



Tomorrow's Technology Today

**Manufacturing Technology Transfer
Case Study : Phoenix Machinery**

UN-ESCWA
Economic and Social Commission for
Western Asia
ICT Division/ EESCWA Technology
Centre (ETCC)

FCCIAAL
Federation of Chambers of
Commerce, Industry and
Agriculture in Lebanon

South-South Cooperation in Technology Transfer

Mr. Rabih Osta
General Manager

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Background

- **25% of the world lacks access to electricity**
 - Improving the performance of the existing power generation facilities across the world would produce substantial benefits
- **Analytical studies and documented practical experience demonstrate that:**
 - Technology/mode of operation account for 20-25 % of the overall improvement.
 - Human factors/management account for 75-80 %

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Outline

- **Brief about Phoenix Machinery**
- **Technology Transfer**
 - How to Make it Happen
 - Definitions
 - Dimensions
- **Technology Transfer Through Phoenix – Case Study**
 - To Phoenix (Inter-Organization)
 - In Phoenix (Intra-Organization)
 - From Phoenix (Inter-Organization)
- **Challenges**

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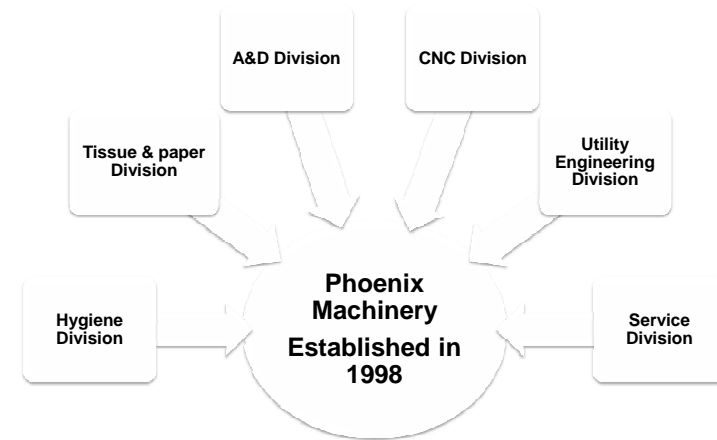
Phoenix Machinery's Vision

- **Phoenix Group of Companies common values:**
 - Adaptability
 - Quality
 - Innovation
- **Phoenix Group of Companies offer:**
 - New machines
 - High precision parts
 - Technical services
 - Automation and drive to industrial, commercial, and residential sectors
 - Renewable Energy products and solutions

Phoenix's services and products are supplied around the globe reaching beyond the customer's expectations

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Phoenix Machinery's Divisions



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Hygiene Division

Complete Production Lines & Retrofit Units for:

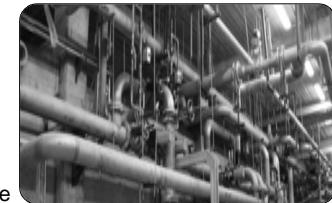
- Baby Diapers (BD-04 & BD-06)
- Adult Diapers (AD-250)
- Feminine Napkins (LN-05UT)



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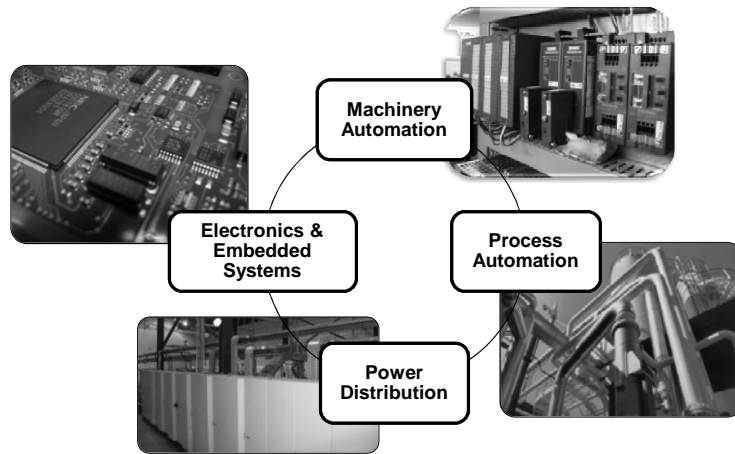
Tissue & Paper Division

- Asset recovery and Upgrades for paper converting machines
- Complete engineering documents for tissue mills: P&ID's mass balances, control loops, DCS utility engineering.
- Increase productivity for used tissue and paper machines



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Automation & Drive Division



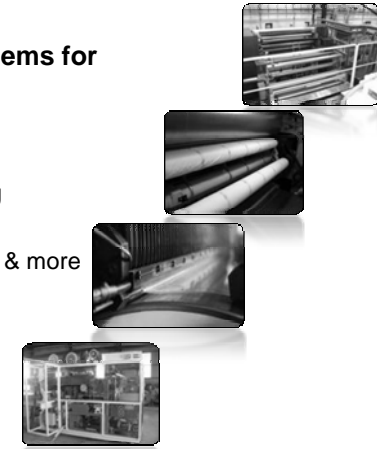
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A & D Division – Machinery Automation

• Fully Automated Systems for

- Hygiene Disposables
- Tissue Converting
- Tissue Mills
- Packaging & Strapping
- Plastic Manufacturing
- Offset & Flexo Printing & more



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A & D Division – Process Automation

Turnkey Solutions for:

- Process Development
- Process & Instrumentation Diagrams (P&ID)
- Distributed Control Systems (DCS)
- Motor Control Centers (MCCs)
- Instrumentation
- Power generation plant



Our scope of work: Conception, Design, Assembly, Installation, Commissioning & Training

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CNC Division

- Manufactures high precision parts
- Milling and turning parts
- Medium and small batches
- Customized parts



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Utility Engineering Design

Engineering Solutions & Installation Supervision

Design of Fire Fighting System as per NFPA
 Design of Compressed Air System
 Design of Fresh Water System
 HVAC system
 Medium Voltage system
 Low Voltage system
 Gas System
 Steam distribution System



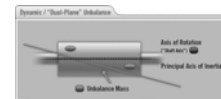
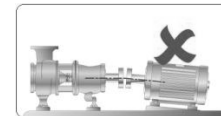
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Service Division

Customized Workshops & General Training

- Mechanical Fields
- Electrical Fields
- Automation
- Motion



Laser Alignment for:

- Belts
- Rolls
- Couplings
- Cardan shafts

Vibration Analysis
 Applied to Machinery
 Diagnosis

**Proactive
 Maintenance**

Field Balancing
 To correct both static &
 dynamic imbalance

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TECHNOLOGY TRANSFER: HOW TO MAKE IT HAPPEN

- **Technology Transfer Bridges the gap between industries and revolutionary technology from academia and research institutes**
 - Identify scope of transfer and options
 - Establish Best Practices
 - Measure Effectiveness & Benefits
 - Learner & Transfer Environment
 - Knowledge Sources
 - Nature of Technology



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Technology Transfer Definition

- **Technology transfer is the process of:**
 - Sharing of skills
 - Knowledge
 - Technologies
 - Methods of manufacturing
 - Samples of manufacturing
 - Facilities among industries, universities, governments

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Technology Transfer Dimensions

Inter Organization

- The handing over of the technology from one organization to another

Intra Organization

- The development of competence amongst people to be able to use technology they possess intra-organizationally

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Technology Transfer Through Phoenix

Inter Organization

To Phoenix

- Partnership
- Joint Ventures
- Agencies
- International Projects
- Exhibitions & Conferences
- Licenses

Intra Organization

- Management Meeting
- End Project Knowledge Sharing
- Management Training
- On The Job Training
- Orientation Period: Lab, Handbook, Training, Work Instructions

From Phoenix

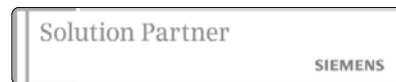
- Training
- Executing Projects
- Summer
- Instructors
- Exhibitions & Open Houses
- Media & Publications
- New Curriculum

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Partnership SIEMENS Solution Partner

Siemens Solution Partner in Industrial Automation
Human Machine Interface (HMI) & Motion Control



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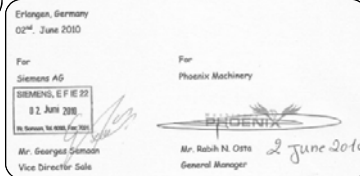
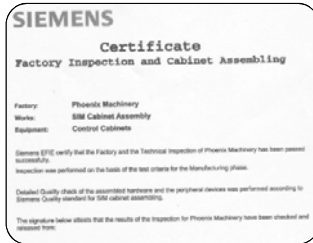
Partnership SIEMENS Solution Partner

- SIEMENS Solution Partner
 - Continuous training that Phoenix engineers receive.
 - The periodic recertification which forces our engineers to stay up-to-date with the latest automation technology.
 - Through shared projects between Phoenix and SIEMENS consultants
 - Through the periodic publications and technical news and article releases provided by SIEMENS to its partners
 - Through the attendance of Siemens in-house technical Conferences
 - PUSA (Project Under Special Assistance) Program

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Certifications - SIM Cabinet Assembly



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Joint Ventures



&



Parts Manufacturing
prospecting and servicing

Leading the world in
automated inker technology

To optimize the manufacturing cost and spread the
technology in MENA region



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Joint venture



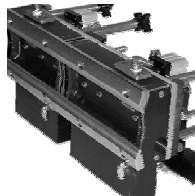
&



Upgrading the control
system for the Printing
industry

Upgrading & renovating of
flex print-machines

To provide a turn key solution and
optimize the service cost



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Agencies

- Phoenix Machinery is an agent to a number of technologically advanced items and brands.

- Hygiene
- Tissue & Paper
- Cement Industry
- Pharmaceutical
- Food & Beverage
- Packaging
- Plastic Manufacturing
- Steel & Aluminum
- and More ...

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International Projects

- **Phoenix Machinery has executed a number of key projects at an international level such as**
 - Power Generation
 - Paper Making
 - Tissue And Paper Converting



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Exhibitions & Conferences

- **Phoenix Machinery regularly attend exhibitions and conferences learning about the different technologies in the industrial field**



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Research & Development

- **Collaboration with international research centers and technical experts in the development of new ideas handled by the R&D Department**

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INTRA Organization

- **Management Meeting** (best practices sharing, news update, ...)
- **End Project Knowledge Sharing sessions**
- **On The Job Training:**
 - 409 trainings from 2008 till 2011
- **Orientation Period:** Lab, Handbook, Training, Work Instructions

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Training

- **Phoenix Machinery's Training Center (-Lebanon EGYPT-KSA)**
 - Mechanical Fields
 - Electrical Fields
 - Automation
 - Motion
- **On Site Training in UK-USA-Egypt**
- Phoenix Senior Engineers hold regular trainings in a large range of topics in both mechanical, electrical, and automation technologies.

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Projects hand Over

- **Phoenix Machinery executes projects in numerous companies in the region and among many industrial sectors.**
 - Hygiene
 - Tissue & Paper
 - Cement Industry
 - Pharmaceutical
 - Food & Beverage
 - Packaging
 - Plastic Manufacturing
 - Steel & Aluminum
 - and More ...



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Summer Trainee

- **Phoenix encourages and welcomes universities and technical schools to send their students during summer to receive on-the-job training.**
 - 360 summer trainees from 2002 to 2011

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Instructors

- **Phoenix Machinery supports and encourages its employees to teach as part time instructors in universities and technical schools**

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Exhibitions

- **Phoenix Machinery regularly participates in exhibitions in the region where it presents its latest technological advancement through its machinery or other products.**
 - Tissue World – Nice -France
 - Index – Geneva –Switzerland
 - Gulf Print & Pack – Dubai -UAE
 - Makinat Lebanon – Lebanon
 - Project Lebanon
 - Insight – Memphis –USA
 - Memex - Abu Dhabi –UAE
 - Built It Green – Lebanon

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Exhibitions

Index
Geneva Switzerland



Project Lebanon
Lebanon

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Tech Conferences and Open Houses

- **Yearly Phoenix Machinery hosts an open house at its facility inviting leaders of the industry from different sectors.**
- **Participating in Technical Conferences through the presentations such as:**
 - Medhealth
 - Environment, Principles and solutions
 - Beirut Energy Forum

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Media and Publications

- Phoenix Machinery quarterly issues its magazine and distributes 5000 copies that presents the latest news from its different departments among which it discusses the latest technological advancement in a given product or service provided by Phoenix.



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Media and Publications

- In addition, Phoenix machinery's often write technical articles in a number of well known magazines in the region.
 - Tissue World Magazine
 - ME Tissue
 - Human and health
 - Lebanon Opportunities Magazine

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Universities

- Direct funding of projects and research costs through sponsoring final year projects (more than 85 projects from 1998 to 2011).
- University-industry exchange programs (Phoenix engineers contribute in the updating the new programs for some technical colleges)
- University Awards: Phoenix Machinery sponsored the NDU's Third Annual Engineering Awards Ceremony which was held in the Abou Khater Hall Auditorium at NDU

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New Curriculum

- **Phoenix Machinery participated in the preparation of new Mechatronics curriculum for the BT level handled by the IECD through**
 - Overview of the actual situation of the technical education system in Lebanon
 - Problems in industrial technical education
 - Industrial market needs
 - Compatibility of the new curriculum to the market needs
 - Future suggestion

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Challenges

- **At Country Level:**
 - Lack of research culture (funding & environment)
 - Absence of any technology transfer center to share the best practices and improve the co-operation with OEM's& NGO's
 - Absence of legislations that support & protect technology transfer (flow of innovations)
 - Absence of models to solidify relationships with researchers and industry partners
 - Absence of the methods for reviewing and reporting on the effectiveness of technology transfer processes

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Thank You

Mr. Rabih Osta
General Manager



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www.phoenixlb.com