Complete filtration and separation solutions for Fuels & Chemicals and Power Generation industries

Engineering the perfect process for your fluid management needs
LET KLARWIN® HELP YOU IMPROVE YOUR PROCESS TO MAXIMIZE YOUR EFFICIENCY

Klarwin® is the emerging European company specialised in technical consultancy, systems and services in the field of applied engineering for filtration, separation and purification of fluids and treatment of water.

- Complete range of products manufactured by world leading technological partners
- On-site services and support
- Top engineers
- More than 10 years of experience
- Cross-industry expertise and know-how

Klarwin® provides technical solutions and trustworthy services to more than 250 clients in more than 9 countries, with offices in Romania, Hungary and Slovenia.

Klarwin® represents a technical partner, present on-site, offering:
- Fluid filtration/separation/purification equipment and spare parts
- Reliable laboratory cleanliness analysis of fluids and components
- Process optimization recommendations
- Equipment rental services
- Customized trainings

KLARWIN ENERGY TECHNOLOGY

Klarwin® represents a technical partner, present on-site, offering:
- Filtration/ separation/ purification equipment and spare parts
- Filtration audit
- Process optimization recommendations
- Equipment rental services
- Customized trainings

WHAT ARE THE GENERAL OUTCOMES?

Klarwin® aims to maintain all of the fluids in the process cycle at an optimum level.

FUELS & CHEMICALS

The Fuels & Chemicals branch addresses oil & gas production units, refineries and other similar units, who seek an increase in equipment efficiency and the quality of the final product.

- Oil & Gas Production
- Refining
- Chemical & Petrochemical
- Fertilizers
- Biodiesel & Bioethanol

POWER GENERATION

The Power Generation branch addresses power, cogeneration or trigeneration plants, whether the energy is produced from nuclear, fossil or renewable sources, who intend to increase the reliability of the plant.

- Nuclear Energy
- Fossil Energy
- Hydro Energy
- Wind Energy

Nothing influences more the continuous operation, the reliability and safety of a unit than the cleanliness of fluids involved, whether it is water, hydrocarbons (liquids or gases) or oils.

KLARWIN ENERGY TECHNOLOGY

is concerned with whatever drives our day to day life, from the light switch we turn on in the morning to the fuel used in our cars. We understand the significance of the cleanliness of all fluids – water, oils, natural gas or chemical products, increasing the efficiency and reliability of critical equipment.
PRODUCTS THAT MEET YOUR NEEDS

Klarwin brings world leading technologies and innovation in filtration, separation and purification applications.

1 FILTRATION TECHNOLOGY

CARTRIDGE FILTERS
Klarwin offers liquid and gas cartridge filters, with a wide range of removal ratings and dirt holding capacities, for protection of most critical fluid components, resulting in greater efficiency and reliability, while reducing waste and emissions.

Pall Ultipleat, Pall Profile Coreless, High Flow, Pall Duo-Fine, Pall Ultipor GF Plus, Pall Hydro-Guard, Pall Dynaflow, Pall Rigimesh, Pall Coralon etc.

FILTER BAGS
Felt filter bags come in a variety of materials and designs that ensure ease-of-use and cost effectiveness.

Pall BOS, Pall BOS MAX, Pall POEX, Pall PolyWeld etc.

AUTOMATIC BACKWASH FILTERS
Automatic filtration systems, with metallic meshes, used for water streams, are easy to operate due to back-washable cleaning cycle, initiated by the increase of the pressure drop.

MONITORING SYSTEMS
Fluid contamination monitoring systems, like solid contamination and water sensors, help plant operators and engineers manage, control and monitor plant water, fuels and oil resources.

Let a Klarwin specialist help you to select and size the equipment that will increase the reliability and efficiency of your equipment.

2 SEPARATION TECHNOLOGY

COALESCERS
Liquid/liquid coalescers Pall AquaSep, Pall PhaseSep, in horizontal and vertical configurations, improve process reliability, delivers consistent quality, reduces maintenance and waste disposal costs.

Liquid/gas coalescers Pall Medallion, Pall SepraSol practically eliminate all free and emulsified water in the fuel, down to 0.1ppm, improving product quality.

CYCLONES
Cyclone technology Emtril/CECO Environmental removes particulates from air, gas or liquid streams, without the use of filters, through vortex separation.

3 PURIFICATION TECHNOLOGY

AUTOMATIC CROSS-FLOW SYSTEMS
Membrane technologies for UF/RO water treatment systems Pall Diac Tube Module, Pall Aria AP are specifically designed to meet the water purity requirements, from desalinization to potabilization applications.

OIL PURIFIERS
Oil purifiers Pall HLP22, Pall HLP50, Pall HIPE, based on mass transfer under vacuum technology, eliminates free and dissolved water & gases, and as well the solid contaminants, from oils.

VARNISH REMOVAL UNITS
Varnish removal units Pall VRF, Pall Sentry purify oils to prevent sluggish controls and servo valves stiction, which can lead to expensive repairs or unscheduled outages.
MIDSTREAM

Transportation and primary processing of Oil & Gas streams from extraction location to refining facilities requires a mix of complex processes that depend on the cleanliness of the fluids involved.

ENSURE PROCESS RELIABILITY AND HIGH QUALITY PRODUCTS

- Filtration of solid particulates and separation of quality degrading acid gases from natural gas streams helps producing a high quality product, improves sweetening productivity and protects against amine foaming and fouling.
- Removal of solids, free water and brine from hydrocarbon condensate prevents fouling and corrosion of stabilizer and fractionator columns.
- Filtration, combined with upstream cyclonic separation, removes black powder (iron sulphides) and other particles (sand, debris) from gas, protecting against compressor fouling, blocked orifice meters, blocked furnace nozzle and off-spec gas.
- Removal of black powder and other particulates from gas pipelines will improve the performance of the gas compressor, as well as the integrity of the pipeline itself.
- Filtration of contaminants from natural gas reduces glycol foaming and fouling and prevents equipment failures in the dehydration unit.

UPSTREAM

Klarwin provides solutions for the upstream segment of the oil and gas business, particularly for liquid streams (drilling fluids, produced water or condensate) and for gas streams (wellhead protection).

PROTECT AND MAKE THE MOST OUT OF YOUR EQUIPMENT

- Filtration of particles in completion fluids avoids blockage of rock pores and ensures long term productivity, cleaning efficiency of the wellbore and reliability of the well.
- Filtration and separation of the upstream condensate prevents maintenance downtime due to brine-initiated corrosion and deposits on stabilizer and fractionator columns.
- Filtration of injection water protects against plugging of the injection equipment and of the formation rock, excessive pump wear, heat exchanger fouling and contactor foaming and prevents well reworking.
- Filtration and separation of produced water, for removing emulsified oil droplets and solid contamination, ensures reuse, reduces the production of waste and the need for onsite storage.

CUSTOMIZED SOLUTIONS FOR YOUR APPLICATIONS

- Water purification, by microfiltration followed by reverse osmosis, ensures pure steam boiler water in offshore production applications.
- Filtration of produced gas protects the wellhead heaters or wellhead compressors.

FUELS & CHEMICALS

Our Fuels & Chemicals specialists support oil & gas production units, refineries and chemical & petrochemical units with technical assistance and up-to-date technology in the field of filtration and separation of fluids.

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FUELS & CHEMICALS

DOWNSTREAM

The efficiency of the complex processes in refining industry depends on the cleanliness of the fluids involved.
Klarwin provides premium filtration and separation solutions, for specific applications that increases oil recovery rate, minimizes maintenance downtime and increases the reliability and efficiency of the equipment.

ALL YOUR REFINERY NEEDS

- Filtration and separation of feed & process streams protects against corrosion, heat exchanger/ reboiler/ column fouling, hazy products, liquid carryover, poor extraction efficiency and highly contaminated solvent in all extraction process.
- Filtration and separation of gas streams protects against compressors malfunction, burner fouling and column foaming.
- Water and solid removal from the final product streams protects against hazy products (LPG kerosene, jet fuel and diesel).
- Process water purification removes hydrocarbons, particles, bacteria and cysts and allows reuse or disposal.
- Monitoring and optimization of gas sweetening plants (amine conditioning skids) ensures process reliability.
- Filtration and purification of lubrication and hydraulic oils protects against wear and corrosion.
- Cyclones, equipment which are crucial for reactor and regenerator reliability on the Catalytic Cracking Units.

CHEMICAL & PETROCHEMICAL PLANTS

Klarwin addresses chemical and petrochemical plants for their filtration, separation and purification needs. Especially for worn equipment, our separation and purification applications have brought an important contribution in increasing performance and decreasing maintenance downtime.

The filtration of solid contaminants, the separation of two emulsified liquid phases or removal of liquid aerosols from gases are a continuous challenge for our customers in maintaining the functionality of chemical/petrochemical processes.

FERTILIZERS INDUSTRY

The need for chemical fertilizers is increasing, both due to the soil exhaustion and the increase of agricultural production.
Filtration, separation and purification applications have shown a fast payback by increasing the production, efficiency, production capacity and decreasing the costs of raw materials and catalysts.

Some of the applications that bring the most benefits include: the protection of platinum in the Nitric Acid plant, the protection of static and dynamic equipment in Ammonia and Urea plants and the recovery of carry-over platinum in the Nitric Acid facility.

BIOFUELS & BIOETHANOL

The new international regulations and the high costs of crude processing have led to the development of the Biodiesel and Bioethanol production industry.
Klarwin, along with its partners, provides a wide range of filtration and separation applications associated to this industrial branch, starting with products related to the operating processes up to adjacent applications (protection of equipment, waste and utilities).

FLUID CONTAMINATION IS EXPENSIVE

With experience and know-how, we are able to design the optimal solution that will solve and further prevent loss of usefulness of your equipment or off-spec products.

A Romanian refinery had serious issues due to contamination in the Hydrogen gas stream, which led to expensive maintenance of their reciprocating compressor.
Klarwin was requested to investigate the cause of contamination in the gas stream and to provide a complete solution that will reduce maintenance costs.

PALL Scientific and Laboratory Services (SLS) analyzed the solid residues found in the compressors.
Based on the results, the source of the contamination was traced to the condensate and the chlorine compound from the H₂ stream, which transforms into solid compounds due to the conditions inside the compressor (temperature & pressure).

These contaminants were the cause of compressor valves, cylinders, segments, etc. failure.

The solution proposed by PALL SLS was a system composed of a L/G coalescer (Seprasol plus), followed by Chlorine adsorbent bed.

Since the system was installed, the maintenance costs due to the contaminants in the gas were almost eliminated.
POWER GENERATION

FOSSIL ENERGY

The reliability of thermal power plants that use fossil fuels (coal, oil or natural gas) to produce energy, relies on the cleanliness level of all fluid systems. Filtration and separation technology is necessary to control the cleanliness of the water, steam and lubrication oil circuits in a thermal power plant, offering extensive benefits.

PROTECT AND MAKE THE MOST OUT OF YOUR EQUIPMENT

- Filtration of demineralized water and condensate before the Steam production unit prevents against deposits on the pipes and turbine blades, erosion of the nozzles, turbine vibration and loss of efficiency.
- Filtration of condensate water protects against deposits, corrosion of the boiler and pipe walls and reduces the frequency of blow down.
- Filtration of cooling water protects condenser tubes from deposits that decrease thermal exchange and causes increased fuel consumption.
- Filtration and purification of steam turbine lubricating oil prevents against wear, varnish formation that leads to clogged lines and bearing failures.
- Filtration of coal pulveriser’s hydraulic oil protects gears, bearings, pumps and seals from fatigue, erosive and abrasive wear.
- Moisture and particulate removal from combustible gases prevents against deposits and corrosion of burners.

NUCLEAR ENERGY

Klarwin offers dedicated solutions and technical support for purifying water, oil and gas throughout every stage of the power cycles.

CLEAR SOLUTIONS FOR PRIMARY LOOP FLUIDS

Contamination control is our focus wherever we are talking about moderator, heat transport system or spent fuel. Klarwin provides solutions to help nuclear power plants to maintain low levels of radioactive contamination and reduce rad-waste.

- Filtration of heavy water in the Primary Heat Transport System and Moderator System reduces radioactive levels.
- Filtration of irradiated water in the Fuel Bay helps visual inspection.
- Filtration of water in the fuelling machine maximizes component reliability.
- Filtration of active liquid waste reduces costs related to waste disposal.
- Filtration of the end shield cooling water ensures proper heat transfer.
- Filtration of turbine lubrication oil prevents against varnish and corrosion formation.
- Filtration of hydrogen Seal oil prevents against hydrogen leaks.
- Filtration of fire-resistant fluids prevents oxidation and varnish formation.
- Filtration of jacking oil protects the turbine’s journal bearing from wear.
- Filtration of diesel generator oil ensures the reliability of the equipment in case of emergency.

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Protect water and steam circuits in Secondary loop

Keeping the water and steam at optimum level, ensures the efficiency, reliability and low operating costs of the turbine.

- Polishing of condensate reduces deposits and corrosion on pipes and boiler circuits.
- Filtration of stator cooling water avoids overheating and generator failure.
- Filtration, desalination and softening of service water ensures proper cooling and protects pipe integrity.

Don’t neglect Auxiliaries (hydraulic & lubrication oil)

Water is not the only fluid to be concerned about in nuclear power plants – hydraulic & lubrication oils and gases are also essential. Studies prove that hydraulic systems and machine parts failures are 80% of the times due to particulate and moisture contamination in lubrication, hydraulic or dielectric oils [Rabinowicz, 1981]. Using state-of-the-art filtration systems results in lowering operating and maintenance costs, decreasing unplanned downtime and extending oil life.

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HYDRO ENERGY

Clean hydroelectric generation depends greatly on the reliability, availability and response of the turbine control mechanisms and lubrication systems.

PROTECT AND INCREASE THE PERFORMANCE OF YOUR EQUIPMENT

- Filtration of the inlet valve hydraulic oil maximizes performance and uptime.
- Filtration and purification of the turbine bearing lube system prevents bacterial/fungal growth, premature oil degradation and component wear and failure.
- Filtration and monitoring of turbine governor hydraulic oil protects against proportional and directional valves failures, sluggish system response and unscheduled shutdown.
- Filtration and purification of the hydraulic oil of the wicked gate mechanism protects against inefficient power production and turbine shut down due to troubleshooting.
- Filtration and purification of generator bearing’s oil protects against scoring, premature failure and downtime.
- Filtration and purification of lift pump oil reduces wear at shut-down and start-up.
- Water purification ensures potable water for plant workers.

WIND ENERGY

Wind is the fastest growing electricity source globally, and since they are flourishing, the reliability of the systems in a challenging environment (outdoor, corrosive, with large temperature variations) is crucial.

PROTECT AND MAKE THE MOST OUT OF YOUR EQUIPMENT

- Filtration of gearbox lubrication oil protects bearings and gears from wear.
- Reservoir-mounted air breather protects against airborne contaminants and moisture.
- Remote monitoring system with moisture and particulate contamination sensors facilitate rapid interventions.
- Hydraulic oil filtration protects valves against wear, stiction and jamming, providing a better response of the pitch and stall system.
- Airborne contaminants filtriom protects the nacelle against moisture and particulates.