

Presentation on
Process Technology
Innovation and Competition

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Contents

➤ Targets

- Upgrade ENPPI technological edge in process disciplines and new frontiers.

➤ New Initiatives

- Creating an environment that promotes innovation.
- Technology acquisitions.
- Interdisciplinary Integration.
- Field Cross-linking.
- Process Design Benchmark.
- Process-Academia Link.

Targets

- Strengthen process technology competitive edge.
- Develop proprietary process technology that would be protected by intellectual property rights.

Process Resources

- 137 chemical engineers & Leaders.
- Cumulative process expertise acquired over 34 years.
- Extensive simulation S/W and tools.
- Process general specification, Engineering guides and instructions.
- Process installations database.

Technology Challenge

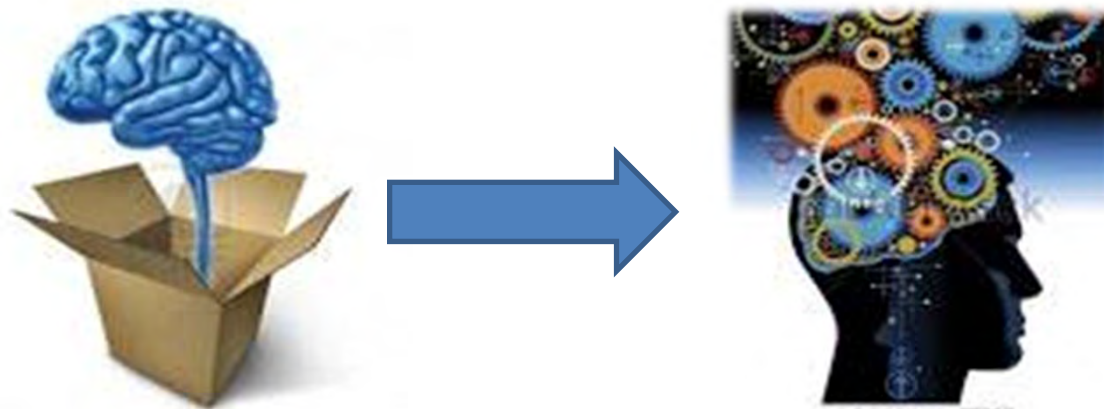
- Petrochemicals.
- Refining Conversion Technology.
- Advanced gas technology.
- Fertilizers.
- Clean and Biofuel.

Process Project Opportunities

- Local Egypt.
- Gulf area.
- Africa.
- North America (Venezuela) .

New Initiatives

- Restructuring process technology department.
 - Uncap process engineers potential.



Staff Coaching

- Enlarge modeling and dynamics capabilities.
- Integrate process engineering functions.
 - Simulation + equipment design.
 - System engineering + dynamics.
 - Process start-up modeling and dynamics.
- e-Learning project.

Interdisciplinary Integration

- Independent process sub-groups.
 - Changeable function leader.
 - Function team from all specialties.
 - Interactive specialty exchange.

- Exposure with other divisions.
 - Process mechanical link.
 - Process instrument / control link.
 - Feasibility studies.
 - Value engineering.

Field Cross-linking

- Permanent link existing infrastructure.
- Resident engineers in all facilities.
 - Entire process database (TECHDATA).
 - Robust rigorous model.
- Lessons learned update cycle.

Process Design Benchmark

- Re-assess current operating installations vs. available new technologies.
 - Energy (optimization & integration).
 - Environmentally friendly design.
 - Lower CAPEX & OPEX.
 - Higher productivity.
 - Flexible operation.
 - Automation & control.

Process-Academia Link, EPRI

- “Process–EPRI” cross linking.
 - Clean and Bio fuels.
 - Thermodynamics & EOS.
 - Fluid characterization.
 - Fluid database.
 - Potential ENPPI unique EOS and properties.

Process-Academia Link, University

- Continuous feedback process innovation.
- Support for pre-graduate programs.
- Enrichment process sense and innovation.
 - PFD, P&ID.
 - Modeling.
- Process innovation farm pool.

Abroad Process Exposure

- Frequent abroad exposure & training.
- Division expat injection.
- Process licensor consortium.
- Reverse engineering potential.

Innovation & Competition

- Database & exposure for all patents & license.
- Benchmark & process improvements.
 - ENPPI process patents & know-how
 - Potential licensor technologies

