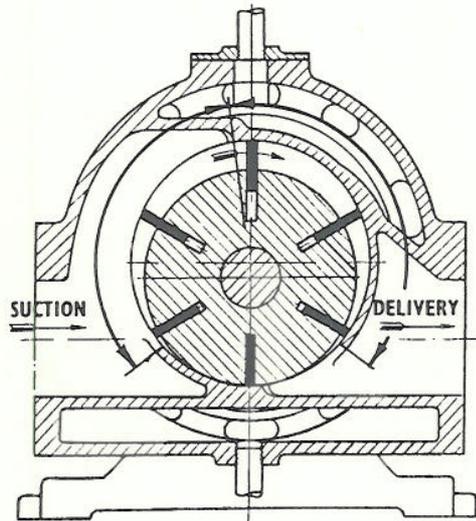


THE SLIDING VANE ROTARY COMPRESSOR AND ITS PARTICULAR APPLICATION
IN RECIRCULATION OF BIOLOGICAL GAS IN ANAEROBIC DIGESTORS

The MAPRO sliding vane rotary consists basically of an eccentrically mounted rotor slotted to receive sliding blades which sub-divide the crescent shaped space between the rotor and cylinder into a number of compartments. When the rotor is revolving, centrifugal force drives the blades out to contact the cylinder walls which trap the gas load at maximum volume position, the gas being gradually compressed during rotation and finally discharged at the required compression ratio.



The shaft and rotor assembly is supported at both ends by roller bearings and is axially located by an angle ring HJ type which maintains the running clearances necessary for high volumetric efficiency.

Lubrication of the unit is accomplished by a multi-feed direct coupled lubricator which supplies oil to the bearings, mechanical seals and blades.

Lubrication is necessary to ensure low friction coefficients among stationary and moving parts. The oil quantity used is very small generally (approximately 80 gr/h per 1000 m³ of sucked gas).

The lubricating oil used for strictly mechanical purposes plays, besides, some very important collateral roles :

1. protection of internal surfaces with a constant renewed film

2. internal cleaning of compressor taking out solid or liquid impurities carried by sucked gas

Due to these characteristics, the sliding vane rotary compressor is the only machine suitable for compressing acid gases with common materials such as cast iron and ordinary steels with a very satisfactory corrosion strength.

That is the first reason of its very wide use in the compression of biological and combustion gases, rich of CO₂ and steam saturated.

Furthermore, lubrication with renewed oil permits to suck not only dirty but also steam saturated gases or even containing small drops of liquid. Indeed, even though the rotary vane compressor is an internal compression machine, the accidental suction of liquid (up to 10% of the internal volume) can be accepted without any problems except for a temporary quicker blades' wear.

That is the second reason of its particular suitability for compressing biogas, usually saturated and dirty.

The sliding vane machine has moreover, compared with other kinds of compressors, the following advantages :

- simple and economic maintenance, very simplified assembly and disassembly due to the the reduced number of parts composing the machine body
- high efficiency and consequently lower absorbed powers
- lower noise level

That is why the MAPRO sliding vane rotary compressors are so widely diffused in the recirculation of biogas in anaerobic digestors as per the reference list attached.