

PPP Industries Ltd

Serving New Zealand's Primary Industry Since 1963

Abattoir - Slaughterhouse - Meat Packers Waste Treatment

Press Screw Separator (PSS)

Centrifuge Classifier Separator (CCS)

Dissolved Air Flotation (DAF)

Cavitation Microbubble Reactor (CMR)

Filter Oscillating Separator (FOS)

Specialising in solid-liquid separation equipment innovations since 1986, FAN SEPARATOR GMBH of Germany has established a niche in engineering solutions for the dewatering, clarification, recycling of slurry streams in paper mills, livestock farms, abattoirs and in the food and feed processing industries.

FAN SEPARATOR is a group of companies with offices in Europe, America and Asia with a network of local and after sales services representatives to serve the needs of our customers everywhere. FAN Separator are a Global company.

FAN SEPARATOR since their establishment in 1985 have sold over 4,000 systems world wide.

The Total Reduction of Waste using all three FAN Components
PSS, CCS, and DAF without Chemicals:

Deductible Solids: 89-98%

COD and BOD: 37-46%

Free Fat: 80-92%

**A remarkable improvement of this result can be achieved by using upgrading
the flotation unit with a dosing system for flocculants.**

Press Screw Separator (PSS)



In all applications the PSS can replace static screens with the advantage of much dryer separated solids with about 70% moisture (“drip free”) and better solid capture rate by using a smaller screen with slots from .10 – 0.25 - .50 – 0.75 – 1.00 mm slots.

The solids dry matter can be adjusted by counterweights.

The PSS is fed with a low pressure by pump or gravity. An overflow is necessary if the pump pressure is too high. The flights of the rotating auger clean the screen slots by every rotation and convey the screened solids against the solid plug and the output regulator. The solid consistency is adjustable. A vibrator unit reduces the viscosity of thick liquids and increases the hydraulic capacity.

There are now PSS units on Dairy Farms, Piggeries and Meat Works for the processing of waste streams in New Zealand.

These systems are in Northland, Waikato, Hawkes Bay, Manawatu and Southland.

With only once a day greasing the PSS requires no labour input on a daily basis to operate. The PSS is a processor of waste – separating Liquids and Solids.

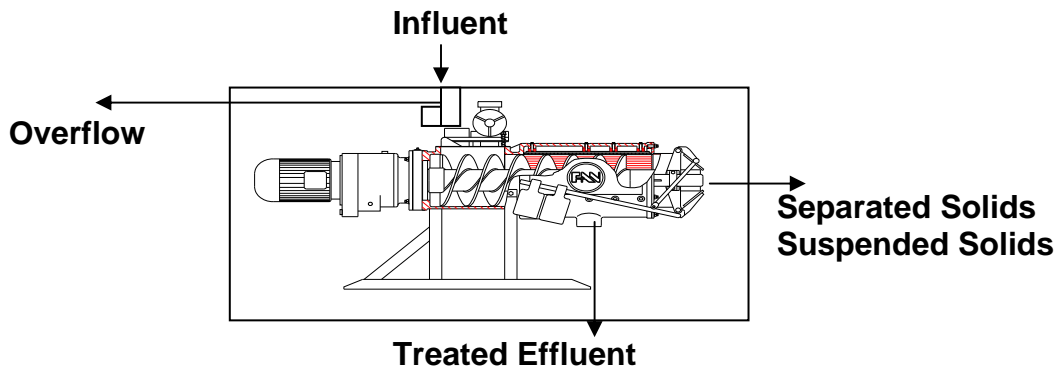
The main features of the FAN PSS are:

- ❑ Very high capture rate of solids with different size screens.
- ❑ Low moisture level of solids – cheaper freight.
- ❑ Low labour input - Automated operation.
- ❑ Low electrical running costs.
- ❑ No extra water required to continually keep screen clear.*
- ❑ All dangerous moving parts are internally so OSH friendly.
- ❑ Assisting in compliance with RMA requirements.
- ❑ Composted solids have great fertiliser benefits.

* hot water flush can be added on if dealing with products that have a high fat content.

The models range from simple dairy and pig farms models (PSS1) up to very large industrial PSS8 machines. The options also include complete manufacture from stainless steel and also different strength ratings depending on work load.

The FAN PSS is the first stage in mechanical treatment of waste streams. For more information on other FAN products please contact PPP Industries Ltd.



SET UPS



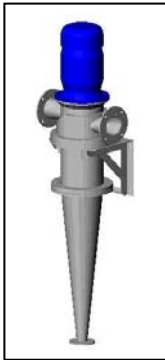
SLAUGHTER HOUSE



HIDE TRIMMINGS



Centrifuge Classifier Separator (CCS)



Agricultural and industrial waste or process waters pre-treated by the FAN PSS or screening devices contain fine suspended solids which may cause both high pollution of the waste water and/or problems in the following process. If the specific weight of the solids is higher or lower than the liquid they can be separated by gravity or centrifugal force.

Fan Separator has developed the CCS for the separation of suspended solids heavier or lighter than the liquid. The CCS combines sedimentation and floatation by centrifugal force in a closed, compact and efficient separator.

The CCS is fed by gravity or pump. The rotor (1,450 rpm) and stator produce a rotating flow in the cyclone. The specific heavy solids follow the centrifugal force to the outer cyclone diameter and leave the CCS at the bottom outlet. The specific light particles follow are pressed to the inner diameter and can take out both with the heavy particles at the bottom or separately through a hollow motor shaft.

The exiting sludge has a water content of approximately 90%. It is liquid hence pumpable.

There are three models available;

The CCS 150 with up to 20 cubic meters per hour and

The CCS 150 with up to 30 cubic meters per hour and

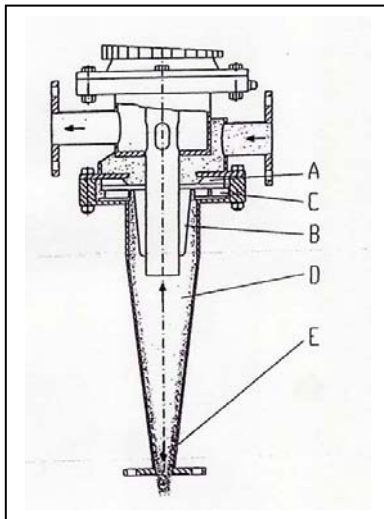
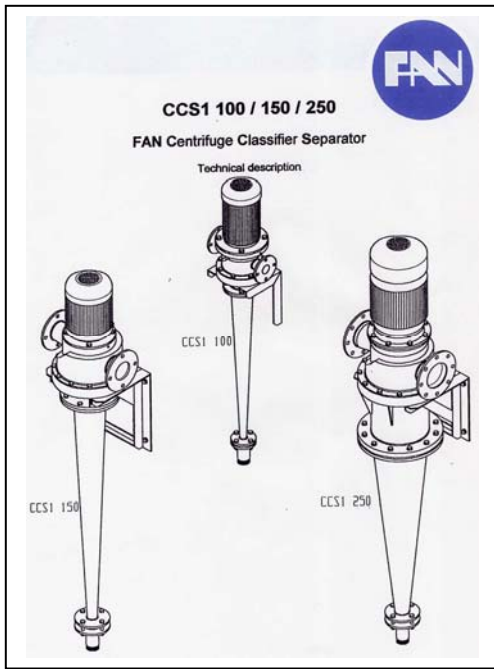
The CCS 250 with up to 100 cubic meters per hour.

The motor sizes range from 4 to 30 kW. The CCS is made from Stainless Steel



Separated fats

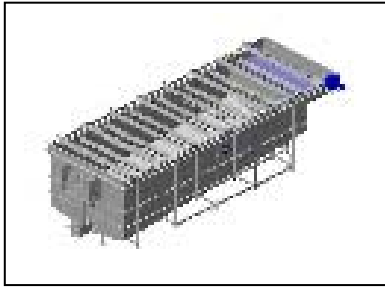




The liquid to be cleaned flows freely via the inlet pipe in the intake area of the transport rotor (A) of the CCS.
 The twisted rotor blades press into the stator (C) which supports the tangential injection into the cylindrical cyclone chamber and generates the radial rotation of the liquid in combination with the cyclone rotor (B) mounted to the transport rotor shaft.



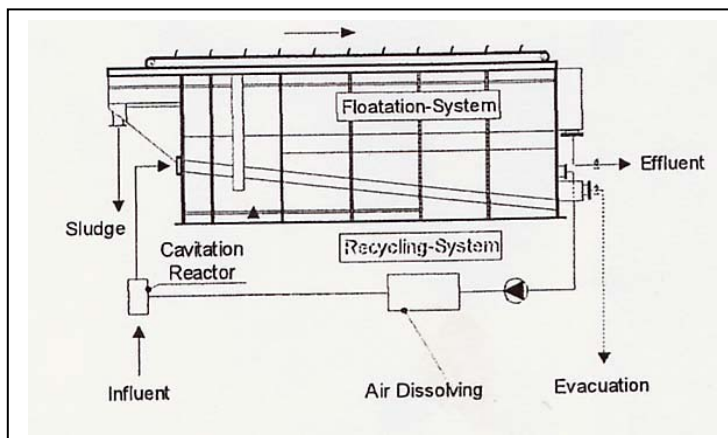
Dissolved Air Flotation (DAF)



Flotation is a unit operation used to separate solids or liquid particles from a liquid phase. Separation is brought about by introducing fine gas bubbles into the liquid phase. The bubbles attach to the particle matter and buoyant force of the combined particles and gas bubbles is great enough to cause the particle to rise to the surface. There the particles form a scum blanket which is removed by skimming mechanism.

A portion of the effluent is recycled pressurised and semi-saturated with air. The recycled flow is mixed with non-pressurised main in-feed just before admission to the floatation tank. The production of the micro bubbles takes place in a choke manifold into which a pipeline containing the pressurised fumigated fluid is led. If this water streams through the covered hollow cone nozzle a hollow in form of a cone is created above the nozzle which stands under such a high vacuum that the stream escapes from the fluid.

There are five standard sizes complete with scrappers manufactured.



Cavitation Microbubble Reactor (CMR)



The Microbubble generation as a part of floatation technology, has become increasingly important in municipal and industrial waste water treatment processes due to its relative economic purchase price and wide range of applications.

The Cavitation Microbubble Reactor is a unit to generate microbubbles in water. Air is dissolved in water in a multi-staged pressure aeration pump, expanded in the nozzle assembly create a detailed air bubble veil.

The function of the expansion facilities is based on the laws of Cavitation. The air penetrates the collapsing steam bubbles through pressure reduction, resulting in an accumulation of microbubbles.

The CMR is a unit to generate microbubbles. The major application is the expansion of air saturated water so that an extremely fine bubble and regular bubble veil can be made.

The air saturated water will be moved in a specific order from the pressure pump to the expansion unit and through the nozzle assemble.

The fluid now to be floated is now conveyed over a second line into a nozzle assembly. A mixing of both streams now begins and continues in the line behind the nozzle assembly.

Air saturation is achieved by way of an air throttle valve which creates a low air pressure before the entry of the pressure pump resulting in a sucking of inlet air – venturi effect. The air inlet airflow can be adjusted by the throttle valve.

According to empirically determined values the required supply of air amounts to 8 –19 Ncm³/g TS, i.e. 0.008 – 019 Nm³/kg TS (Dalton Table)

One possibility is to operate the CMR with fresh water, which will be mixed with material to be handled in nozzle assembly. On the other hand it is possible to operate the CMR with precleaned water (e.g. from flotation unit) and mix it with untreated waste water – recycling procedure.

Six different sized models are available to match DAF tanks. **The CMR can be fitted to most existing DAF tanks.**

Filter Oscillating Separator (FOS)



The FAN Filter Oscillating Separator (FOS) was developed by FAN Separator to clarify liquids with fine fibres that have already been separated by the Press Screw Separator, the Centrifuge Classifier Separator, the Dissolved Air Flotation Unit, or other mechanical devices.

The FOS can remove fine solids using a screen 100 μm in size or smaller. Radial vibrations of the oscillating cylinder inside the FOS screen support the separation action. The cylinder causes overpressure to squeeze liquid through the screen where the solids are lifted from the screen by a vacuum thousands of a second later.

A scraper removes the separated solids from the screen. The solids exit the FOS through the bottom of the machine as a concentrated sludge.

