



VARIABLE-SPEED COMPRESSORS  
IVR from 7,5 to 75 kW

T E C H N O L O G Y Y O U C A N T R U S T



# IVR for Environment

Our extensive experience of compressed air has taught us that, regardless of a compressor's size:

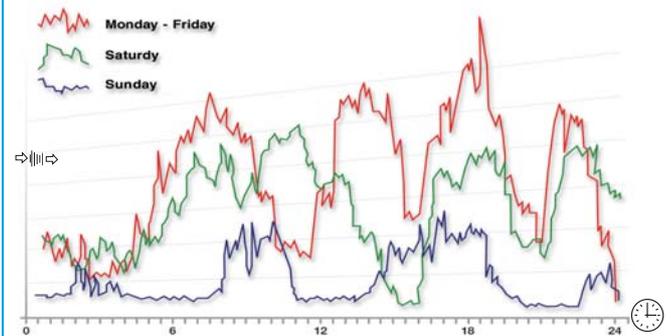
- the amount of compressed air needed varies according to consumption peaks,
- greater the variation in compressed air consumption, the more energy is consumed per liter of air produced,
- most installations require two or three compressors of different sizes.

Variations in the amount of compressed air needed cause constant loading and emptying of the compressors or choked intake.

If a compressor operates empty, energy is wasted while no work is performed.

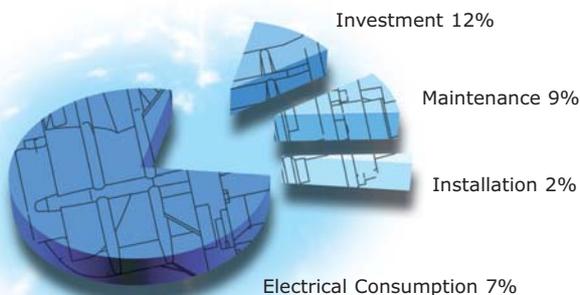
If a compressor operates with choked intake, it consumes more energy than would be required to produce the same amount of compressed air.

The amount of compressed air needed during a given day or week varies depending on production.



These variations may be more or less intense. The more intense they are, the more energy is consumed when the compressor operates empty.

Only producing the air needed for the production cycle is an intelligent way to cut consumption and power costs.



It is well-known that in 3-5 years of operation, over three quarters of the overall cost of a compressor is ascribable to electricity consumption.

REDUCING electricity consumption means:

- Lower power costs = **SAVINGS**
- Lower power consumption = **ENVIRONMENTAL FRIENDLINESS**

**Energy saving is the best possible investment for improved future performance.**



# IVR high Technology

from 0,300 to 13,338 m<sup>3</sup>/min. for every requirement

Variable-speed compressors with Inverters from MARK operate optimally under any load conditions and ensure maximum capacity with minimum consumption.

All components are reliable, efficient and time-proven, and are the standard components used in traditional machines.

The inverter is made by the world's leading brand, and is built into the machine.

**Compressor** with asymmetric screws. High efficiency, high yield and low noise level.

Main **electric motor** enclosed, air-cooled with external ventilation and Class F insulation.

Triple-action **air/oil separator** guarantees compressed air delivery with lower residual-oil content.

Compact, highly efficient air/air and air/oil **coolers** maintain optimum oil temperature and keep delivery air cool



**Control panel** with state-of-the-art control system, microprocessor diagnostics and alphanumeric display for safe, efficient machine management. All data displayed in standardized symbols

Built-in **frequency converter** for compressor speed variation and ramped motor startup, including standard RFI filters.

**Sound-proofing** fairing in wide, painted steel panels, removable for easy access to all internal components.

Sturdy steel **base** set-up for easy handling.

# IVR Range 7,5 - 75 kW



## Easy maintenance

Particular care has been taken to simplify all maintenance operations:

- wide, easily removable side doors or panels ensure easy access to all internal components
- all components can be removed without special equipment
- scheduled signaling of all maintenance required.

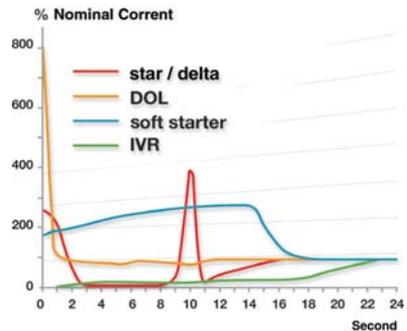
## Easy to use

The compressor is controlled by a safe, state-of-the-art monitoring system proven through years of use in traditional machines:

- automatically manages the multiple running phases, such as startup, adjustment, compressor control and shutoff
- stops the compressor in the event of breakdowns
- All messages are digital, displayed simply and clearly, and directly readable without special codes.

## Soft startup

Traditional startup results in high current peaks.



Startup with the inverter:

- does NOT cause current peaks
- does NOT result in overheating to an extent that limits the number of startups
- does NOT cause mechanical stress to coupling elements
- EXTENDS the life of bearings, belts and transmission joints.



## Integrated INVERTER

A highly efficient frequency converter with low harmonic distortion ensures excellent output for all compressor operations.

A standard product compatible with our compressors.

Conforms to current standards of electromagnetic compatibility.

Built into the machine in a well-aired housing.



# Savings...



...with the variable-speed compressor from MARK

## Principle

Variations in the amount of compressed air required cause corresponding variations in line pressure.

Pressure variation is detected by the compressor delivery pressure sensor, which processes the signal and transmits it to the control system.

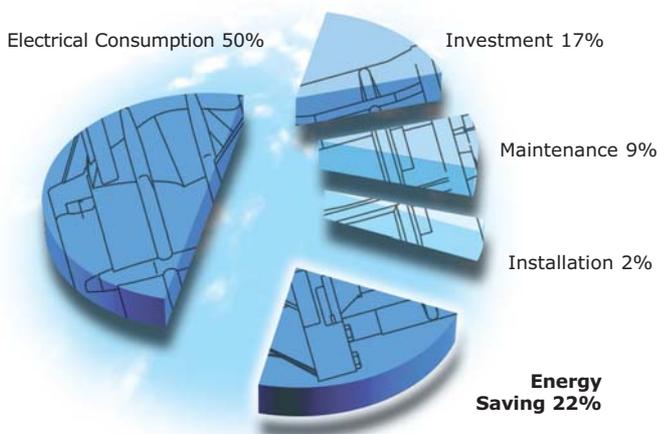
The machine varies motor speed and keeps line pressure constant, adjusting automatically according to consumption. This means it only supplies the amount of compressed air required by the system.

The motor speed is regulated by varying the electric motor feed frequency.

Every re-start of the electric motor using the INVERTER is ramped, with limited current. This means an unlimited number of startups can be performed, unlike traditional compressors with direct or ASD startup.

## Result

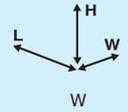
The IVR screw compressor, coupled to a system that electronically adjusts the motor's rotation speed, **ONLY CONSUMES** the energy needed to produce the compressed air required by the system. This saves over 20% in approximately 20,000 hours of operation compared to traditional equal power.



## Advantages

- **LOWER RUNNING COST**
  - Only uses energy for air production.
  - No energy wasted on partial loading
- **CONSTANT PRESSURE**
  - Lower energy consumption.
  - Higher process stability.
- **LOWER MAXIMUM PRESSURE**
  - Lower energy consumption for lowest maximum pressure.
  - Reduced compressed air leaks.
- **CONSTANT POWER FACTOR (Cos φ)**
  - High value, even with reduced loads.
  - No need for rephasing.
  - No penalties imposed by power suppliers.
- **RAMPED MOTOR-STARTUP**
  - No current peaks.
  - Lower energy consumption.
  - Less stress on coupling elements.
  - Improved mechanical reliability.
  - Unlimited startups.
  - No penalties imposed by power suppliers.
- **STANDARD COMPONENTS**
  - Reliable, standard motors and inverter.
  - Customer service available everywhere.
- **EASY MAINTENANCE**
  - Easy component access.
  - Operation parameter monitoring.
- **LONGER MAINTENANCE INTERVALS**
- **ELECTROMAGNETIC COMPATIBILITY**
- **SILENT RUNNING**
- **MARK GUARANTEE**
- **PROFITABLE IN THE LONG RUN**

In response to these needs, MARK offers its own range of compressors with **INVERTER** and its own technical experts to analyze your requirements.

TECHNICAL DATA (ACCORDING TO ISO 1217 AND CAGI PNEUROP PN8NTC2)														
Type					max  min.									
	bar	psi	HP	kW	m³/1'	m³/h	cfm	dB (A)	V/Hz/Ph	gas	L	W	H	Kg
<b>MSA 7,5 IVR</b> ①	8	116	10	7,5	1,120	67	40	64	400/50/3	3/4"	1000	664	1045	230
	10	145	10	7,5	0,335	20	12							
<b>MSA 11 IVR</b> ①	8	116	15	11	1,620	97	57	63	400/50/3	3/4"	1000	664	1045	245
	10	145	15	11	0,505	30	18							
<b>MSA 15 IVR</b> ①	8	116	20	15	2,000	120	70	65	400/50/3	3/4"	1000	664	1045	250
	10	145	20	15	0,623	37	22							
<b>MSB 18 IVR</b>	8	116	25	18,5	2,900	174	102	68	400/50/3	1 1/4"	1330	815	1190	455
	10	145	25	18,5	0,870	52	31							
<b>MSB 22 IVR</b>	8	116	30	22	2,690	161	95	68	400/50/3	1 1/4"	1330	815	1190	470
	10	145	30	22	0,800	48	28							
<b>MSC 30 IVR</b>	8	116	40	30	4,900	294	173	69	400/50/3	1 1/4"	1100	1390	1805	750
	10	145	40	30	1,470	88	52							
<b>MSC 37 IVR</b>	8	116	50	37	6,080	365	215	70	400/50/3	1 1/4"	1100	1390	1805	850
	10	145	50	37	1,760	106	62							
<b>MSC 45 IVR</b>	8	116	60	45	7,790	467	275	71	400/50/3	1 1/4"	1100	1390	1805	870
	10	145	60	45	2,255	135	80							
<b>MSD 55 IVR</b>	8	116	75	55	10,180	611	359	69	400/50/3	1 1/2"	1100	1930	1765	1115
	10	145	75	55	3,095	186	109							
<b>MSD 75 IVR</b>	8	116	100	75	13,880	833	490	69	400/50/3	1 1/2"	1100	1930	1765	1205
	10	145	100	75	4,220	253	149							
					11,860	712	419							
					3,606	216	127							

Unit performance measured according to ISO 1217, Ed.3, Annex C-1996.

Mean noise level measured according to ISO 2151/Pneurop/Cagi PN8NTC2 test code; tolerance 3 dB(A).

① Available version tank mounted with or without dryer and filters

② Reference conditions: intake : 760 mmHg, 20°C, 70% UR

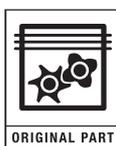
output : MSA - C - D = P. max - 0,5 bar : MSB/8 = 7 bar : MSB/10 = 9,5 bar, 5 bar

③ Sizes and weights without packaging

Our products are under constant development. We therefore reserve the right to make any product changes deemed



According to



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