Nexo Process Technology: Chemical, Mechanical and Hybrid Systems

We understand how important it is to operate consistently with no down time, no unscheduled maintenances, high reliability, full capacity, low operational costs and minimum losses. We also understand how important it is to meet product specifications and deliver consistent quality products. This is why Nexo Process Technology develops systems and technologies for specialized applications.

From emulsion separation technologies to selective extraction designs, Nexo Process Technology creates chemical, mechanical and hybrid systems that produce an effective and comprehensive solution. Innovations and new concepts are always incorporated in systems fabricated or licensed by Nexo Process Technology, and these technologies consistently offer unmatched performance results.

**Process Technologies**
- Selective Separation Systems
- Solids Removal Systems
- Liquid Coalescing Systems
- Adsorptive Separation Systems
- Vessel Reengineering Programs
- Hybrid Separation Systems

**Applications**
- NGL Sweetening and LPG Treating
- Amine Recovery
- BTEX Removal
- Sour Water Treatment
- Slop Oil Processing
- Filtration, Coalescence, Adsorption and Extraction

**Chemical Technologies**
- H₂S and Mercaptans Removal Agents
- Phase Separation Additives
- Bioremediation Aids
- Antifouling Additives
- Surfactants and Cleaning Formulations

**Technical Support**
- On-Site Analysis, Evaluations and Support
- Process Design and Engineering
- Specialized Technical Support & Consulting
- Troubleshooting (On-Site & Remote)
- Advanced Analytical Services

One key step for proper process control, enhanced reliability and increased throughput is contamination control. Today, most plants need to increase production even while lowering operating costs, and relying on proper separation processes and systems is critical for correct and cost effective contamination control. This invariably leads to more robust processes and more reliable plants. Through the years, Nexo Process Technology has developed a suite of water & process technologies with superior performance and unique features.

Several of our lead engineers and scientists are recognized experts in their field and hold a number of U.S. and international patents. This means you can count on our expertise to develop high performance process technologies and systems that state-of-the-art and highly reliable.
Exion™ Selective Separation Systems

The Exion™ Selective Separation System is a technology that provides a unique and highly improved extraction and separation of emulsified, entrained and dissolved contaminants that is significantly superior to any other conventional device such as water washing or liquid scrubbing. Conventional approaches to washing or scrubbing are often limited by contact efficiency and subsequent separation efficiency, resulting in limited performance, high water use (or scrubbing media) and large capital investments. Exion™ was developed utilizing advanced micro-fiber contacting technology specifically designed to create a single stage, high efficiency structured extractor-separator with unmatched efficiency.

Applied to batch chemical processes, the Exion™ system increases process speed and operational flexibility. Exion™ allows neutralization or washing to proceed on-line during product transfer, allowing washing and decanting steps to be eliminated entirely. The Exion™ system can also be used in combination with specialized chemical technologies. The upstream injection of additives is followed by the Exion™ contactor/extractor stage, mixing and phase separation of the extract phase.

xPhase™ Coalescing Separation Systems

xPhase™ technology was developed to separate liquid contaminants from gas and liquid streams, making it possible to separate essentially all emulsions and liquid aerosols are process streams. The xPhase™ system overcomes limitations of conventional separators, vane pack or wire mesh coalescers and even “high efficiency” mesh pads, achieving superior separation in demanding conditions.

xPhase™ makes use of proprietary media formulations, custom element designs and advanced fiber geometries. These qualities allow for the interception, coalescence and removal of entrained droplets of even sub-micron sizes from the process. The proprietary high surface energy media effectively disrupts stabilized water droplets, allowing for efficient capture.

xPhase™ protects critical assets from lubricating oils or water contamination and the salts, acids and bases which it may contain. It has a small in footprint, simple maintenance, low operational costs and high removal performance. Application of Lumia™ technology allows for optimized performance of downstream treaters, salt beds, exchangers and reactors while assuring the elimination of haze from finished products. The system is flexible in configuration allowing for application in a number of environments.
Smart Filtrations™ Solids Removal Systems

Smart Filtrations™ is a line of high performance solid-liquid filtration separation technologies. Smart Filtrations™ technologies utilize elements with an extended surface area media configuration utilizing proprietary media formulations. The media utilized provides robust performance in glycol and aqueous service as well as hydrocarbon applications. Smart Filtrations™ systems have been applied in the oil and gas, refinery, chemical, petrochemical and power industries with demonstrated success.

Smart Filtrations™ systems can be used virtually anywhere there are suspended solids in a gas or liquid stream; they can operate in both water and hydrocarbon streams in addition to many other solvents and under demanding process conditions. Key applications include amine units (and physical solvents), hydrocarbon feeds, chemical products for specification guidelines, glycol units and other dehydration equipment, natural gas transmission lines (for black powder removal), sour water filtration, water for power plants, fuel gas filtration for burner protection and many others.

Smart Filtrations™ systems have small footprint, variable media materials, and flexible configuration to handle many different contamination types. The system has low operational costs and high performance for contaminant removal.

Provia™ Adsorptive Separation Systems

Provia™ provides high efficiency, state-of-the-art adsorption bed systems for applications requiring complete removal of dissolved species in gas or liquid streams. Provia™ technologies are customized designs utilizing advanced surface modifications and impregnation for selective and specialized separations. Systems are built for total bed use and the highest possible efficiency for each application. Pre- and post-filtration systems are also designed and implemented by Nexo in several designs to ensure proper protection of adsorbents and to prevent fragmented adsorbent from causing detrimental downstream issues.

Fundamental aspects for the efficient performance of adsorbent beds include effective bed loading, proper liquid distribution to avoid channeling, correct cross sectional velocity and suitable bed diameter to length ratio. Provia™ systems are significantly more efficient than traditional designs as they offer proper flow geometry, residence time and adsorbent selection. Each application is carefully analyzed by our engineering group in terms of process conditions and specifications, operation and maintenance, and performance requirements, and every Provia™ system is designed to suit unique needs.
**Intellichem™ HR/MR H₂S & Mercaptans Removal Agents**

Intellichem™ HR and MR are water-soluble blends of hydroxyls in a complex alcohol system. These products are extremely effective in removing H₂S and mercaptans from gas streams, water, crude, NGL, hydrocarbon condensates and fuel oils.

Despite what the name infers Intellichem™ HR and MR are not actually scavengers in chemical terms. The proprietary formulations are better defined as a removal technology since they do not act by ‘scavenging’ the H₂S molecules. The chemistry rather converts H₂S and mercaptans irreversibly and instantaneously into stable, non-hazardous, water soluble sulfate salts (SO₄²⁻). This mechanism eliminates the many issues and detrimental effects in the process system often associated with triazine-based and other scavengers that leave reaction products in the hydrocarbon phase. The product is also effective in the removal of small molecular weight mercaptans.

Intellichem™ HR and MR are non-corrosive liquids which are compatible with virtually all production chemicals and system materials. The chemicals require very little retention time as the reaction from H₂S (and mercaptans) to SO₄²⁻ is instantaneous and, most importantly, stable.

**Envirosol™ Surfactants and Cleaning Agents**

Envirosol is a unique line of specially formulated surfactant-based formulations used in a wide variety of applications. These surfactants significantly reduce surface tension between hydrocarbons and water and can be used effectively for cleaning deposits and surfaces, dispersing hydrocarbon contamination in water, and in bioremediation applications.

Envirosol interacts with hydrocarbons and water and promotes contact between the two phases, dispersing and emulsifying the liquids into a homogeneous and stable mixture. Surfactants in Envirosol disperse the contaminant phase into tiny droplets, stabilizing them and allowing efficient contact with the bulk phase. In addition, Envirosol effectively removes oils, greases and other contaminants from solid surfaces or deposits; this loosens and weakens the structure of solid deposits to surfaces and allows for rapid equipment washing and cleaning cycles.

The reduction in surface tension offered by Envirosol formulations is superior to any conventional surfactant used today; the products interact strongly with oil and water and produce emulsions that will not break unless powerful separation methods are applied. Envirosol can be used to safely and effectively clean any deposit or surface, even in extreme conditions, and has no components that will cause environmental or operational issues.

For more information, please contact us at [www.NexoSolutions.com](http://www.NexoSolutions.com) or Tel +1 (832) 510 8191