Project Management, Detail Engineering, Design, Drafting and Safety-Regulatory Service Company

We Are: “M E L”
Established in 2006
A Processes Unlimited International Inc., USA company with partners Manrochem, India and GPC, Bahrain
Located in Chennai, India – the intellectual capital
Specialists in Design, Drafting and Detail Engineering Services
Processes Unlimited (ProU) International Project Execution Strategy

- Supplemental Resource Staffing for ProU Projects
- Oil & Gas Experience Base (Latin America)
- Operations Support
- ISO 9002 Compliance

ProU Joint Venture
Proynca USA

Proposed GCC
Joint Venture Project Office(s)

ProU California Operations

ProU India Joint Venture
Manrochem Engineering Pvt. Ltd. (MEL)

- Project Management
- Feasibility Studies
- Alternative Selection
- Conceptual & Basic Engineering
- Intl. Procurement Services

- Detail Engineering
- Design
- Drafting
- Resource Staffing for ProU projects
- Safety – Regulatory Services

- Project Customer Liaison & Project Management
- Feasibility Studies
- Small Project Execution
- Field Support
- Construction Management

- Supplemental Resource Staffing for ProU Projects
- Oil & Gas Experience Base (Latin America)
- Operations Support
- ISO 9002 Compliance
The Best From the Partners
ProU brings expertise in

- Basic Engineering and conceptualization for Oil, Gas Industry
- Instrumentation controls – logic and programming
- Project Management Techniques
- Project Scheduling to dovetail expansion to a planned shut down of existing operations
- Process Engineering and Concepts for food and beverages
Manrochem India brings expertise in

- Basic Engineering and conceptualization for batch process industries
- Designs meeting regulatory requirements in food and pharmaceutical industries
- HSE and Quality Management Systems – compliance to current Good Manufacturing Practices
- Specialty and fine chemical industry
- Process Engineering and special equipment/ system design for nutraceuticals/ natural products/ phytochemicals
GPC brings expertise in

- System Integration for field instrumentation
- Instrumentation and control system for oil and gas fields
- Continuous emission monitoring
- Analyzers/ shelters for remote monitoring – field instruments and telecommunication
- Customer needs identification and marketing network in the Middle East
- Process / chemical
- Mechanical and piping
- System and controls
- Electrical
- Instrumentation
- Civil / structural

Engineering Services

Procurement

- Procurement Management
- Expediting & Inspection
- Logistics - Transportation

- International Project Execution – ProU, GPC, Manrochem UK:
- Latin America, Middle East, Russia, Kazakhstan, Far East, Europe, UK

International Experience

Safety Regulatory

- EHS Program Implementation, training, auditing
- Behavior-Based Safety Program development
- Process Safety Management compliance
- Contractor Compliance Programs

M E L
Differentiating Factors

- Understanding Customer’s Values and Culture
- Established alliances (focus on continuous improvement, best practices)
- Project performance metrics
- Continuous Improvement of work procedures & practices
- Flexibility – adapting services to reflect needs of project
- Project management practices
  - Scope Development
  - Schedule & cost monitoring
  - Communication
- International Resources and Relationships
- Partners’ competencies and experience readily available
- International Quality at an affordable price
Current projects

- Burren Energy - Turkmenistan Field Development – 17,000 Man hours
  - Brown field upgrades include
    - Water Treatment Expansion
    - Oil Dehydration Expansion
    - Substation Replacement
    - Utility Expansion
    - Flare Knockout Drum Installation
    - Heater Installation
  - Scope
    - Detailed Engineering and Design
    - Procurement Support
Current projects

- **Taft Manufacturing Company** – 1250 Man-hours
  - Create non-electronic P&ID’s in ACAD
  - Update all drawings with all MOC (management of change) changes

- **Chevron USA** – 725 Man-hours
  - Station 1-09 To 26C Dehy Produced Water Plant Update
  - Electrical Design and Drafting Support
  - Single Line Diagram
  - Grounding and Lighting Plan, Lighting Schedule and Schematic
  - Conduit and cable Schedules, Motor Schematics
  - PLC Panel Layouts, I/O Wiring Diagrams
  - Cable Tray Routing and Details
  - Hazardous Area Classification
  - Electrical MTO (material take-off), Electrical Installation Details
  - Junction Box Assembly Drawing
Previous Projects

- Ivanhoe Energy – 400 Man-hours
  - Bottom Recycle Pump Modification
    - Piping Layout
    - General Arrangement Drawings
    - Isometrics

- Plains Exploration
  - Offshore Platform As-Built Drafting (Platform Irene & Platform Hidalgo) - 1,000 Man-hours
    - Receive field data of P&ID changes and incorporate into drawings
    - Interface with client on clarifications required
  - Vapor Recovery Unit Detail Design – 1200 Man-hours
    - Mechanical/Piping Design Layout
    - General Arrangement Drawings
    - Isometrics
    - Updates of P&ID
    - Structural Drafting
    - Interface/collaborate with all other disciplines
Previous Projects

- **Chevron USA – 350 Man-hours**
  - MWSS Station 1-09 Water Plant Expansion Project
    - Electrical Design and Drafting Support
    - Single Line Diagram
    - Grounding and Lighting Plan
    - Conduit and cable Schedules
    - Motor Schematics
    - PLC Panel Layouts
    - I/O Wiring Diagrams

- **Big West Oil – 750 Man-hours**
  - Flying J Refinery
    - Creation of isometrics from weld testing drawings
Technical Capabilities

- **Upstream**
  - AWT
  - Production Gathering
  - Steam Distribution
  - CVR Systems
  - Steam Generators
  - Water flooding
  - Kill Water Systems

- Slug Catchers
- Separators / Treaters
- FWKO
- Tanks
- Offshore Platforms
- Operations – troubleshooting
- Vessel Sizing and Design
Technical Capabilities

- Petroleum Engineering
  - Reservoir
  - Production
  - Operations
  - Workovers
  - Downhole
  - Steam Flooding
  - Operations
The People

- T.N. Chandrasekharan, Chief Engineer
- S. Srinivasan, Lead Engineer – Process
- J. Sam Vendan, Lead Engineer – Piping
- A.K. Natarajan, Lead Engineer – Electrical
Profile – TN Chandra

- Chemical Engineer with more than 30 years experience in Plant Design, Engineering and Project Management
- Facilitate a team of Lead Engineers and Designers of all disciplines
- Pressure vessel and process equipment design as per international codes
- Design piping system
- Design and selection of utility equipment
- Training of leads and designers in new design softwares
- Manpower planning and recruitment
Chemical Engineer with more than 25 years experience in Plant Design, Engineering and Project Management

- Procurement specialist - national and international resources
- Facilitates/ co-ordinates between process licensor, detailed engineering team and vendors
- Evaluates vendors’ design/ fabrication drawings and incorporates into detailed engineering
- Implements Quality Assurance System with respect to vendor development, inspection and auditing
Profile – Sam

- Mechanical Engineer with 18 years experience in Oil, Gas, Refinery, Petrochemical process and power plant piping
- Piping
  - Hydraulic Calculations
  - Pipeline Specifications
  - P&ID, PFD
  - Plot plan, Layouts and Transposition
  - Field review, Re engineering and As-built
  - Isometric Generation, MTO
- Vessels and Equipment
  - Pressure vessels
  - Storage Tanks
  - Heat exchangers
  - Fired heaters
  - Chimney
Profile – Sam

- **Projects**
  - Estimation, Scheduling and co-ordination
  - Engineering and Procurement, Materials management
  - Erection, Commissioning, testing, and installation,
  - QA&QC
  - Installation and Testing procedure write-ups

- **Systems/ Softwares**
  - AutoCAD
  - CAD WORKS
  - Leica -CAD WORKS Field Pro
  - PRO-E
  - UNIGRAPHICS
Profile – Nat

- Electrical Engineer with more than 25 years experience in
  - Design of electrical systems
  - Engineering
  - Operation
  - Trouble-shooting
- Knowledge of National and international design and safety codes
- Carry out basic and detailed calculations for design of
  - Substations
  - Transformers
  - Motors
  - HV/MV/PFC panels
  - AC/DC Drives
Profile – Nat

- Design total electrical control system for oil, gas, petrochemical and process plants
- Design and selection of control and instrumentation equipment/system, PLC, SCADA
- Design and selection of electrical equipment for hazardous operations
- Implement quality assurance procedures
- Inspection and testing of electrical equipment
- Carryout energy audit
- Implement QS 9000 standards
Process & Mechanical Engineering

- Oil and Gas Industry
  - Oil dehydration
  - Oil metering
  - Oil & gas gauging
- Refinery
  - Crude Distillation
  - Reformers
  - Delayed Coking
  - Hydro treating,
  - Gas Treating
  - Water Treating
- Gas processing facilities
  - Compression facilities
  - NGL extraction
  - Gas treatment
- Gas/ Oil pipe lines
  - Metering
  - Control Stations
  - Analyzer shelters
- Water Treatment Plants
  - Injectors
  - Waste Water System
Steam and Utilities
- Generation
- Distribution
- Metering and Control

Vapor Recovery System

Power Generation

Co-Generation

Food and Beverages
- Processing
- Storage
- Packaging

Specialty and fine chemicals
- Multipurpose
- Regulatory compliant
- EHS Management

Pharmaceuticals/ Nutraceuticals/ Natural Products
- Conceptualization
- cGMP compliant
- CIP
Process & Mechanical Engineering

- Processing facilities
  - Tomatoes, milk, cheese, ice cream
  - Chips
  - Fruit, fruit roll-ups, endive, parsley,
  - Bleach, wine
- Material handling systems – graphite, concrete, asphalt, kitty litter, sludge, pressboard material, food products
- Documentation and Training
Civil and Structural Engineering

- Industrial and Commercial Structures
- Skid – Design and Development
- Pipe Racks, Supports and Pipe Bridges
- Stress Analysis – Structural and piping systems
- Structural supports, operating platforms, ladders
- Equipment Support and Foundation Engineering
Civil and Structural Engineering

- Seismic Analysis – Static and Dynamic
- Plumbing, Cleaning and Drainage Plans
- Site Development and Plot Plan Concepts
- Tank farm engineering and retaining walls
- Fire Protection Engineering/ Hydrant Systems
- 3 D Laser Scan Imaging
- Assistance and support service for getting Statutory and Environmental Clearance
- Fabricators/ Vendor Auditing and Inspection
Electrical and Instrumentation Engineering

- Electrical system design
- Plant electrical load studies and analysis
- Distribution – Power and Lighting
- Lighting plan development / analysis
- PCC, MCC and switchgear specification
- Power generation, transmission and distribution
- Electrical inspection services
- Troubleshooting, optimization and energy conservation
Electrical and Instrumentation Engineering

- Process control system design
- Instrumentation specifications
- Facilities control systems design or upgrade
- SCADA
- Plant start-up and commissioning
- Networking systems - design and installation
  - Cable, fiber, radio and satellite
- Troubleshooting and optimization
Instrumentation Control System

- PLC programming and development
- DCS System integration (Foxboro, DeltaV, Rosemount, etc.)
- Systems integration and automation (logic and database)
  - Data management systems
  - Networking
- Custom PDA software development
- Control panel design & fabrication
- System commissioning and start-up
- Troubleshooting and optimization
- Training
<table>
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<tr>
<th>Software</th>
<th>Description</th>
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<tr>
<td>PIPE PHASE</td>
<td>Fluid Movement Modeling&lt;br&gt;Single and Multi-Phase Networks&lt;br&gt;Transient Analysis</td>
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<tr>
<td>SiNET</td>
<td>Hydraulic Calculations&lt;br&gt;Single and multiphase</td>
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<tr>
<td>RISA</td>
<td>2D/3D Finite Element Analysis Modeling</td>
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<td>HYSIS</td>
<td>Process Simulation Modeling Software</td>
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<td>ACX/STX</td>
<td>Heat Exchanger Size Simulation Software&lt;br&gt;Shell Tube and Fin Fan</td>
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<tr>
<td>CAESAR</td>
<td>Pipe Stress Modeling&lt;br&gt;Steady State and Dynamic.&lt;br&gt;Thermal Expansion, Gravity, Pressure and Seismic stresses</td>
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<tr>
<td>CADWORX</td>
<td>Three Dimensional Piping Design Software</td>
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<tr>
<td>FIELD PIPE</td>
<td>In-field direct-to-model scanning</td>
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**Electrical Circuit Analysis**
- Short Circuit Study
- Load Flow Analysis
- Relay Coordination

**PROGRAMMING/SOFTWARE**
- Siemens
- Modicon
- Wonderware
- Rockwell Software
- FANUC
- etap
Safety / Regulatory Services

- Policies, Protocols, Procedures
  - Quality, Safety and Productivity Management Systems
  - Environment Management System/ Impact Assessment
  - Contractor and construction safety
  - On-site support and training
  - HACCP
  - Self-assessment checklists, Audits and Program Implementation

- Specification interpretation/implementation:
  - General – API, NFPA, ASME, UBC, etc
  - Food and Pharmaceutical safety design standards -FDA, AIB

- IH surveys
- Air-quality permitting assistance
Project Management Services

- Project Management
- Construction management
- Inspection services
- Procurement services
- Project schedule tracking and reporting services
- Value Improving Practices
- Client’s Engineering Services
Design and Drafting Services

- AutoCAD
- 3D design – CADworx
- On-site design and drafting support
- As-builts
- Document management systems
- Project collaboration website via www.buzzsaw.com
  - Communication with remote sites
  - Common secure internet site for all parties
  - Fast delivery of data via internet
  - Redline, review capabilities, etc.
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A professional, flexible & efficient team for project management, engineering, design, construction management, safety, and regulatory services.