Consulting Engineers

MK I Slop Oil Plant
Capacity Range
5 m³ to 15 m³ / hr

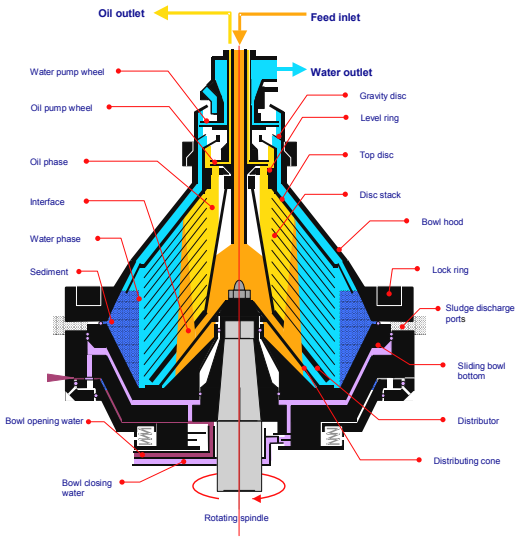
The MKI Plant

The Plant in the photo is specifically designed for the treatment of Slop Oils defined as oily waste containing <3.0% solids-sediments by volume of the whole waste. Its capacity is determined mainly by the viscosity of the feed. For example slop oils with a viscosity in the range of 10-20 Cst at 50°C can be treated at 15 m^3/hr whereas those having a 180 Cst at 50°C can be treated at 5 m^3/hr. We therefore recommend to treat at a temperature of 95°C to maximize the plant capacity and to improve the overall separation performance to produce the highest quality oil. A major variable in treating slops are the concentrations of common contaminates, water & solids. One limitation of the MKI is the solids-sediments volume. The MKI requires the feed contain <3.0% solids. If the solids exceed 3.0% we recommend our MKII Plant model. The ***G-force*** 3-phase MKI centrifuge applies 6000-g to separate the water and any solids-sediments from the oil phase for the purpose of achieving the highest quality treated oil in the smallest operational footprint. The MKI can be supplied as either an Oil Purifier or Water Concentrator by nature of its vertical disc-stack configuration. ***G-force*** is unique for the treatment of slop oils, when compared to 3-phase horizontal scroll decanters, in that the vertical disc-stack is not critically sensitive to changes in oil and water feed ratios common to slops. This feature eliminates the requirement of batch blending residence tanks and as a result produces a higher quality treated oil phase. The MKI plants are designed to the new EU ATEX specifications and/or Class I Div 2 for compliance involving Oilfield operations. A special design feature is the interconnecting in-out pipe and utility works centrally located at the rear of the skid module where all supplies centrally flange thereby minimizing space requirements, making installation and commissioning a quick, simple and easy task and providing excellent operations logic and safety monitoring as required for the treatment of the various classifications of slop oils.

Principle of Operations

The feedstock is picked up by the plant-installed pumps for feeding into the plant process. Process heat is provided by ***G-force*** through our Heat Exchangers whereby hot water (from a boiler system) or steam (if available on site) is utilized to heat the slop oil to the required range of 95°C for feed into the 3-phase Centrifuge. Depending on the contamination volume of water contained in the oil phase, the oil-water droplet sizes and the volume of particle sizes in the range of 5 mμ to 10 mμ determines if Treating Chemicals are required in the separation process. Normally at 6000-g treatment of low viscosity slop oils can be accomplished without the use of Treating Chemicals thereby significantly reducing cost. If however viscosities are in the high range treating chemicals are required. Therefore the plant is delivered with a static mixer where treating chemicals are first injected to mix with the contaminated oil. Immediately following the static mixer the feed enters the ***G-force*** RTR Dynamic Residence Blender to insure the treating chemicals come into direct contact with the water phase droplets and the sediment particles so

as to de-emulsify or coalesce them for separation. The treated slop oil leave the RTR Blender and immediately enter the 6000 g-force High Speed Centrifuge to separate the oil-water-sediments. The separated oil is immediately transfer to the clean oil export tank and ready to be returned to the client or sold into the market place. The separated water is pumped to the client's wastewater treatment facility or if needed ***G-force*** can provide a small water concentration centrifuge to treat the water separated from the 3-phase centrifuge so that it meets the disposal regulation for land or sea. Finally the solids separated from the centrifuge are directly conveyed into a solids thickener-dryer (optional) for final disposal & declassification. ***G-force*** specializes in the design and manufacture of custom plants to meet any defined capacities specific to the needs of our customers. This is achieved by the simple addition of multiples of the main components.



INSTALLATION & SERVICEABILITY

G-force plants are supplied with one-year of spares and come with a recommended maintenance schedule based on each 2000 hours of operations (4 times per year). All primary equipment is supplied as a complete package including special tools and is ready for installation on a level concrete pad. A ***G-force*** engineer supervises the plant installation and commissioning on site, which for the MKI normally takes ~7 days. Installation tools and special equipment servicing tools are also provided with the delivery of the plant. Immediately following plant commissioning the actual operations are ready to commence. If required ***G-force*** arrange special rates for on site training of the clients assigned Plant Operator to insure a smooth handover. No other requirements are needed except for the client to bring service points to the concrete pad for hook up purposes. If required ***G-force*** also supplies all climate buildings dimensionally specific for the plant footprint as delivered.

DIMENSIONS & UTILITIES

Basically, if the client orders a plant with a heat supply from ***G-force***, the only utility requirements are electrical power, diesel for the Hot Water Boiler and plant operations water (~100 liters/hr). If the client has a steam heat supply only electricity and operations water are needed. The kW and water depend on plant size and options chosen, details of which are provided with our quotations. For the plant shown in the photo the electrical requirement is 35 kW of installed power and the footprint is ~L6m x ~W2.2m.

DELIVERY TIMEFRAME, PLANT CERTIFICATION & EQUIPMENT WARRANTEES

Delivery, from the time of approved order placement up to ex-works, requires ***G-force*** 12 weeks and is dependent upon the delivery timeframe of the major components. It is the policy of ***G-force*** that before shipment the plant is fully assembled at the factory and undergoes a complete Factory Mechanical Completion Certification. The buyer is asked to attend this certification. During the last 7-day period of plant fabrication ***G-force*** invites the Buyers assigned engineers to our manufacturing facility in Holland for schooling and hands on training. G-force provides the Buyer a Mechanical Warranty to certify that the plant delivered is under warranty for 100% of the supply against any defects for the 1st year of operations, starting from the date of commissioning, or for a period of 18 months from the date of ex-works delivery, whichever comes first.