CLAIMS

1. A FOG (Fats, Oil, or Grease) separator apparatus which includes:

a first reservoir or chamber having a wastewater inlet configured to receive wastewater containing FOG;

a second reservoir or chamber which is separated from the first reservoir by a first weir configured to permit overflow of at least FOG from the first reservoir to the second reservoir;

a third reservoir or chamber separated from the second reservoir by a second weir configured to permit overflow of at least FOG from the second reservoir to the third reservoir;

a syphon arrangement having a syphon inlet provided in the third reservoir at a first level and having a syphon outlet provided outside the third reservoir at a second level which is higher than the first level; and

a pump arrangement comprising a FOG pump and a sensor provided in the third reservoir at a third level which is higher than the second level, wherein the pump has a pump inlet in the third reservoir above the first level, and wherein the pump is activated by the sensor in response to a liquid level or concentration in the third reservoir triggering the sensor.

2. The FOG separator apparatus as claimed in claim 1, in which the syphon arrangement:

is a self-priming syphon arrangement;

is primed, and starts syphoning, in response to a liquid level in the third reservoir being at or rising above the second level; and

stops or experiences a syphon break in response to the liquid level in the third reservoir being at or falling below the second level.

3. The FOG separator apparatus as claimed in claim 1, in which the syphon arrangement includes a pump and/or valve to regulate flow.

4. The FOG separator apparatus as claimed in claim 1, in which:

the sensor is a capacitive sensor configured to sense a FOG concentration at the level of the sensor in the third reservoir; and

the FOG separator apparatus is configured to activate the pump when the FOG concentration at the level of the sensor reaches or exceeds a pre-definable concentration.

5. The FOG separator apparatus as claimed in claim 1, in which:

the sensor is a liquid level switch; and

the FOG separator apparatus is configured to activate the pump when the liquid level in the third reservoir reaches or exceeds a level of the sensor.

6. The FOG separator apparatus as claimed in claim 1, which includes one or more heaters provided in one or more of the first reservoir, the second reservoir, and/or the third reservoir.

7. The FOG separator apparatus as claimed in claim 6, in which the heaters are configured to warm or heat the wastewater containing FOG to 40°C – 80°C (~104°F – 176°F).

8. The FOG separator apparatus as claimed in claim 1, which includes an electronic controller communicatively coupled to the sensor and the pump, the electronic controller also being communicatively coupled to a communication arrangement configured to send or receive messages from or to the electronic controller.

9. The FOG separator apparatus as claimed in claim 1, in which the third reservoir is contained or nested within the second reservoir.

10. The FOG separator apparatus as claimed in claim 1, in which:

the FOG separator apparatus includes a fourth reservoir or chamber separated from the second reservoir by a third weir;

the syphon outlet is provided in the fourth reservoir; and

wastewater syphoned by the syphon arrangement is deposited into the fourth reservoir and permitted to overflow the third weir and return to the second reservoir.

11. The FOG separator apparatus as claimed in claim 10, in which a height or level of the third weir is adjustable, thereby to permit tuning or adjustment of the overflow of the third weir.

12. The FOG separator apparatus as claimed in claim 1, in which:

the first and second weirs are at the same level; and/or

the first weir and/or the second weir are above the third level.

13. The FOG separator apparatus as claimed in claim 1, in which:

the FOG separator apparatus includes a first wall which defines the first weir and which separates the first and second reservoirs from each other; and

the first wall defines one or more apertures or vents, at one or more levels beneath the first weir, to permit wastewater containing FOG to flow from the first reservoir to the second reservoir not only over the first weir but also through the apertures.

14. The FOG separator apparatus as claimed in claim 1, in which the pump directs the FOG away from the reservoirs to an external FOG treatment system, the FOG separator apparatus therefore being considered a FOG concentrator.

15. The FOG separator apparatus as claimed in claim 1, which includes:

an outer enclosure to accommodate the reservoirs; and

a lining or shell provided inside the outer, enclosure, the lining or shell providing some of the structure defining some of the reservoirs.

16. The FOG separator apparatus as claimed in claim 1, which is modular and in which plural FOG separator apparatus can be linked in parallel and/or in series.

17. The FOG separator apparatus as claimed in claim 1, in which:

the FOG separator apparatus includes a bubble generator to generate bubbles in one or more of the reservoirs; and

the bubble generator is configured to provide bubbles of primarily O_2 or O_3.

18. The FOG separator apparatus as claimed in claim 1, which includes a belt or wheel oil skimmer in the third reservoir, configured to skim off a floating FOG layer.

19. A method of separating FOG using the FOG separator apparatus as claimed in claim 1, the method including:

permitting overflow at the first weir of at least FOG from the first reservoir to the second reservoir;

permitting overflow at the second weir of at least FOG from the second reservoir to the third reservoir;

syphoning, by the syphon arrangement, from the syphon inlet at the first level at least wastewater from the third reservoir when a liquid level in the third

reservoir is equal to or higher than the syphon outlet at the second level which is higher than the first level; and

pumping, by the pump arrangement comprising the FOG pump and the sensor provided in the third reservoir at a third level which is higher than the second level, from the pump inlet in the third reservoir between the first and second levels, when the pump is activated by the sensor in response to the liquid level or concentration in the third reservoir triggering the sensor.