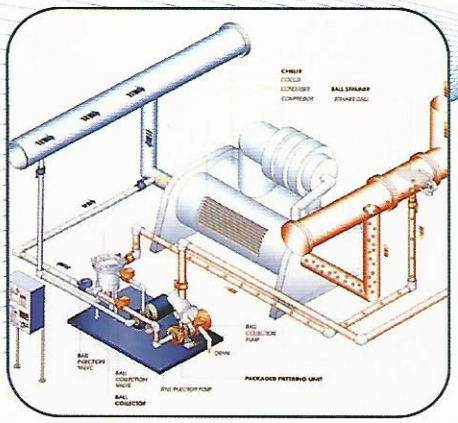




INNOVATIVE SOLUTIONS BASED ON ADVANCED ANALYTICS AND STRATEGIC THINKING.

TAKREER
Envirotech

Water | Wastewater | Solar Technologies

www.takreerenvirotech.com

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Company Profile

TAKREER, a member of AL WADI GROUP INTERNATIONAL, was established in 2008, the company has been running for last 4 years with the main goal for the development and promotion of the appropriate use of desalination technologies nation wide in water supply, water reuse, water pollution control, water purification, water treatment, other water sciences and technologies and various solute-solvent separations..

TAKREER is an Sharjah based company in the United Arab Emirates and we work hand in hand in the completion of the projects undertaken in the UAE & GCC Countries.

Our Mission

TAKREER provides engineering products and services in the fields of water and energy:-

Waste Water Treatment Plants.
Water desalination plants.
Solar Water Heating Systems.
Solar Power Photovoltaic Systems.
HAVC Chiller Tubes Auto Cleaning Systems.

Our Capabilities

With our team of in-house engineers specialising in process, mechanical, electrical and instrumentation, control and automation fields, we have a full turnkey capability to:

Design
Construct
Procure
Install
Commission

All process types of water desalination, water and wastewater treatment, and solar technologies.

Desalination

THE EXPERTISE TO PROVIDE DESALINATION SOLUTIONS FOR RESIDENTIAL, COMMERCIAL & INDUSTRIAL CLIENTS

Availability of fresh water has been the main center of growth of civilization. However, there are lots of inequality existing on earth, which needs to be artificially corrected through incorporation of technologies such as thermal or membrane desalination. With the growth of world population the need of fresh water has also increased substantially which has resulted in growth of desalination installation as well. Logically the desalination activities are concentrated on those parts of the earth where availability of water is scares. This is precisely the reason why more than 80% of desalination plants are located in the water scares Middle East region.

Takreer has been in the business to provide desalination plants, with complete design, manufacturing, installation and commissioning since its inception. We have served the industries like Oil & Gas, food processing, textiles, bottled water production, and various other industries.

Desalination Process

Reverse Osmosis is used to desalinate the water to make it potable. RO plants with three different types (River , Well & Seawater) are used in wide sectors and different applications mainly fro drinking, irrigations, industrial, food and many other places where there is a need to pure water.

The water is pumped from source to the different pre-treatment units to achieve the chemical-physical improvement before reaching the reverse osmosis membranes. Feed water pressure will be approximately 5 bars. Chemical pre-treatment consists of the passing of water through an activated carbon and media filter, to remove the residual chlorine and organic compounds and any suspended solids responsible of taste and odors and to protect the membranes from possible high levels of chlorine which may be in the mains water. Afterwards, the de-chlorinated water is dosed with anti- scaling to avoid precipitation of Calcium salts on the membranes. Besides protecting the reverse osmosis membranes, it helps to reduce the frequency of cleanings.

Takreer Envirotech has supplied 100s of top of the line small and medium desalination plan

throughout middle to various industries, schools, government and semi government entitie

CONSULTATION

SYSTEMS DESIGN

INSTALLATION

AFTERSALES SUPPORT

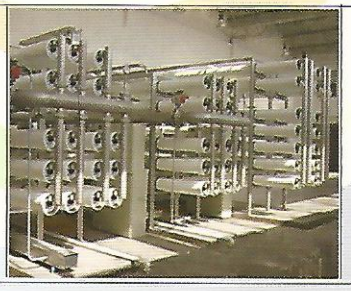
The proposed physical pre-treatment is a micro filtration using a wound polypropylene cartridge with 5-µm selectivity. This ensures the removal of all particulate matter and colloidal substances.

The preconditioned feed water passes to a high pressure-pumping unit a pump that boosts the pre-treated water to the reverse osmosis unit. Inlet feed water design pressure to the pump will be about 5 bars.

Outlet pressure from high-pressure pump will be as per design. To avoid damage to the high pressure pump due to low pressure on the feed side, a low pressure switch is installed before the pump that will automatically stop the system. In the same way, to avoid overpressure on the reverse osmosis membranes, another pressure switch will be installed, after the high-pressure pump that will automatically stop the system in case of exceeding the maximum design pressure.

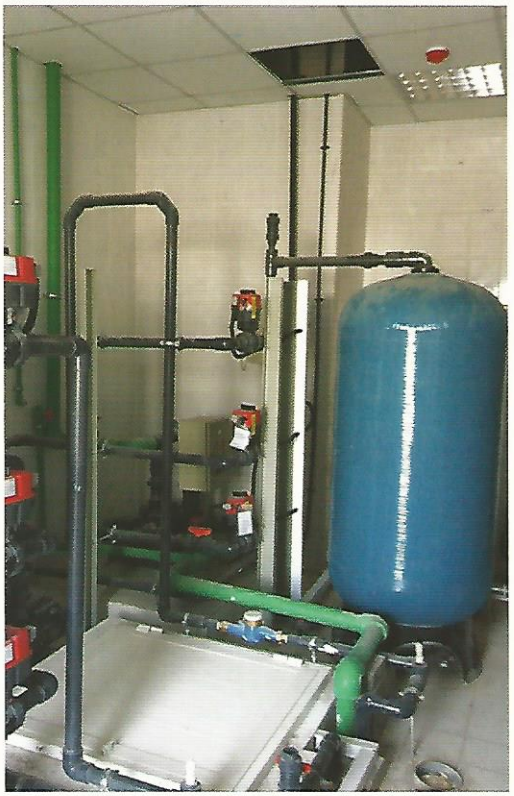
Reverse osmosis unit is formed by pressure vessels and Membrane elements. Vessel has an intake and two outlets (one for permeate and the other one for concentrate). Membranes are protected when plant stops with a system of concentrate dilution, known as flushing. The reject from plant will be evacuated to the drain.

Industrial Desalination Plant installations by Takreer Envirotech



Water Treatment

Multimedia Filteration System



Multimedia Filters often called Sand filters are used to remove suspended solids from water and wastewater. Because they have one layer of filter media, sand filters remove only relatively large solids (normally in the range of 40-100 microns). The effective size of each granule of sand typically varies from 0.35mm – 1.2mm. Larger granules yield coarser filtration. Finer granules yield finer filtration.

Sand filters are typically used for:

- Irrigation water
- Storm water
- Cooling water
- Swimming pool water
- Water in fountains and other water features

Deionization

Takreer Envirotech manufacturers a wide range of deionizers, demineralizers and dealkalizers. These ion exchange systems are skid mounted, factory assembled, wired and tested. Piping, automated valves, pressure gauges and accessories are included. The deionizers, demineralizers and dealkalizers are delivered ready to install. Complete ion exchange systems include automated caustic and acid injection packages, brine maker (where required) and system controls via a PLC with touch screen operator interface. Operation of the system can be integrated with an existing plant DCS.

Water Softeners

Takreer Envirotech manufacturers a wide range of water softeners with capacities. Water softeners are skid mounted, factory assembled, wired and tested. Piping, automated valves, pressure gauges and accessories are included. All of our municipal, industrial, and commercial water softeners are delivered ready to install. Complete water softening systems include an automated brine maker, automated brine injection package, and system control via a PLC with touch screen operator interface. Operation of the system can be integrated with an existing plant DCS.

Only premium grade cation softening resin is utilized. The amount of resin is engineered to the quality of the raw water and the desired level of reduction in water hardness. Our water softeners are ideal for deionizers, demineralizers, and dealkalizers with capacities from 25 GPM to over 10 MGD. Water softeners only are also available instead of complete systems.

Water Sterilization

Ultraviolet purification

UV treatment is an excellent choice to eliminate biological contamination from most home drinking water, whether your home is on a municipal water system or untreated private system (well, lake water, etc.). Its sole purpose is to kill harmful biological contaminants.

Ozone disinfection

Ozone GeneratorOzone is an unstable molecule which readily gives up one atom of oxygen providing a powerful oxidizing agent which is toxic to most waterborne organisms.

Chlorination

Chlorine is one of the most widely used disinfectants. It is very applicable and very effective for the deactivation of pathogenic microorganisms. Chlorine can be easily applied, measures and controlled. Is is fairly persistent and relatively cheap.

Chlorine has been used for applications, such as the deactivation of pathogens in drinking water, swimming pool water and wastewater, for the disinfection of household areas and for textile bleaching, for more than two hundred years.

Ultraviolet purification

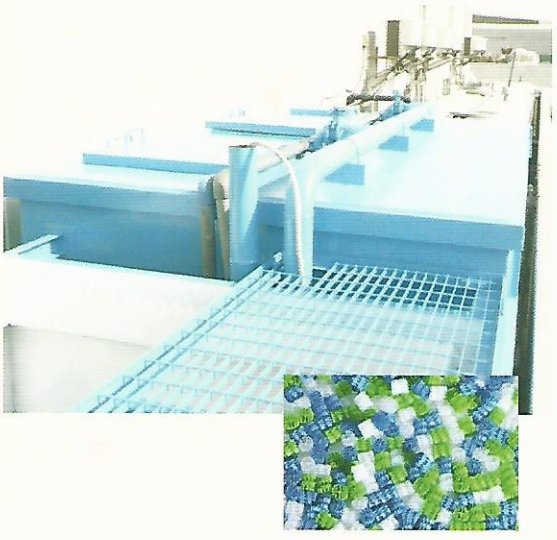
Ozone disinfection

Chlorine Tablets

Wastewater Treatment

The number and size of population is ever increasing in the UAE. All cities require large amounts of fresh water for domestic use, advanced treatment for waste water can be used for washing and cooling, also the treatment of gray water can be used for toilet flashing and irrigation.

Waste water is biologically pre-treated and simply discharged to the environment. Today, waste water is generally recycled for gray water and/or advanced treated gray water.



Moving Bed Bioreactor (MBBR)

MBBR biofilm technology is based on specially designed plastic biofilm carriers or biocarriers that are suspended and in continuous movement within a tank or reactor of specified volume.

An aeration grid located at the bottom of the reactor supplies oxygen to the biofilm along with the mixing energy required to keep the biocarriers suspended and completely mix within the reactor.

Treated water flows from reactor through a grid or a sieve, which retains the MBBR biocarriers in the reactor. Depending on the wastewater, the reactors are may be equipped with special spray nozzles that prevent excessive foam formation.

Membrane Bioreactor (MBR)

MBR is the combination of a membrane process like microfiltration or ultra filtration with a suspended growth bioreactor. This very compact arrangement produces a MF/UF quality effluent suitable for reuse applications or as a high quality feed water source for Reverse Osmosis treatment

Submerged Aerated Filter (SAF)

The active biological process is performed using an extremely efficient Submerged Aerated Trickling Bio Filter.

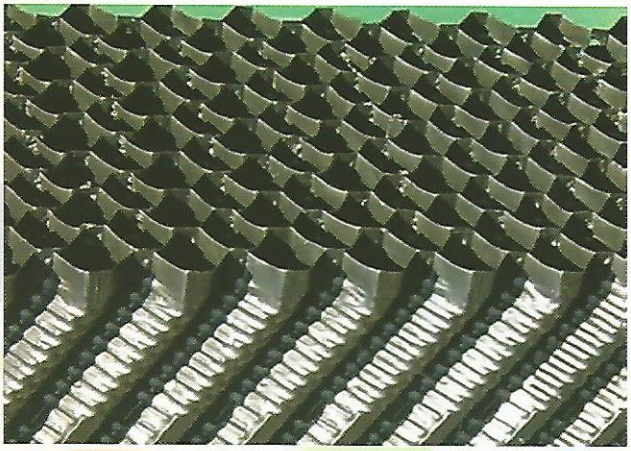
The bio zone of the STOF is fitted with a very high specific area, structured uPVC media. The media is designed with angled, cross fluting and forms an ideal environment for the growth of biomass. The media is engineered in a structured manner to promote extended liquor and air bubble contact time and prevent short circuiting of flow and air common in "random, loose media" systems.

The biomass is fixed to the PVC media thus preventing "wash out" or "loss" of sludge so often found in poorly designed extended aeration plants.

From time to time, biomass is "sloughed" from the surface of the PVC media. This happens automatically and is determined by the thickness of the biomass as well as the air bubble size and motion. Slough biomass passes out of the bio zone wit the liquor flow. New biomass quickly grows on the vacated part of the PVC media.

The very high specific surface area of the PVC media allows for high sludge densities and therefore much reduced retention times, leading to smaller bio zones and hence highly efficient oxidation compared with extended aeration processes.

The Bio zone tank will be constructed from ECS (epoxy coated steel).



Ultra Filtration (UF)

Ultrafiltration systems eliminate the need for clarifiers and multimedia filters for waste streams to meet critical discharge criteria or to be further processed by wastewater recovery systems for water recovery. Efficient ultrafiltration systems utilize membranes which can be submerged, back-flushable, air scoured, spiral wound UF/MF membrane that offers superior performance for the clarification of wastewater and process water.

The primary advantages of UF membrane processes compared with conventional clarification and disinfection (postchlorination) processes are:

- No need for chemicals (coagulants, flocculates, disinfectants, pH adjustment);
- Size-exclusion filtration as opposed to media depth filtration;
- Good and constant quality of the treated water in terms of particle and microbial removal;
- Process and plant compactness; and
- Simple automation.

Wastewater Treatment

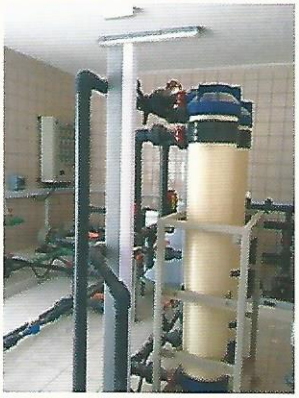
Gray Water Treatment

Gray water systems refer to dual water supply systems which permit the reuse of "gray" wastes from lavatories, bathtubs, showers and other fixtures discharging dilute non-fecal wastes as a secondary, non-potable water source.

These systems accomplish significant levels of water conservation by utilizing water resources in a more efficient manner. As an additional benefit, gray water systems also reduce sewage loads and ease the impact on sewage treatment facilities.

Applications:

- Residential Buildings / Towers
- Labor accomodations
- Schools
- Hotels and Resorts
- Mosques
- Villas
- Hospitals

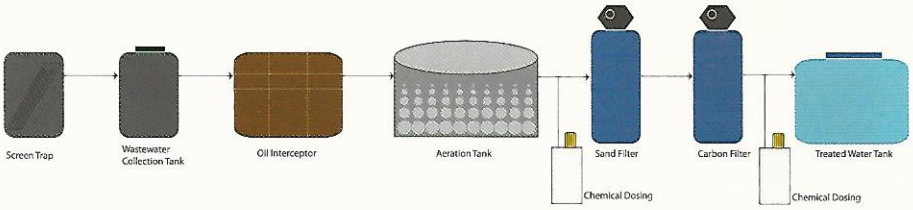


Advantages:

- 30 - 40% savings on your fresh water consumption
- Safe to be reused in toilet flushing, irrigation, cooling towers and othe industrial applicatiions
- Complies with green builing standards
- Reduces sewage load and disposal

Carwash Recycling System

Takreer Water Recycling System has been designed for the harsh and unpredictable MIddle East conditions. The system is suitable for many vehicle wash applications including Automatics, Touchfree Systems, Tunnel and Conveyor Systems as well as Commercial Vehicle Wash Systems.



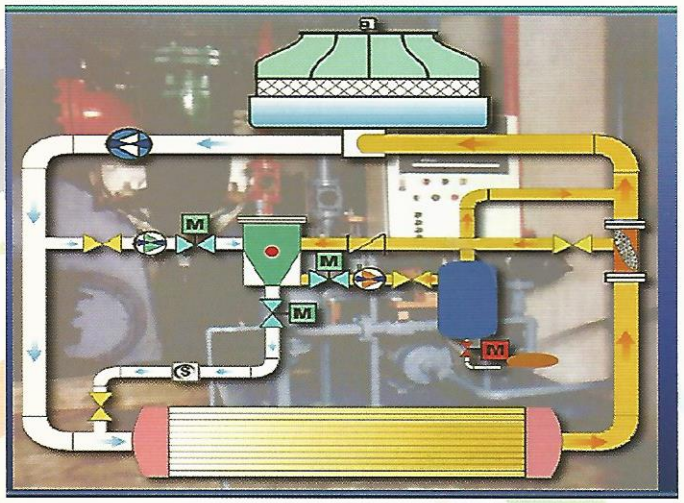
On-Load Tube Cleaning System

Because condenser water cooling systems are open to the environment, the water in them soon become dirty. During the process of cool down, water in the cooling tower absorbs dust and other impurities that are present in the air. Environmental condition such as location of the premises is season, also help to from slime and algae. Chemicals left behind from the water treatment process can also aggravate the situation. When all these condition occur, fouling mechanisms form on the tube wall, restricts the flow of water and effects the heat transfer causes higher power consumption. In general practice, once or twice a year OFF-LINE manual cleaning of the chiller is needed to rid condenser tubes of fouling mechanisms. Wasted time and expensive maintenance can only ensure optimum performance for a short time. As soon as the chiller unit is returned to service, performance begins to deteriorate. Also, during manual condenser tubes cleaning and damage to the tube wall occurs.

The benefits of using Ball Guard on-load tube cleaning system.

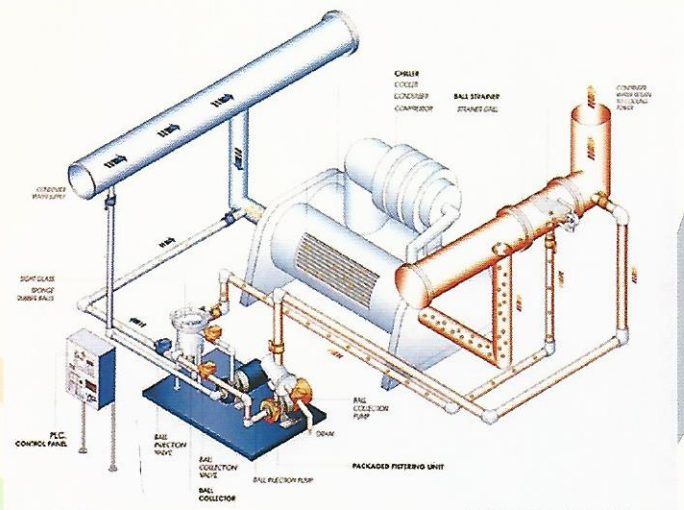
Ball Guard provides you with the best possible solution for energy conservation at the chiller plant, the benefits are as follows:

- Lower power consumption up to 30% at the chiller.
- Maintains constant heat transfer efficiency.
- Eliminates the need for costly manual cleaning.
- Avoid tubes scratching and damage from manual tube cleaning.
- Reduces condenser corrosion and pitting.
- Increases the chiller life.
- Reduces the huge volume of water from bleed off/saving water, and pollution.
- Reduces the use of chemical.
- Increases the unit availability.
- Reduces the chiller first cost.
- Environment Friendly.



With the outstanding design, Ball Guard provides the advantages of using Ball Guard system as follow:

- The condenser water will not be mixing between the condenser water supply and condenser water return. When the condition of condenser water is not change, the chiller can be operated at the optimum efficiency.
- The condenser water shall be always clean with the help of packaged filtering unit.
- Packaged system design provides low cost of installation, space saving and reliable service in a wide range of applications.



Industrial Wastewater Treatment

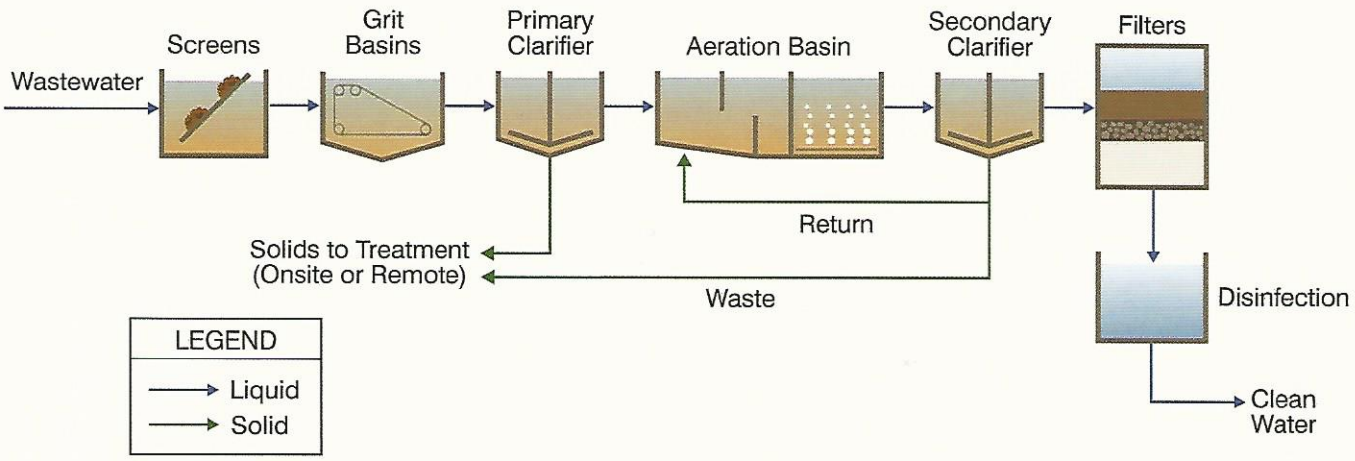
Packaged Wastewater Treatment Plants

Industrial wastewater treatment covers the mechanisms and processes used to treat waters that have been contaminated in some way by anthropogenic industrial or commercial activities prior to its release into the environment or its re-use.

Most industries produce some wet waste although recent trends in the developed world have been to minimise such production or recycle such waste within the production process. However, many industries remain dependent on processes that produce wastewaters.

Treatment of industrial wastewater includes

- Solids removal
- Oils and grease removal
- Removal of biodegradable organics with
- Treatment of other organics
- Treatment of acids and alkalis
- Treatment of toxic materials



Chemical Industrial Wastewater Treatment

We are the wastewater experts; we excel at optimizing your industrial wastewater facility to both minimize operation cost and to mitigateongoing business risk. Our engineering services, our capital goods or our own specialized treatment chemicals are all targeted. At making your wastewater facility operates efficiently for leastcost.

Whether your needs are in upstream or downstream oil and gas, chemical processing, at scale water reuse or food processing we know how to help you solve your problems and save money doing it. It's what we do.

Wecan save with our products direct custom flocculating agents and wastewater treatment equipment`s for your industrial wastewater treatment Process, Your savings start after your Wastewater Analysis & Optimization including an in depth analysis of your current wastewater treatment plant or industrial wastewater treatment systems needs.

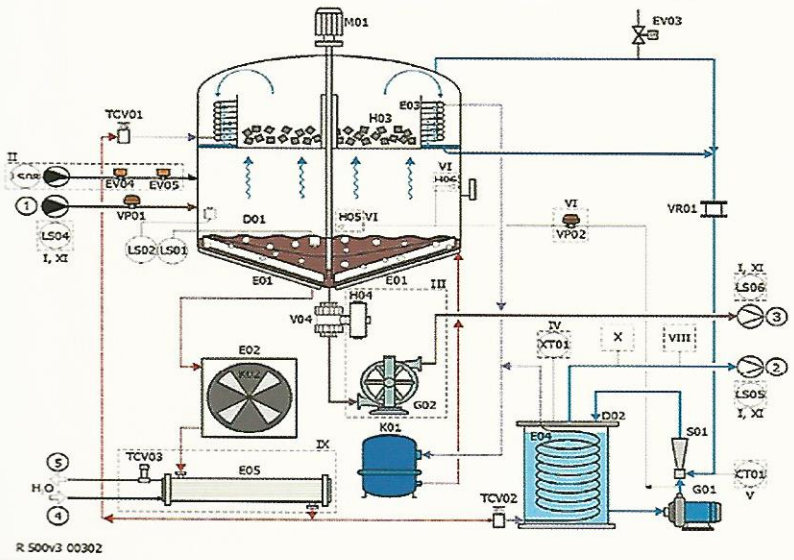
Evaporator

Heat pump vacuum evaporator with a scraped system and a heating jacket exchanger.

The liquid to be treated is sucked in to the boiling chamber D01 as a result of the vacuum created inside it by the vacuum system. The feed is controlled by the level sensor LS01 which controls the pneumatic valve VP01. The bottom of evaporation chamber consists of a heating jacket heat exchanger E01. Inside the boiling chamber there is the scraper, driven by an electric motor-reducer M01.

The scraper shape assures a good cleaning of the heat exchanger E01 walls and an efficient stirring. The refrigerating fluid, coming from the heat pump circuit, flows in to the heat exchanger E01. The contact between the process liquid and the walls of the heating jacket leads to the boiling of the liquid it self. The vapor rises through the demister in order to damp the droplets.Vapor is condensed against the coil heat exchanger E03.

The vacuum system extracts the condensed distillate together with any incondensable gases and sends them to the storage tank D02. The distillate is discharged by overflow, then on-condensing gas are vented with the liquid. The concentrate is discharged through the valve V04 and by running of the membrane pump G02.



Process Diagram

Solar Technology

Solar Power

It is possible for an entire home to run off of solar electricity. This means not just alarm clocks and ceiling fans, but such things as dishwashers, clothing washers, and TVs. Of course, depending on how many solar panels are installed and where one resides (among other factors,) varying amounts of solar electricity will be produced.

It is worth noting that some people produce enough solar electricity that their utilities company actually must credit them. In other words, their home solar technology makes them money!

Solar Water Heating System

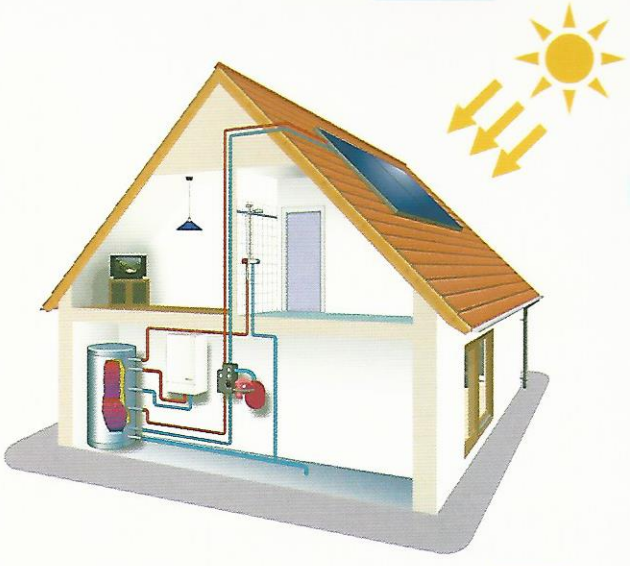
The Solar Thermal System offers first rate possibilities for gating usable energy for the household from the sun, it captures the sun`s radiant energy and converts it into warmth for heating or hot water, a low maintenance & economical technology that is twice as pleasing when the sun smiles down.

Where the insolation energy is converted into heat, we refer to solar thermal system, this heat is used to provide central heating backup & DHW heating, the fact that almost 90 % of all energy in the average household is expended on central heating & DHW heating speaks very much in favour of solar thermal systems.

Solar collectors are distinguished by their excellent absorption of insolation; low radiation losses and an impressively long service life, the sum of all technical components enable them to achieve extremely high collector efficiency in excess of 80%.

Commercial & Industrial

The solar compact system set enables you to install a solar thermal system simply and to provide the optimum connection between the collector array and the cylinder. The solar compact installations set comprise all components required for the hydraulic circuit. The solar compact installations in array stand out on account of their compact design and easy handling.



Residential

This solar set comprises all essential components required for DHW heating in households starting from 2 members. The solar heating system delivers up to 60% of the energy required for heating hot water, and the associated savings, all year round.

The flat-plate collectors contained in the set are easily mounted on a tiled roof, where they convert solar rays efficiently into available heat. That way, sufficient hot water is always available in the freestanding or above solar cylinder. The set also contains all other essential components for the installation of this solar heating system, such as the solar compact installation and the solar control unit.

Commitment to Environment

Takreer is committed to green building practices by providing technologies that help protect the environment in the fields of water and wastewater treatment, and solar technologies.

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