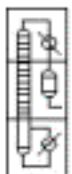


# **Koch Modular Process Systems, LLC.**



**Koch Modular Process Systems (KMPS) is a joint venture of Koch-Glitsch LP, an international column internals supplier. Koch-Glitsch is a division of Koch Industries.**

**Koch-Glitsch has offices and fabrication sites throughout the world. A division of Koch-Glitsch, ETA Process Plants, partners with KMPS to provide fabrication capabilities and the supply of process plants for the European market.**



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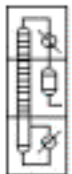
# What We Do



**Specialists in Process Design and Construction of Modular Mass Transfer Systems for Solvent Recovery, Wastewater Stripping, Product Purification, Organic Chemical Separations, Acid Gas Treating and Environmental Applications. KMPS also provides engineered components and engineering services, including equilibrium data development, process development and pilot plant testing.**

## Objective:

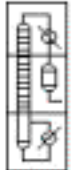
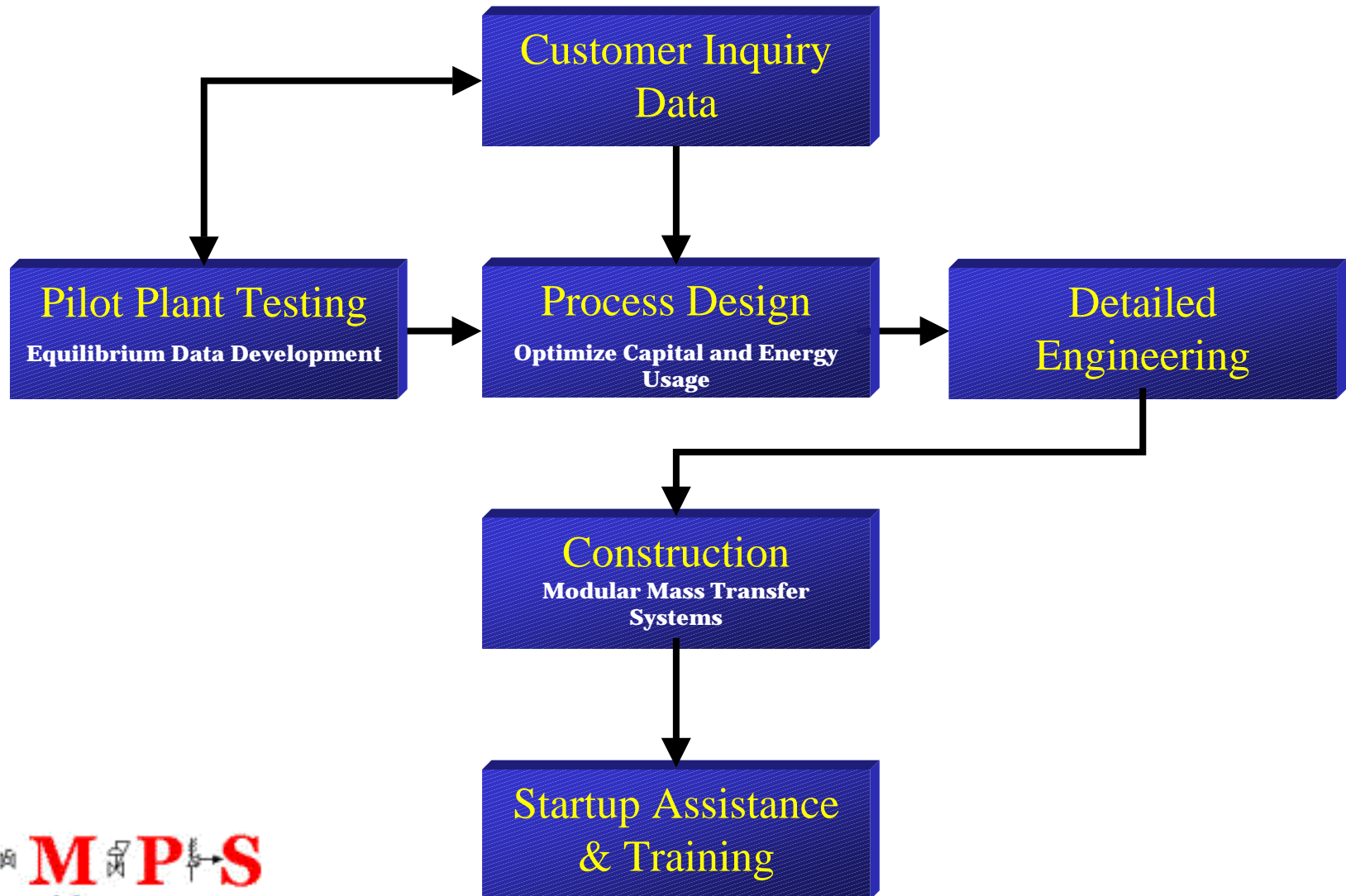
**Provide economic solutions to separation problems.**



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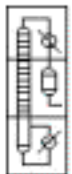
# How We Do It



# Who We Are



- **Chemical Engineers:**
  - Process – 11
  - Project – 4
  - Controls - 1
- **Design Drafting:**
  - Piping Design – 4
  - Vessel – 3
  - Structural – 2
  - Process/P&ID - 1
- **Other Engineers:**
  - Mechanical – 2
  - Civil/Structural – 3
- **Administrative:**
  - Assistant – 2
- **Purchasing:**
  - Manager – 1
  - Agent – 1
  - Assistant – 1
- **Pilot Plant Personnel:**
  - Operators – 3
  - Analytical Chemist – 1

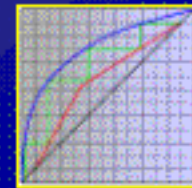


**K & M P & S**

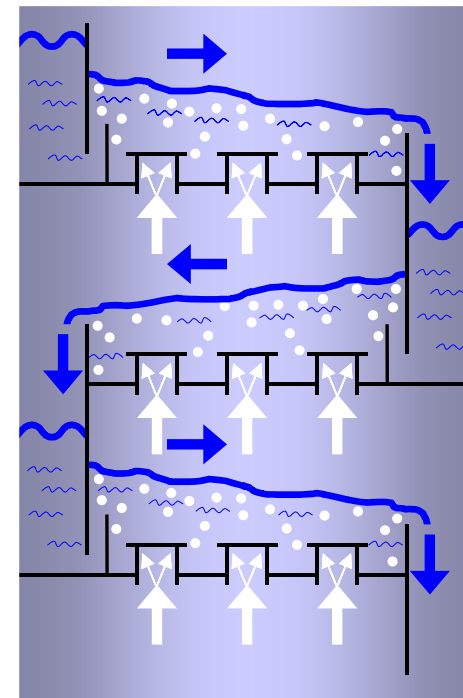
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# Areas of Expertise



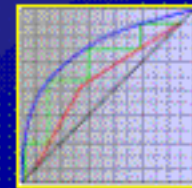
- Process Simulation
- Continuous Distillation
- Steam Stripping
- Batch Distillation
- High Vacuum Distillation
- Azeotropic Distillation
- Extractive Distillation
- Liquid-Liquid Extraction
- Gas Absorption
- Reaction Kinetics
- Reactive Distillation
- Process Chemistry
- Thermal Design of Shell/Tube Exchangers



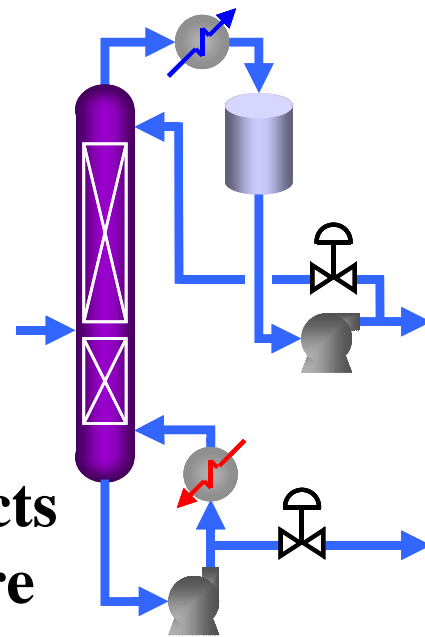
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# Process Applications



- Solvent Recovery Systems
- Aqueous Waste VOC Removal
- Pharmaceutical Intermediates
- Multicomponent Separations
- Solvent Drying
- Pilot Plants/Semi-Works
- Purification of Organic/Inorganic Products
- Organic/Inorganic Chemical Manufacture
- Acid Gas Treating (aMDEA licensee)



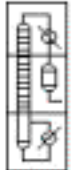
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# Products



- **Modular Mass Transfer Systems**
- **Liquid-Liquid Extractors – Karr™, Scheibel™**
- **Engineered Equipment**
- **Engineering Services:**
  - **Process Development**
  - **Process Feasibility Studies**
  - **Process Simulations**
  - **Engineering Packages**
  - **Pilot Plant Testing**
  - **VLE Data Generation/Regression**
  - **Heat Exchanger Thermal Design**
  - **Troubleshooting Existing Equipment**
  - **Startup Assistance and Operator Training**



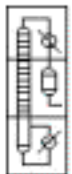
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# Advantages of Modular Construction



- **Schedule Compression**
- **Lower Cost/Lump Sum Bid**
- **Minimal Plant Site Interruption/Improved Safety**
- **Construction Proceeds While Waiting for Permits**
- **Single Source Responsibility**



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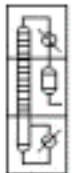
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# Schedule Compression



- Efficiencies realized from construction inside a shop, under controlled conditions
- Series of fabrication steps occur in sequential order
- Learning curve already mastered from having built many previous modular systems
- Typical delivery is 4-6 months from date of order



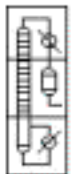
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# Lower Cost/Lump Sum Bid



- Efficiencies realized from construction inside a shop under closely project-managed conditions
- Waste is minimized due to accurate pre-planning/3-D modeling
- Model review with customer eliminates changes in assembly phase
- Typically, cost of building an operating unit in modular fashion is 70-80% of cost to field assemble the same scope



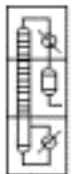
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# Minimal Plant Site Interruption/Improved Safety



- Only interruption to plant site occurs when module is brought in on a truck for field erection
- Minimal safety hazards are created, as compared with a lengthy field assembly project where the risks are considerably greater over the entire length of the field assembly process



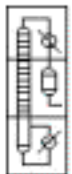
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# Construction Proceeds While Waiting for Permits



- Often permits of various types (environmental, construction, operating, etc.) are required **BEFORE** construction can begin at customer's site
- Permits typically take 3-6 months to obtain
- If modular unit is ordered at the same time permits are applied for then modular unit can be delivered by the time permits arrive, thus saving several months off the entire project schedule



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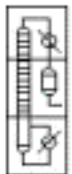
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# Single Source Responsibility



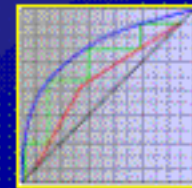
- **Placement of single purchase order instead of many**
- **Expediting of suborders performed by KMPS instead of end user**
- **Project management performed by KMPS instead of end user**
- **KMPS has all engineering disciplines on staff, preserving end user resources and precluding necessity of end user to subcontract some disciplines that may not be on end user staff**



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# Proven Separations Experience



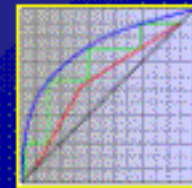
<b>Acetaldehyde</b>	<b>Benzophenone</b>	<b>Dioxane</b>
<b>Acetic Anhydride</b>	<b>BHT</b>	<b>DMAC</b>
<b>Acetic Acid</b>	<b>Br Hydrocarbons</b>	<b>DMF</b>
<b>Acetone</b>	<b>Butanol</b>	<b>DMSO</b>
<b>Acetonitrile</b>	<b>Butyl Acetate</b>	<b>Esters</b>
<b>Acrylonitrile</b>	<b>Caffeine</b>	<b>Ethanol</b>
<b>Amines</b>	<b>Carbon Dioxide</b>	<b>Ethyl Acetate</b>
<b>Ammonia</b>	<b>Carbon TetraCl</b>	<b>Ethylbenzene</b>
<b>Amyl Acetate</b>	<b>Chloroform</b>	<b>Ethyl Dichloride</b>
<b>Amyl Alcohol</b>	<b>Cyclohexane</b>	<b>Formaldehyde</b>
<b>Aniline</b>	<b>Cresols</b>	<b>Formic Acid</b>
<b>Benzene</b>	<b>Cumene</b>	<b>Furfural</b>



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# Proven Separations Experience



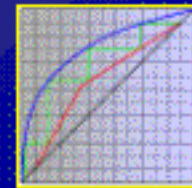
<b>Geraniol</b>	<b>MEK</b>	<b>Propanol</b>
<b>Glycols</b>	<b>Methanol</b>	<b>Pyridines</b>
<b>Hexane</b>	<b>Methyl Acetate</b>	<b>Refrigerants</b>
<b>HMDO</b>	<b>Methylene Chloride</b>	<b>Styrene</b>
<b>Heptane</b>	<b>MIBK</b>	<b>THF</b>
<b>Indene</b>	<b>Napthalenes</b>	<b>Thionyl Chloride</b>
<b>Ionones</b>	<b>n-methyl Pyrrolidone</b>	<b>Toluene</b>
<b>IPA</b>	<b>Nitroethane</b>	<b>Trichloroethane</b>
<b>Isophorone</b>	<b>Nitromethane</b>	<b>Trichloroethylene</b>
<b>Isopropyl Ether</b>	<b>Nitrophenol</b>	<b>Water</b>
<b>Isopropyl Acetate</b>	<b>Perfumes</b>	<b>Xylene</b>
<b>Isopropyl Alcohol</b>	<b>Phenol</b>	<b>Xylenols</b>
<b>Limonene</b>	<b>Phenylenediamine</b>	
<b>Linalool</b>	<b>Piperidine</b>	



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# Major Customers List



**3M Corp.**

**ABB Lummus**

**Advanced Aromatics**

**Ag Processing**

**Air Products & Chemicals**

**American Cyanamid**

**American Home Products**

**Archer Daniels Midland**

**AT&T Corp.**

**BASF**

**Bayer Corp.**

**Bethlehem Steel Corp.**

**BOC Gases**

**Borden Chemical Co.**

**BP Amoco**

**BP Oil**

**Cabot Corporation**

**Carbonyl Corp.**

**ChemDesign Corp.**

**Citrus & Allied**

**Coalite Chemicals**

**Coca Cola Corp.**

**Croda**

**Dakota Gasification Co.**

**Degussa Corp.**

**Dennison Corp.**

**Diacolo-Pope Corp.**

**Diamond Shamrock**

**Dow Chemical**

**DuPont**

**Firmenich Corp.**

**Fluor Daniel**

**Gencorp Specialty Polymers**

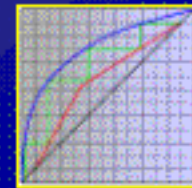


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# Major Customers List



**General Electric Corp.**

**General Foods, Inc.**

**Glaxo Smith Kline**

**Goodyear Chemicals**

**Great Lakes Chemical Corp.**

**Huntsman Chemical**

**IFF**

**Jacobs Suchard, Ag.**

**Kawasaki Heavy Industries**

**Kent Polymers Corp.**

**Koppers Company**

**Kyowa Foods**

**Labelon Corporation**

**Lederle Laboratories**

**Linde, AG**

**Lonza**

**Mallinckrodt**

**Merck & Co.**

**Mona Industries**

**Nabob Foods**

**Nippon Petrochemical**

**Noramco, Inc.**

**Noveon**

**Pfizer, Inc.**

**Pharmacia & Upjohn**

**Plastics Engineering Co.**

**Princeton University**

**Q. O. Chemical**

**Quick Roll Leaf Corp.**

**Raytheon Engineers**

**Reilly Chemical**

**Roche Vitamins Inc.**

**Rodel, Inc.**

**Rolm & Haas**

**Solutia**

**Staflex Corp.**

**Stepan Chemical**

**Takasago International Corp.**

**Ungerer Corp.**

**Wellman, Inc.**



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