real and virtual models



FIAT
GROUP



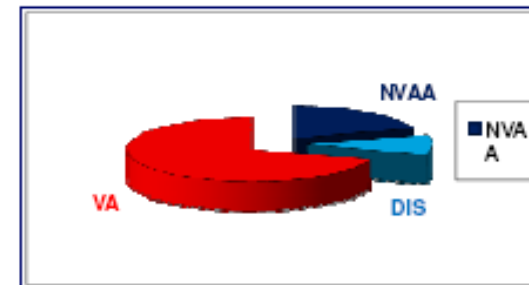


Production optimization

Variables total cycle time and calculation of no-saturation

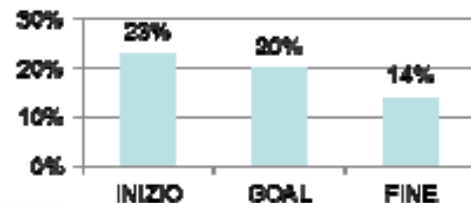
- TC_7_SX_B_MANUFACTURING
 - TC_7_SX_B_QUALITY
 - TC_7_SX_B_VARIOUS
 - TC_7_SX_B_SUPPLY
 - TC_7_SX_B_WALK
- TC_7_SX_B_TOT

FREQUENCY → NO SATURATION_7_SX_B = FREQUENCY - TC_7_SX_B_TOT



OPTIMIZATION OF PRODUCTION PARAMETERS:
NVA+NO SATURATION < 30%
VA > 70%

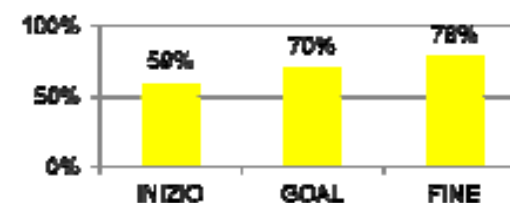
NVA -9%



NO SATURATION -10%

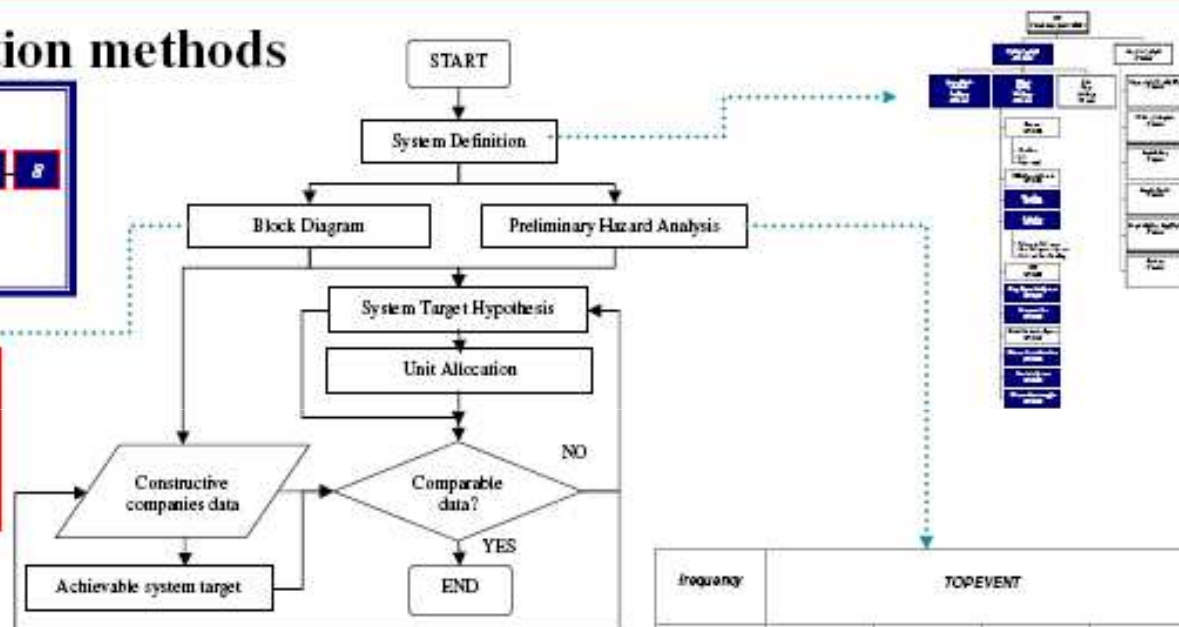
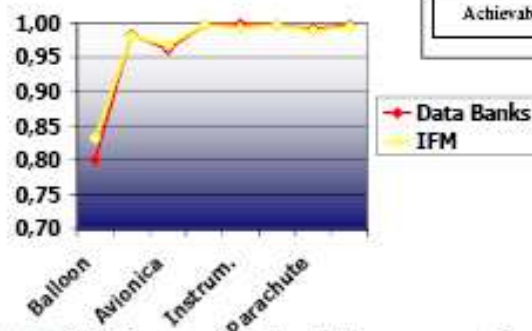
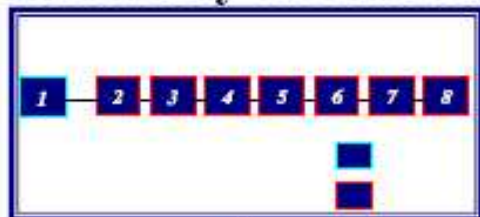


SATURATION +19%





Reliability allocation methods



Frequency	TOPEVENT			
	1. Critical	2. Major	3. Significant	4. Minor
A. Frequent	1A	2A	3A	4A
B. Very Probable	1B	2B	3B	4B
C. Probable	1C	2C	3C	4C
D. Improbable	1D	2D	3D	4D





Integrated maintenance policies

Availability – A(t)



Applied maintenance



Preventive maintenance

Predictive maintenance

Maintenance due to failure

Frequency	Time	Operations	Operators
Every 400 h	8 h.	<ul style="list-style-type: none"> Cleaning Greasing Lubrication 	Company workers
Every 700 h	10-16 h.	<ul style="list-style-type: none"> Electric motor reconditioning Mechanic equipment reconditioning 	Outsourcing workers
Impossible to estimate	Impossible to estimate	<ul style="list-style-type: none"> Changeable 	Company workers outsourcing workers





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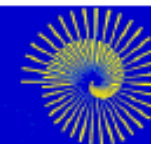
NOISE IMPACT EVALUATION INDOOR-OUTDOOR

Monitoring Device and Simulation Software

 **Spectra**



SoundPLAN



SoundPLAN[®] is a suite of software created by professionals from the noise and air pollution engineering for professionals who work with the scenarios of air and noise pollution.



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NOISE IMPACT EVALUATION INDOOR-OUTDOOR

Results

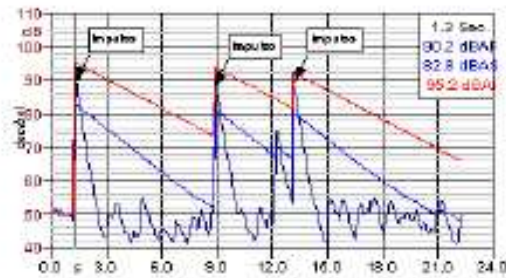


Fig.2 Identificazione automatica degli impulsi con NIS90*

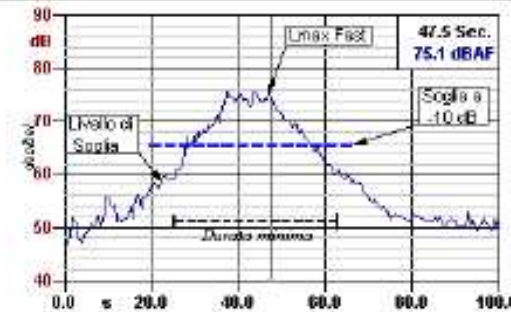
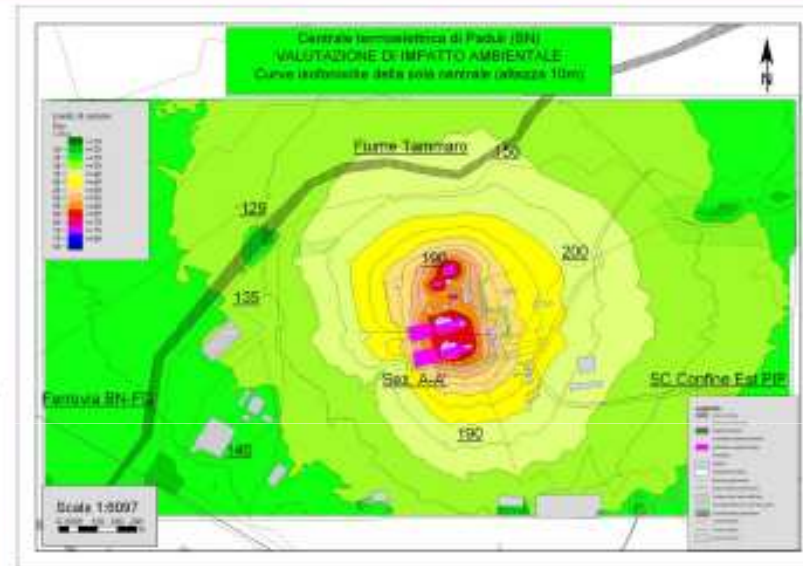
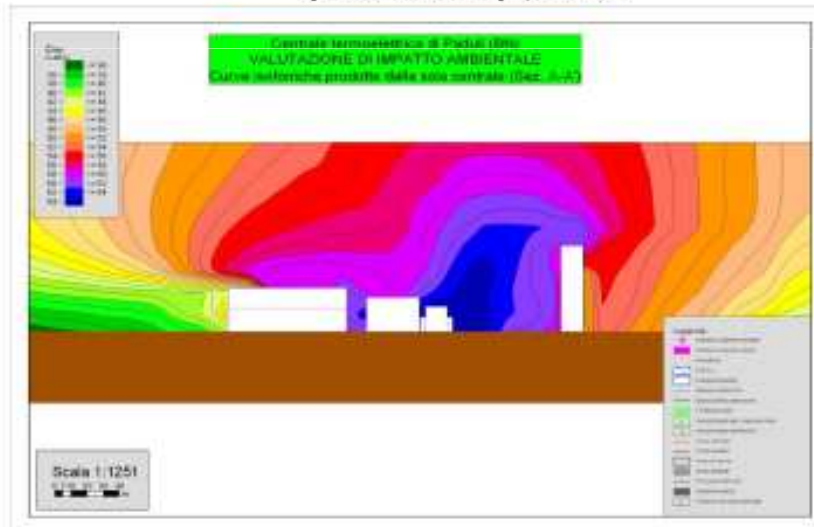


Fig.4 Identificazione automatica degli eventi con LD-924



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PROCESS AND PRODUCT IMPROVEMENT

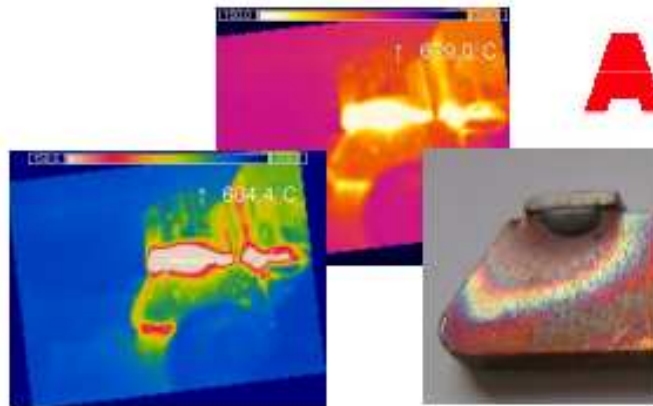
New Methods of Inspection



**INFRARED
THERMA-CAM**



**OPTICAL 3D
SCANNER**



ABB



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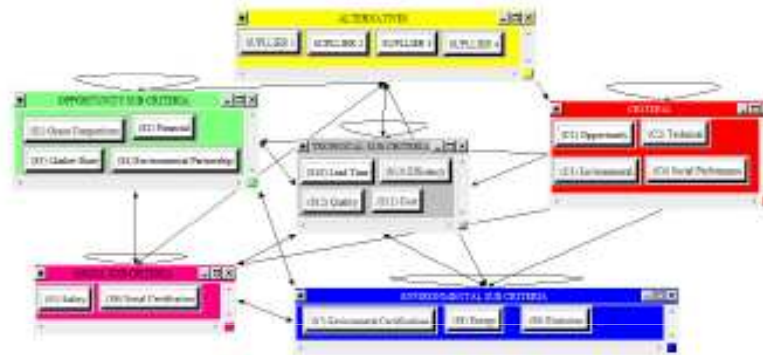
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MANAGEMENT AND DECISION SUPPORT SYSTEM

Analytic Hierarchy/Network Process



Thomas L. Saaty
Distinguished University Professor
at the University of Pittsburgh



ISAHP 2011
SYMPOSIUM 15-18 JUNE,
2011 – SORRENTO
(NAPLES), ITALY.
HILTON SORRENTO
PALACE



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Top 10 Publications (last 5 years)

- 5 F. De Felice, A.Petrillo, A new multicriteria methodology based on Analytic Hierarchy Process: the "Expert" AHP International Journal of Management Science and Engineering Management. 5(6): 439-445, 2010.
- 3 F. De Felice, A.Petrillo, A multiple choice decision analysis: an integrated QFD – AHP model for the assessment of customer needs. International Journal of Engineering, Science and Technology Vol. 2, No. 9, pp. 25-38, 2010.
- 1 D. Falcone, F. De Felice, G. Di Bona, A. Silvestri, New Reliability allocation methodology: the Integrated Factors Method. International Journal of Operations & Quantitative Management Volume 16, Number 1, ISSN: 1082-1910, 2010.
- 5 T.L.Saaty, D. Falcone, F. De Felice: Testo edito dalla Hoepli "Il Decision Making ed i sistemi decisionali multicriterio", ISBN 978-88-203-4184-8, 2010.
- 5 D. Falcone, A. Silvestri, V. Duraccio, TPM Application to a Company of Automotive Components. Recent Advances in Maintenance and Infrastructure Management. p. 171-223, LONDON: Springer, ISBN/ISSN: 978-1-84882-488-1, doi: 10.1007/978-1-84882-488-1_4, 2009.
- 6 D. Falcone, A. Silvestri, V. Duraccio, G. Di Bona, Project of an Agv Transport System through Simulation Techniques. In: EMSS2008 – European Modeling & Simulation Symposium; MAS 2008. Campora S. Giovanni, Italy, 17 – 19 September, 2008.
- 4 D. Falcone, F. De Felice, A. Silvestri, G. Di Bona, V. Duraccio, Risk Assessment in a Co-Generation System: Validation of a New Safety Allocation Technique. In: Applied Simulation and Modelling. Palma de Maiorca, 29-31 agosto, CALGARY: Acta Press, vol. 1, p. 256-261, 2007.
- 1 D. Falcone, F. De Felice: Testo edito dalla Hoepli "Progettazione e Gestione degli impianti industriali", ISBN 978-88-203-3941-8, 2007.
- 5 D. Falcone, A. Silvestri, G. Di Bona, V. Duraccio, A. Forcina. Metodologie Rams per la Manutenzione nel settore di lavorazione del rottame metallico. MM - MAINTENANCE AND FACILITY MANAGEMENT, vol. 6; p. 50-56, ISSN: 1971-1735, 2007.
- 7 D. Falcone, V. Duraccio, A. Silvestri, G. Di Bona, "Improvement of performances of an optical system for defectiveness survey in a company of the automotive field". In: SCSC 2006 – Summer Computer Simulation Conference. Calgary, Canada, 31 July – 2 August, 2006.

Research Topics – Ing/Ind-17

1	2	3	4	5	6	7
Production system analysis and design	Auxiliary plant analysis and design	Processes and production technologies	Ergonomics and safety of industrial systems	Production system management	Logistics	Production system automation



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RESEARCH PROJECT

The Most Important Research Project

Title: *"Infrastructures of Advanced Logistics for very flexible assembly lines"*

Description: The project goal is the definition of a new integrated logistic model able to manage information and material flows, through the adoption of new management procedures and technologies.

Partners:

- Fiat Group Automobili Spa;
- Elasis Scpa;
- CRF Scpa;
- SDE Srl;
- NIPA Srl;
- COSILAM.

Total Amount: € 23.600.000 - Falcone coordinator: € 2.000.000;

Public Funding: Regione Lazio.





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INDUSTRIAL PARTNERS

The Most Important Industrial Collaborations

Abatecola Trasporti	CML	Infordata	RIV-SKF
ABB-Sace	Cogeme	Intergroup	Sabemi
AGC	CSF	LEAR	SADA
Agusta	Elasis	MBDA	SAF
Alcart	Eterno	Musilli	SDE Group
Autostrade	Eurolink	Nautilus	Soleco
CEVA Logistics	Fantini	Nuova CMA	Splintex
Cianfrocca Trasporti	FIAT	Pozzi Ginori	SPV
CIRA	Formisano Ferro	PROMA	Tutolo STAMPI
CMA	ICAM	REFAS	Vegstore

