MAPRO®
INTERNATIONAL

ISO 9001 - Cert. n. 1835

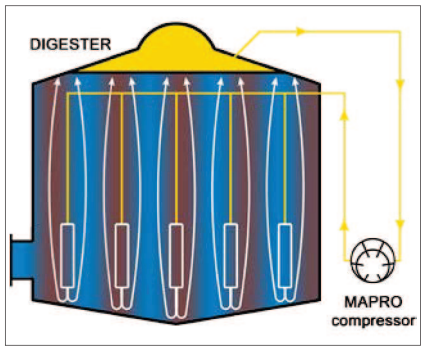
MAPROBioGas
Technology

SLIDING VANE ROTARY COMPRESSORS for BIOGAS

Biogas recirculation into anaerobic digesters

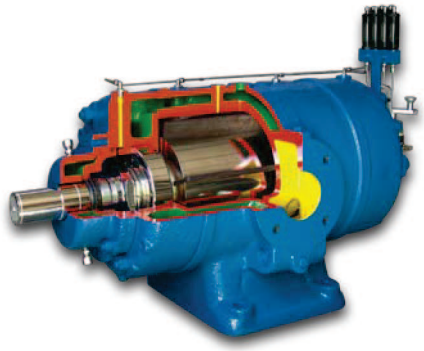
Anaerobic digestion is a biological process in which microorganisms break down biodegradable material in the absence of oxygen. It is used as part of the process to treat effluents, sewage sludge, and almost any organic material. It takes place into digesters where **the process produces a biogas**, mainly **consisting of methane and carbon dioxide**.

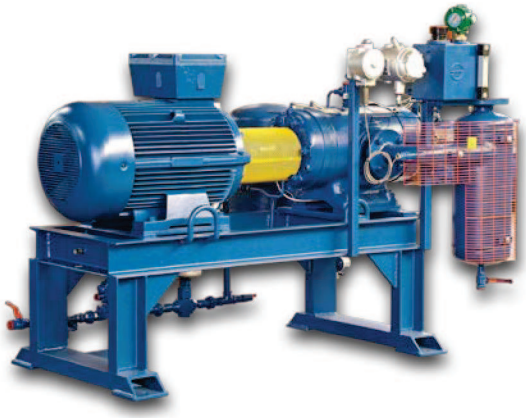
MAPRO® sliding vane rotary compressors are widely used for the agitation of the digester contents.
MAPRO® compressor sucks the biogas from the digester dome and re-inject it at the bottom of the digester, thus providing uniform conditions of the organic material inside.



Main advantages of using MAPRO® compressors

- **Unchangeable and high efficiency**. The **power needed for the biogas compression is well lower than that required from other types of compressors with consequent lower operating costs**
- **Simple and economic maintenance**
- **Gas flow without pulsations**
- **Internal protection during compression of biogas**. The thin film of lubricating oil, constantly renewed, used for purely mechanical purposes, plays also two important roles:
  - protection of the compressor internal surfaces from attack of acids contained in the biogas. Due to this very satisfactory corrosion strength, the sliding vane **rotary compressor is the only machine made of common materials such as cast iron and ordinary steel which do not need any protection coat** for biogas compression
  - removal of the impurities which are in the biogas in the form of solid or liquid particles, with an effect of internal cleaning of the compression chamber





Conformity with 94/9/EC Directive (ATEX)

All MAPRO® biogas compressors are designed in accordance with the 94/9/EC Directive, Equipment-Group II, **Category 2**, for use in hazardous places, classified as **Zone 1**, where an explosive atmosphere, consisting of a mixture of air and flammable gases, is likely to occur.

For the mixtures of combustible gases, such as **biogas, MAPRO®** has chosen to **feature the specific technology** used **for** the manufacturing of the **compressors, with the trademark**:

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MAPRO BioGas Technology

SLIDING VANE ROTARY COMPRESSORS for BIOGAS

Performance

Outlet pressure [bar g]		0,5		1		1,2		1,5		1,8		2		2,3		2,5		2,8		3		3,2	
Flow rate		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h		m³/h	
Absorbed power			kW		kW		kW		kW		kW		kW		kW		kW		kW		kW		kW
rpm	Compressor type																						
	RF4 G	**33**	1,3	**30,3**	1,6	**29,3**	1,7	**27,6**	1,9	**26**	2	**25**	2,2	**22**	2,4								
	RF6 G	**53**	1,9	**49**	2,5	**47,4**	2,7	**45**	3	**42,6**	3,3	**41**	3,5	**37**	3,8								
	RF9 G	**83**	2,4	**78**	3,3	**76**	3,6	**73**	4	**70**	4,4	**68**	4,6	**65**	5								
	RF12 G	**104**	3,1	**99**	4,2	**97**	4,6	**94**	5,1	**91**	5,6	**89**	5,9	**85**	6,4								
	RFL15 G	**124**	4	**118**	5,2	**115**	5,6	**112**	6,2	**108**	6,8	**105**	7,2	**101**	7,8	**98**	8,2						
	RFL20 G	**174**	4,9	**166**	6,7	**162**	7,3	**158**	8,2	**153**	9,1	**149**	9,7	**144**	10,6	**141**	11,2						
	RFL25 G	**218**	5,7	**208**	8,2	**204**	9	**198**	10,2	**192**	11,4	**188**	12,2	**182**	13,4	**176**	14,2						
	RFL30 G	**273**	7,2	**262**	10	**257**	11,1	**250**	12,5	**242**	13,9	**236**	14,9	**227**	16,6	**220**	17,7						
	RFL40 G	**385**	10,4	**365**	14,4	**357**	15,6	**345**	17,4	**332**	19,2	**323**	20,4	**310**	22,2	**300**	23,4						
	RFL50 G	**465**	12,2	**440**	17	**430**	18,4	**415**	20,5	**400**	22,6	**390**	24	**372**	26,2	**360**	27,7						
	RFL60 G	**550**	14	**524**	19,4	**512**	21,4	**494**	24,1	**476**	26,8	**464**	28,6	**446**	31,3								
	RFL65 G	**590**	14,9	**560**	20,8	**548**	22,7	**530**	25,7	**512**	28,6	**500**	30,6	**482**	33,6								
1450	R15 G	**144**	4,9	**138**	5,8	**135**	6,3	**132**	6,9	**128**	7,6	**125**	8	**122**	8,7	**119**	9,1	**115**	9,8	**111**	10,2	**107**	10,7
	R20 G	**181**	5,5	**174**	6,9	**171**	7,5	**166**	8,4	**158**	9,4	**155**	9,9	**151**	10,7	**148**	11,2	**143**	12	**140**	12,6		
	R25 G	**242**	6,9	**232**	8,8	**228**	9,6	**222**	10,8	**216**	11,9	**212**	12,7	**206**	13,8	**202**	14,6	**196**	15,7	**192**	16,5	**188**	17,3
	R30 G	**302**	8,4	**290**	10,7	**285**	11,8	**278**	13,3	**266**	15	**261**	15,8	**254**	17,2	**249**	18	**242**	19,3	**237**	20,2		
	R40 G	**385**	11,4	**370**	14,2	**364**	15,4	**355**	17,2	**346**	18,9	**340**	20	**331**	21,5	**325**	22,5	**316**	24	**310**	25	**304**	26
	R48 G	**448**	12,8	**432**	16,1	**426**	17,5	**416**	19,7	**406**	21,6	**400**	22,9	**382**	25,8	**375**	27	**364**	28,8	**357**	30	**350**	31,2
	R52 G	**507**	14,2	**488**	17,7	**480**	19,7	**469**	22,3	**458**	24,3	**450**	25,6	**439**	27,9	**431**	29,2	**420**	31,3	**412**	32,7	**404**	34
	R61 G	**580**	16,2	**559**	20,4	**550**	22,2	**537**	24,9	**524**	27,4	**516**	29,2	**494**	32,7	**485**	34,2	**473**	36,5	**464**	38	**456**	39,5
975	R60 G	**587**	17,2	**565**	21,8	**556**	23,8	**543**	26,5	**530**	28,9	**521**	30,5	**508**	33	**499**	34,7	**486**	37	**477**	38,4	**468**	40
	R70 G	**677**	20	**652**	24,5	**642**	26,8	**627**	29,7	**612**	32,6	**588**	35,6	**573**	39	**563**	41	**548**	43,8	**538**	45,8	**528**	47,5
	R80 G	**832**	23,5	**802**	29,5	**790**	32,4	**772**	36	**754**	39,5	**742**	41,9	**724**	45,4	**712**	47,8	**694**	51,3	**682**	53,3	**670**	55,2
	R100 G	**960**	27	**926**	33,5	**912**	36,7	**892**	40,9	**872**	45	**839**	49	**819**	54	**805**	56,7	**785**	60,7	**771**	63,4	**757**	66
	R121 G	**1145**	30,5	**1105**	39	**1089**	43	**1064**	48,3	**1040**	53	**1002**	58	**978**	63,7	**963**	67	**939**	71,8	**923**	75	**907**	78
735	R140 G	**1293**	35	**1248**	45	**1230**	49,5	**1203**	56	**1176**	61,5	**1158**	65	**1131**	70,5	**1113**	74	**1086**	79,5	**1068**	83	**1050**	86,5
	R160 G	**1430**	39	**1380**	49	**1360**	54	**1330**	61	**1300**	67	**1280**	71	**1250**	77	**1230**	81	**1200**	87	**1180**	91	**1160**	95
	R180 G	**1690**	47	**1630**	58	**1606**	64	**1570**	72	**1534**	79,5	**1510**	84	**1474**	91	**1450**	95	**1414**	102	**1390**	107	**1366**	111
	R190 G	**1920**	51	**1852**	65	**1824**	72	**1782**	81	**1740**	90	**1690**	97	**1651**	105	**1625**	111	**1586**	119	**1560**	125	**1534**	130
585	R250 G	**2325**	64	**2250**	79	**2219**	86	**2140**	100	**2095**	110	**2065**	116	**2020**	125	**1990**	131	**1945**	141	**1915**	146	**1885**	153
	R300 G	**2980**	78	**2880**	98	**2840**	107	**2750**	126	**2690**	138	**2650**	146	**2590**	158	**2550**	166	**2490**	178	**2450**	186	**2410**	194

Flow rates and absorbed power refer to biogas with specific weight 1.14kg/Nm3 and at the suction conditions of: 35°C and 1033 mbar abs.
Tolerance on the given values in accordance with the Standard ISO 1217

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