

# Ingersoll Rand Compressed Air System Solutions

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Commercial Business Unit

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# **IR** Ingersoll Rand

Industrial Technologies

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IR delivers AIR SOLUTIONS that spans entire range of compressed air system, from compressor to point of use, while improving efficiency of the entire system, increasing reliability, quality and uptime availability of compressed air - 4<sup>th</sup> utility.

The above process is enabled by air audits, timely service, remote monitoring, controls, installation & piping solutions, extended maintenance and financing its delivered by solutions & service providers, focused on customer delight.

## Introduction

### Putting Air to Work

For over 100 years, Ingersoll Rand has been the world leader in air compressors and air system accessories. We provide compressor system ranging from 1 HP to 6000 HP. We understand the needs and requirements for air systems and the business demands that are faced everyday. Increasing energy costs and reduced margins require increased reliability and efficiency from not only your air compressor, but your entire air system.

Simply stated, your air system is much more than an air compressor. It's the complete system - the piping, filters, dryers, drains, hoses, valves and point-of-use tools. And it all needs to work at peak efficiency with the quality and reliability to get the job done.

### Solutionizing™ from Ingersoll Rand

We no longer consider ourselves an "air compressor company." We are moving far from the typical point-solution for your business to become a provider of complete air solutions that saves money from the compressor room all the way to the point-of-use. Ingersoll Rand is totally focused and dedicated to reducing your operational costs through efficient, reliable and energy-saving products, innovative maintenance services, controls and financing to maximize performance across your entire air system.

**No matter the size of your operation, Ingersoll Rand is the source for complete and cost-effective air solutions for your business.**

MORE THAN  
**100**

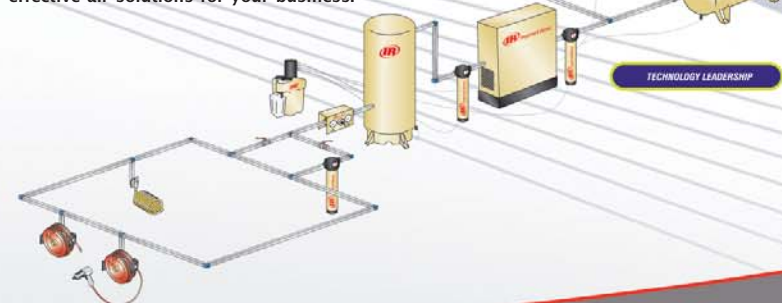
YEARS



KNOWLEDGEABLE SALES STAFF



TECHNICAL ASSISTANCE



TECHNOLOGY LEADERSHIP

## Glossary

**Adsorption**  
The process by which a desiccant with a highly porous surface attracts and removes the moisture from compressed air. The desiccant is capable of being regenerated.

**Aftercooler**  
A heat exchanger used for cooling air discharged from a compressor.

**CFM (Cubic Feet per Minute)**  
The standard measurement of air flow. Flow rate of air measured and converted to a standard set of reference conditions.

**Compressed Air**  
Free air that has been pressed into a volume smaller than it normally occupies. Compressed air performs work when the air is released and allowed to expand to its normal free state.

**Compressors**  
Machines designed for compressing air from an initial intake pressure to a higher discharge pressure.

**Constant Speed Control**  
A system in which a compressor is run continuously and matches air supply to air demand by varying compressor load.

**Demand**  
Flow of air at specific conditions required at a point or by the overall facility.

**Desiccant**  
A material having a large proportion of surface pores, capable of attracting and removing water vapor from the air.

**Dew Point**  
The temperature at which moisture in the air will begin to condense if the air is cooled at constant pressure. At this point the relative humidity is 100%.

**Duty**  
The percentage of time that a compressor is designed to actually run.

**Free Air Delivery (FAD)**  
Actual quantity of air delivered at the conditions of temperature and pressure existing at the inlet to the compressor.

**Full Load**  
Air compressor operation at full speed with a fully open inlet and discharge delivering maximum air flow.

**Intercooler**  
Device that removes the heat of compression of the air between consecutive stages of multi-stage compressors.

**l/min (Litres per minute)**  
The standard measurement of air flow. Flow rate of air measured and converted to a standard set of reference conditions.

**m<sup>3</sup>/min (Meter<sup>3</sup> per minute)**  
The standard measurement of air. Flow rate of air measured and converted to a standard set of reference conditions.

**Online/Offline Pressure**  
The minimum and maximum discharge pressure at which the compressor will switch from unload to load operation (online) or from load to unload (offline).

**Piston Displacement (PD)**  
The theoretical volume of air swept through by the pistons.

**Pneumatic Tools**  
Tools that operate by air pressure.

**Barg (Bar Gauge)**  
The standard metric measurement of air pressure.

**PSI (Pounds per Square Inch)**  
The standard imperial measurement of air pressure.

**Receiver**  
A vessel or tank used for storage of air under pressure.

**Refrigerated**  
Cools compressed air by mechanical refrigeration.

**Single Stage**  
Compression in one step. Pressures upto 135 PSI.

**Start/Stop Control**  
A system in which air supply is matched to demand by the starting and stopping of the unit.

**Two-Stage**  
Compression in two steps with intercooling in-between for greater efficiency. Pressures upto 175 PSI.

## What is Compressed air?

Compressed air is used widely throughout industry and is often considered the "fourth utility" at many facilities. Almost every industrial plant, from a small machine shop to an immense pulp and paper mill, has some type of compressed air system. In many cases, the compressed air system is so vital that the facility cannot operate without it. Plant air compressor systems can vary in size from a small unit of 5 horsepower (hp) to huge systems with over 6,000 hp.

In many industrial facilities, air compressors use more electricity than any other type of equipment. Inefficiencies in compressed air systems can therefore be significant. Energy savings from systems improvements can range from 20-50% or more of electricity consumption. For many facilities this is equivalent to thousands, or even Lakhs of Rupees of potential annual savings, depending on use. A properly managed compressed air system can save energy, reduce maintenance, decrease downtime, increase production throughput, and improve product quality.

Compressed air systems consist of a supply side, which includes compressors and air treatment, and a demand side, which includes distribution and storage systems and end-use equipment. A properly managed supply side will result in clean, dry, stable air being delivered at the appropriate pressure in a dependable, cost-effective manner. A properly managed demand side minimizes wasted air and uses compressed air for appropriate applications. Improving and maintaining peak compressed air system performance requires addressing both the supply and demand sides of the system and how the two interact.

## Rotary Screw Air Compressors

When you choose an Ingersoll Rand rotary screw air compressor, you've selected the compressor rated highest in the world for its quality and reliability. Engineered for high-performance, reliability and efficiency, Ingersoll Rand rotary screw compressors provide easy operation, low maintenance and a reliable air supply.

### Rotary Compressor

The rotary screw air compressor has become the most popular source of compressed air for industrial applications. A major reason is its simple compression concept. Air enters a sealed chamber where it is trapped between two contra-rotating rotors. As the rotors intermesh, they reduce the volume of trapped air and deliver it compressed to the proper pressure level. This simple compression concept, with continuous contact cooling, allows the rotary screw air compressor to operate with temperatures approximately one half that generated by a reciprocating compressor. This lower temperature enables the rotary screw air compressor to operate in a "fully loaded" continuous duty cycle 24 hours per day, 365 days per year, if necessary. Its ability to operate for extended periods of time makes the rotary compressor ideal for demanding industrial applications.

### Why Rotary?

- Designed to provide pulsation-free air 24 hours a day
- 100% continuous duty
- Quiet operation
- Energy efficient at full load
- Extended service intervals
- Reliable long life
- Improved air quality



# Nirvana (5.5-30 kW) – The Right Air, On Demand...

## Nirvana Delivers

- Maximum operating flexibility to meet your individual site needs
- Total Air System (TAS) in one package
- World class sound, as low as only 65 dB(A)
- High quality filtered and dried discharge air
- Lowest power consumption at start-up, full-load, and part-load conditions
- Up to 35% energy savings
- Inherent reliability through elimination of parts wear and simplicity of design

## Featuring

- Innovative component integration
- Innovative IntelliDrive scalability
- Preliminary diagnostics
- Expanded user control interface
- Improved VSD capacity regulation reliability
- Improved acoustic engineering

## Performance by Design

Nirvana is the only compressor that has the ability to grow with your business and be a true partner in productivity and product quality. Nirvana incorporates smart package integration and state-of-the-art IntelliDrive technology to provide the right air on demand.



Nirvana 15-30 kW  
Variable speed drive rotary air compressor with total air system option.



Nirvana 5.5-11 kW  
Fully enclosed variable speed drive rotary air compressor unit.

## "Integration Redefined"

Coalescing and Particle Filters

IntelliDrive

Airend

Enclosed Rotary Compressor

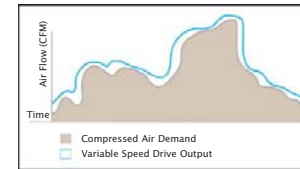
Cycling Refrigerated Dryer



## Technology in a 5.5-30 kW Compressor

### Variable Speed Drive Benefit

"Cruise control for your compressed air system"



Nirvana control is delivered by a variable speed drive. The Nirvana 5.5-30 kW VSD maintains a close controlled system pressure, automatically adjusting its output to achieve the highest efficiency for your operation. This avoids wasted energy caused by excessive pressure band or unloaded running.

### Growth-aligned to Your Demand

"The compressor with 'virtual gears' that can grow with you"

Nirvana will operate effectively, maintaining a stable pressure between maximum capacity at full power down to as little as 30% of its output before turning off. It is also the only compressor that allows the owner to upgrade the drive to the next largest horsepower.

- 5.5 kW can be upgraded to 7.5 kW or 11 kW
- 15 kW can be upgraded to 18 kW
- 22 kW can be upgraded to 30 kW



The Nirvana 15-30 kW compressor also allows the user to pick the optimal operating pressure between 65-150 psig in one standard machine.

The Nirvana 5.5-11 kW compressor utilizes an IntelliKey to maximize performance when pressure is changed.

### Nirvana Performance Data

50 Hz	Nominal Power	Delivered Pressure Range		Max. Capacity		
	kW	psig	bar(g)	cfm	m <sup>3</sup> /min	dB(A) <sup>1</sup>
<b>7.5-15 hp/5.5-11 kW</b>						
IRN5K-8	5.5	115	8.0	31	0.88	65
IRN5K-10	5.5	150	10.4	26	0.74	65
IRN7K-8	7.5	115	8.0	42	1.19	65
IRN7K-10	7.5	150	10.4	35	0.99	65
IRN7K-14	7.5	200	13.8	25	0.71	65
IRN11K-8	11.0	115	8.0	60	1.70	65
IRN11K-10	11.0	150	10.4	51	1.45	65
IRN11K-14	11.0	200	13.8	40	1.13	65
<b>20-40 hp/15-30 kW<sup>(2)</sup></b>						
IRN15K	15.0	65-150	4.5-10.4	87	2.46	65
IRN18K	18.5	65-150	4.5-10.4	108	3.06	65
IRN22K	22.0	65-150	4.5-10.4	130	3.68	65
IRN30K	30.0	65-150	4.5-10.4	161	4.56	65

### Intellisys™ Microprocessor Controller



Nirvana 15-30 kW Integrated VSD and compressor user interface.

Dimensions	Length		Width		Height	Weight	
	inch	mm	inch	mm	inch	mm	kg
<b>7.5-15 hp/5.5-11 kW</b>							
Baseplate Unit	51.8	1315	28.8	731	32.9	835	350
272 Litre Receiver	51.6	1311	28.8	731	57.5	1460	458
500 Litre Receiver	81.1	2059	28.8	731	57.5	1460	513
<b>20-40 hp/15-30 kW<sup>(1)</sup></b>							
Baseplate Unit	64.2	1630	28.5	724	55.8	1418	612



Nirvana 5.5-11 kW Integrated user interface and maintenance indicator.

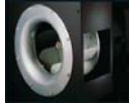
<sup>(1)</sup> Maximum capacity tested in accordance with ISO 1217 1996 Annex C

<sup>(2)</sup> Performance is based on non-TAS models. <sup>(3)</sup> Maximum capacity is based on 115 psig (8 barg)

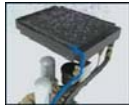
† Measured in accordance with CAGI-pneurop test code PNBNTC2.3

## 5.5-11 kW Rotary Screw Air Compressors

### Rotary for Everyone



**Low sound levels**  
The centrifugal blower keeps the noise of Infinity at such low level that allows installation close to point of use.



**Advanced Cooling**  
High efficiency, oversized combination cooler with roof mount discharge for ease of ducting.



**Dual control operation**  
Provide flexibility to choose control of operation according to operation requirements. In times of low usage, machine shuts down to eliminate wasteful running, resulting in low operation cost.



**Poly-V Belt Drive**  
Premium drive system to minimize belt stretching and increase air output.



**Simple Diagnostics**  
Visual indication of operating status, hours & fault warnings for ease of operation and reduced downtime.



**Generous Serviceability**  
Spacious design for ease of serviceability. Consumable items are extremely easy to access for quick and cost effective preventative maintenance.



**Ultra Coolant**  
Ingersoll Rand's Ultra Coolant provides 9,000 hour extended coolant life, simple condensate separation and high level of biodegradability.



**Hot box Cool box design**  
Exclusive design ensures extended life and reliability. The unique design enable airend to achieve starting temperature as soon as possible and keep heat away from the remaining components like motor.

Model	Power	Pressure		Capacity		
	kW	psig	barg	cfm	m <sup>3</sup> /min	dB(A) <sup>†</sup>
IN-7-7	5.5	102	7	27.5	0.78	72±3
IN-7-8	5.5	116	8	26.0	0.74	72±3
IN-7-10	5.5	145	10	23.6	0.67	72±3
IN-10-7	7.5	102	7	37.4	1.06	72±3
IN-10-8	7.5	116	8	35.3	1.00	72±3
IN-10-10	7.5	145	10	30.0	0.85	72±3
IN-15-7	11	102	7	54.4	1.54	72±3
IN-15-8	11	116	8	51.2	1.45	72±3
IN-15-10	11	145	10	44.1	1.25	72±3

Dimension	Length	Width	Height	Weight
	mm (in)	mm (in)	mm (in)	kg
Baseplate Unit	826 (32.5)	759 (29.9)	782 (56.4)	280
272 Litre Receiver	1437 (53)	762 (30)	1433 (56.4)	397

<sup>†</sup> Measured in accordance with CAGI-pneurop test code PNBNTC2.3  
<sup>†</sup> Sound levels per ISO 2151:2004 annex C



## 4-11 kW TAS Rotary Screw Air Compressors

### A new standard of performance

The UP-Series is more than an integrated air system, it's a complete air solution designed to maximize the key drivers of profitability in today's business:

- Uptime Reliability
- Shop Productivity
- Flexibility Of Operation
- Energy Efficiency & Savings

#### Performance by Design

Integrated air compressor module combining:

- High efficiency, industry-leading airend
- Integral coolant sump
- High efficiency separation system
- Integrated air passages, in place of troublesome hoses and connections

The UP series delivers exceptional value and real world advantages like, Reliability, Efficiency, Flexibility and Productivity.




### 50 Hertz Total Air System Specifications

Model	kW	Discharge pressure		Capacity <sup>*</sup>		
		Compressor bar(g)	Package bar(g)	m <sup>3</sup> /min	cfm	dB(A) <sup>†</sup>
UP5-4TAS-8	4	8	7.3	0.55	19.5	65
UP5-4TAS-10	4	10	9.3	0.45	16	65
UP5-5TAS-8	5.5	8	7.3	0.82	29	65
UP5-5TAS-10	5.5	10	9.3	0.74	26	65
UP5-5TAS14	5.5	14.5	13.8	0.51	18	65
UP5-7TAS-8	7.5	8	7.3	1.08	38	68
UP5-7TAS-10	7.5	10	9.3	0.96	34	68
UP5-7TAS-14	7.5	14.5	13.8	0.68	24	68
UP5-11cTAS-8	11	8	7.3	1.60	56.5	69
UP5-11cTAS-10	11	10	9.3	1.42	50	69
UP5-11cTAS-14	11	14.5	13.8	1.08	38	69

Dimension	Length	Width	Height	Weight
	mm (in)	mm (in)	mm (in)	kg
Base Mount	1042 (41)	734 (28.9)	914 (36)	330
272 Litre Receiver	1311 (51.6)	734 (28.9)	1541 (60.7)	455

<sup>\*</sup> Performance in accordance with ISO 1217 1996 annex C  
<sup>†</sup> Measured in accordance with CAGI-pneurop test code PNBNTC2.3  
<sup>†</sup> Sound levels per ISO 2151:2004 annex C

### Dry & Clean Compressed Air The right air quality to do the job

All  packages come fully equipped with an integral, energy saving air treatment center including high performance air dryer and filtration pack to remove water, oil and particles from the air stream.

All components are perfectly matched to deliver the right air quality to increase air powered tool and system equipment life.

## 15–22 kW Rotary Screw Air Compressors

Ingersoll Rand has taken the power of air to a new level with the Universal Product (UP-Series) rotary screw air compressor. The UP-Series design was inspired by workplace demands as detailed to us by many hundreds of compressor users. Ingersoll Rand engineers applied our expertise and world-class technologies to create a new standard of performance and value through design innovations.

### Performance that Pays

The UP-Series gives you advantages in both performance and value. For example, the high-efficiency, low-speed motor and airend reduce energy usage, extending the life of the unit, giving you a lower total cost of ownership.

### All-Around Quiet

Quiet operation is one of the most valued benefits resulting from the performance breakthroughs on the UP-Series. A number of factors contribute to reduced compressor noise levels, including: a high-efficiency airend and motor; a horizontal separator, specially designed to dampen noises; a centrifugal fan, and a compartmentalized enclosure system that is designed for superior acoustic (sound) containment.

### Long-Term Value

Air compressors prove their value by giving you ongoing and reliable performance. A large part of the UP-Series' value comes from its many design innovations. You benefit with longer equipment life. Additionally, the separator features a design that makes changes simple. A cooling air pre-filter, which traps airborne dirt particles, protects against cooler blockage.

### Ultra Coolant

The factory fill of Ultra Coolant offers unmatched performance and improved compressor efficiency. This advanced synthetic lubricant reduces friction and delivers lower rates of wear than possible with conventional oils. It also saves on maintenance costs, since its superior performance allows drain intervals to be extended to 8,000 hours before a required change.



Model	Power	Capacity		Pressure		
		kW	m <sup>3</sup> /min	cfm	barg	psig
<b>50 Hz</b>						
UP5-15-7	15	2.41	85	7.5	109	68
UP5-15-8	15	2.36	83	8.5	123	68
UP5-15-10	15	2.07	73	10	145	68
UP5-15-14	15	1.61	57	14	203	68
UP5-18-7	18.5	3.00	106	7.5	109	68
UP5-18-8	18.5	2.87	101	8.5	123	68
UP5-18-10	18.5	2.61	92	10	145	68
UP5-18-14	18.5	2.01	71	14	203	68
UP5-22-7	22	3.54	125	7.5	109	69
UP5-22-8	22	3.34	118	8.5	123	69
UP5-22-10	22	3.11	110	10	145	69
UP5-22-14	22	2.32	82	14	203	69

Dimension	kW	Length	Width	Height	Weight
		mm (in)	mm (in)	mm (in)	kg
Baseplate Unit	15	1321 (52)	914 (36)	1080 (42.5)	509
Baseplate Unit	18.5	1321 (52)	914 (36)	1080 (42.5)	532
Baseplate Unit	22	1321 (52)	914 (36)	1080 (42.5)	540

<sup>†</sup> Measured in accordance with CAGI-pneurop test code PNBNTC2.3  
<sup>†</sup> Sound levels per ISO 2151:2004 annex C

## 30–37 kW Rotary Screw Air Compressors

### A Higher Standard of Performance

#### Whisper-Quiet Operation

Oversized, high-efficiency cooling air blower provides sound levels as low as 67 dBA.



#### Dual-Control Operation

Reliable and effective load/no-load control with automatic stop and restart facility for maximum flexibility.



#### Simple Diagnostics

Visual indication of operating status and hours run for ease of operation and reduced downtime.



#### Poly-V Belt Drive

Premium drive system applies patented automatic tensioning to eliminate belt stretch and increase air output.



#### Advanced Cooling

A package pre-filter, efficient combination aftercooler with access to both sides for easy cleaning and top discharge to simplify ducting.



#### Generous Serviceability

All key maintenance components have been grouped to provide ease of serviceability.



Model	Power	Capacity FAD*		Pressure		
		kW	cfm	m <sup>3</sup> /min	barg	psig
UP5-30-7	30	198	5.60	7.5	109	69±3
UP5-30-8	30	173	4.90	8.5	123	69±3
UP5-30-10	30	166	4.81	10	145	69±3
UP5-30-14	30	138	4.05	14	203	69±3
UP5-37-7	37	219	6.20	7.5	109	69±3
UP5-37-8	37	212	6.00	8.5	123	69±3
UP5-37-10	37	201	5.70	10	145	69±3
UP5-37-14	37	169	4.80	14	203	69±3

Dimension	kW	Length	Width	Height	Weight
		mm (in)	mm (in)	mm (in)	kg
Baseplate Unit	30	1713 (67.4)	1380 (54.3)	1344 (52.9)	1105
Baseplate Unit	37	1713 (67.4)	1380 (54.3)	1344 (52.9)	1125

\* Performance in accordance with ISO 1217 1996 annex C  
<sup>†</sup> Measured in accordance with CAGI-pneurop test code PNBNTC2.3  
<sup>†</sup> Sound levels per ISO 2151:2004 annex C



## Reciprocating Air Compressors

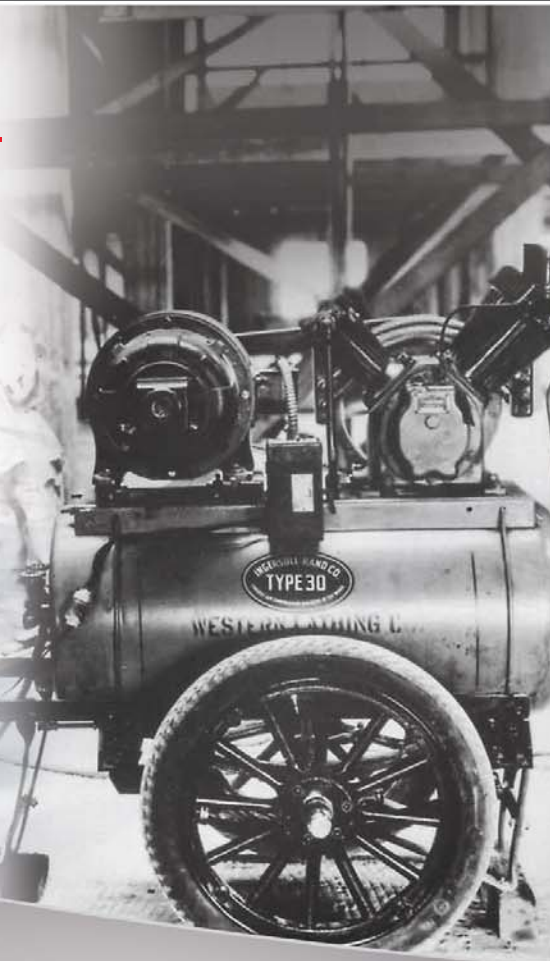
When you select an Ingersoll Rand reciprocating air compressor, you've selected a compressor that is world renowned for its quality and reliability. Engineered for high-performance, reliability and efficiency, Ingersoll Rand reciprocating compressors provide easy operation, low maintenance, and a 100% duty cycle for a reliable air supply.

### Ingersoll Rand - T30

A leader in its class since 1929

The Ingersoll Rand T30 has been the leader in its class since it was introduced in 1929. Whether this is measured by reliability, efficiency, rugged flexibility or maintainability, it has no equal. Designed for heavy industrial applications, the two stage reciprocating air compressors provide the quality and performance that exceed customer requirements.

After all, we've been doing this for over 100 years!



#### The Inside Story

A two-stage model (1) compresses air to an intermediate pressure in the first stage, (2) removes heat of compression through an intercooler, and (3) compresses air to a final pressure in a second compression stage. Two-stage compressors are more efficient and are generally used for pressures above 100 PSI (maximum pressure to 175 PSI).

**No other Reciprocating Compressor offers these efficient, cost-saving features:**

A durable cast iron pump which provides 15,000+ hours of trouble-free service

A 100% copper finned intercooler lowers operating temperatures and extends pump life

An overhung crankshaft and single-piece connecting rod allow access to the running gear for easy maintenance

Individually cast cylinders provide flexible, less expensive maintenance on just one cylinder at a time rather than servicing the entire pump

**Removable cylinders**  
Easy to repair, provides even, 360° cooling and eliminates hot spots

**Overhung crankshaft**  
Precision balanced to run smoothly and quietly

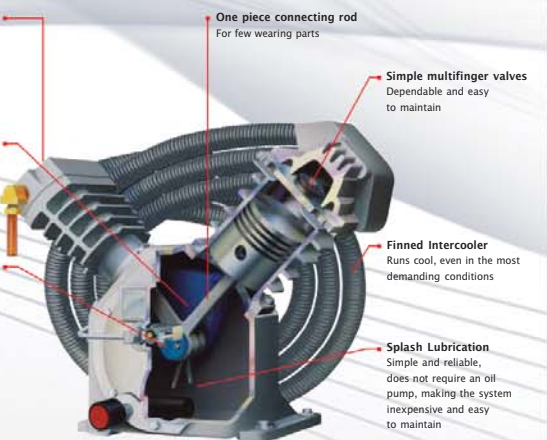
**Centrifugal unloader**  
(From 10HP on)  
Saves motor life

**One piece connecting rod**  
For few wearing parts

**Simple multifinger valves**  
Dependable and easy to maintain

**Finned Intercooler**  
Runs cool, even in the most demanding conditions

**Splash Lubrication**  
Simple and reliable, does not require an oil pump, making the system inexpensive and easy to maintain



## STATIONARY Electric-Driven Two Stage – T30 Series

Designed for heavy shop or industrial use, Ingersoll Rand Two-Stage electric air compressors provide the quality and performance that are ideal for most applications and users, including: automotive service and body shops; fleet maintenance; machine shops; production and manufacturing lines; construction; wood working shops; dry cleaners; car washes; maintenance/repair shops and farms.

### Value Packaged

Economically priced, Ingersoll Rand Two-Stage Value Packaged air compressors are perfect for automotive, commercial or light industrial applications where a dependable air supply is required. The value package includes the added features of a mounted and wired starter, automatic start/stop pressure switch control with suitable size receiver tank.

- Durable cast-iron, two-stage design offers extended pump life for years of trouble-free service
- 175 PSI maximum operating pressure
- 100% continuous duty for tough applications
- Automatic start/stop control/pressure switch operation
- Includes motor starter, oil sight glass (10-15 HP only), manual drain and B55169 tank



Model	Motor HP Range At Working Pressure	Free Air Delivery m <sup>3</sup> /hr (cfm) (Horizontal)		Air Receiver m <sup>3</sup> (lit.)
		7.03 kg/cm <sup>2</sup> g	12.3 kg/cm <sup>2</sup> g	
2340	2 - 3	15.12 (8.90)	14.58 (8.60)	0.150 (150) - 0.225 (225)*
2475	5	24.34 (14.32)	23.78 (13.99)	0.225 (225) - 0.300 (300)*
2475	7.5	30.90 (18.20)	30.84 (17.80)	0.225 (225) - 0.300 (300)*
2545	7.5 - 12.5	60.30 (35.50)	59.46 (35.00)	0.300 (300) - 0.500 (500)
7100	12.5 - 20	80.16 (47.20)	79.50 (46.80)	0.300 (300) - 0.500 (500)
15T	15 - 30	133.50 (79.40)	133.02 (78.30)	0.500 (500)

\* Above mentioned models available with vertical air receiver, capacity : 0.15m<sup>3</sup> (150 litres), 0.25m<sup>3</sup> (250 litres), 0.30m<sup>3</sup> (300 litres)

Performance for above models available on request for higher working pressure upto 17.5 kg/cm<sup>2</sup> g.  
All performance details subject to tolerance as per IS-5456.

Conversion Details :  
 • 1 cfm = 0.02831 m<sup>3</sup>/min  
 • 1 m<sup>3</sup> = 1000 litres  
 • 1 psi = 0.07031 kg/cm<sup>2</sup>  
 • 1 hp = 0.746 kW

## STATIONARY Electric-Driven Two Stage – Non Lubricated Air Cooled Air Compressors

Ingersoll Rand Two-Stage Non-Lubricated cylinder air compressors are designed to provide instrument-quality air at the highest reliability.

### Application

Pharmaceutical Industries; Petroleum Industries; Laboratories; Building Material; Electrical and Electronic; Textile Industries; Food Processing; Hospitals\*; Chemical; Spray Painting; Discharge is free from oil contaminant

Model	Motor HP	RPM	Tank	Piston Displacement		Nomenclature	Overall Dimensions (mm/inch)		
				CFM	LPM		Length	Width	Height
5T2NL	7.5	660	300 ltr	26.25	743	5T2NL D 7.5 LP ASSC	1795(70.70)	705(27.75)	1340(52.75)
5T2NL	10	930	300 ltr	37	1048	5T2NL D 10.0 LP ASSC	1795(70.70)	705(27.75)	1340(52.75)
10T3NL	12.50	592	500 ltr	47.1	1334	10T3NL E 12.5 LP ASSC	2045(80.50)	760(29.90)	1635(64.35)
10T3NL	20	844	500 ltr	67.13	1901	10T3NL E 20.0 LP ASSC	2045(80.50)	760(29.90)	1635(64.35)

Type : LP; Control : ASSC; Max Pressure : 125 psig

1) For model 5T2NL size is 5" & 3" x 3.5" stroke 2) For Model 10T3NL Size is 5" & 5" x 4.25" x 3.5" stroke

## STATIONARY Electric-Driven Single Stage – Portable Cast Iron Air cooled Air Compressor

Our Single-Stage electric air compressors are ideal for most professional compressor user. Each air compressor features durable cast-iron construction, 100% continuous duty cycle for the toughest applications and extended pump life for years of trouble-free service.

- Industrial quality design
- Durable cast-iron construction
- 135 PSI maximum operating pressure

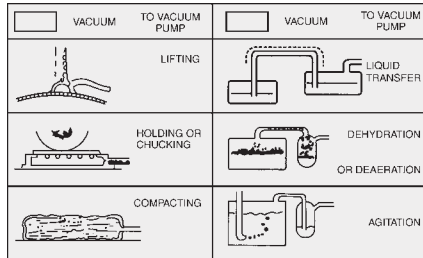


Model	Motor HP	Piston Displacement m <sup>3</sup> /hr	cfm	Maximum Working Pressure Bar	PSIG	Air Receiver Option (Liter)
SS-1	1	06.99	04.12	8.62	125	60 / 100
SS-2	2	14.01	08.25	8.62	125	100 / 150
SS-3	3	23.36	13.75	8.62	125	100 / 150
SS-5	5	42.57	25.06	8.62	125	150

All performance details subject to tolerance as per IS-5456.  
Above models are available with single phase motor also.



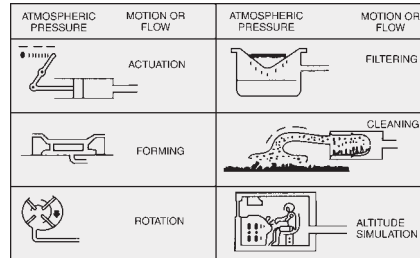
## STATIONARY Electric-Driven Single Stage & Two Stage Dry Type Vacuum Pumps



Vacuum is one of the most versatile of power sources. It can lift, hold, compact, evacuate, move, dehydrate, agitate, actuate, form, rotate, filter, clean and simulate high altitude.

In printing, plastics, materials handling, food processing, packaging, health care and many other industries, vacuum is called upon to perform many essential functions.

Producing a vacuum for modern industrial applications requires a method of air removal that is simple, dependable and economical to operate and maintain.



All of these requirements are met by the Ingersoll Rand T30 air cooled reciprocating single stage and two stage vacuum pumps.

These pumps achieve vacuum upto 737mm (29.0" Hg) for single stage and upto 754.4mm (29.7" Hg) for two stage configuration, at sea level.

These dry type vacuum pumps are ideal for paper handling, food processing, vacuum forming, liquid transfer and many other applications.



Model	Piston Displacement		Motor hp
	cfm	inch	
V235	21.60	29.00	1.5
V235T	10.80	29.60	1.5
V244	34.60	29.00	2.0
V244T	17.30	29.65	2.0
V255	60.00	29.00	5.0
V255T	30.00	29.70	5.0
7V	110.00	29.00	7.5
7VT	55.00	29.65	7.5
15V	149.60	29.20	10.0
15VT	99.00	29.65	10.0

- Note :
- Suffix T denotes two stage.
  - These vacuum pumps can be supplied bare or base - plate mounted.
  - Optional Items: Scrubber, Vacuum gauge and Low oil level switch.
  - Performances indicated are at sea level.

## STATIONARY Electric-Driven Two Stage - T30 Series High Pressure Air Compressors

Ingersoll Rand multi-stage high pressure air compressors are designed for high pressure applications. These compressors have extra heavy-duty components and are designed for minimum maintenance and maximum performance. High pressure air compressors are widely used in power generation plant, PET blow moulding industry, military, diving and component testing.

- Durable cast-iron with two, three and four stage design
- Intermediate duty applications
- Extended pump life for years of trouble-free service

**Standard Scope of Supply**  
(for receiver mounted air compressors)

- V - sheave (compressor pulley)
- Dry type intake filter
- Air cooled inter-stage cooler with condensate drain leg
- Inter-stage pressure gauge
- Inter-stage safety valve
- Air-cooled after-cooler



Model	Motor hp	Free Air Delivery cfm At Working Pressure	
		35.1 kg/cm <sup>2</sup> g	70.3 kg/cm <sup>2</sup> g
231	3	4.80	-
251	5	6.45	-
7T4	5	7.86	6.40
7T2	12.5	21.60	-
15T2	20/25	37.70	36.96



High Pressure Receiver Mounted Package		
Model	Motor hp	Free Air Delivery cfm At Working Pressure
		35.1 kg/cm <sup>2</sup> g
251 Package	5	6.45
7T2 Package	10-12.5	21.60
15T2 Package	20	37.70
15T2 Duplex Package	40	75.40

For high pressure operation, adequate care must be taken for proper selection. Our distributors would be happy to assist you in correct selection of model. Models are also available for higher working pressures upto 351 kg/cm<sup>2</sup>g. Details available on request.

# Air Treatment

## Refrigeration Air Dryers



### Lowest Cost of Ownership

Ingersoll Rand's refrigerated dryers offer design features that reduce energy consumption and improve reliability:

- Corrosion-resistant heat exchangers reduce airflow restrictions, providing more efficient throughput with less wasted energy. A built-in stainless steel demister efficiently removes all moisture.
- Microprocessor control with an easy-to-use graphic interface lets you adjust and manage system parameters easily and efficiently.
- Variable-speed fans reduce power consumption when units operate at less-than-maximum cooling capacity, while ensuring a consistent dew point.
- Reliable, fully hermetic compressors use environmentally friendly R134A refrigerant.
- A fully adjustable programmable electronic drain valve helps minimize air loss.

Model	Flow Rate		Power Supply v/ph/Hz	Pressure bar
	cfm	m <sup>3</sup> /h		
D 54 IN	32	54	230/1/50	14 max
D 72 IN	42	72	230/1/50	14 max
D 108 IN	64	108	230/1/50	14 max
D 144 IN	85	144	230/1/50	14 max
D 180 IN	106	180	230/1/50	14 max
D 300 IN	177	300	230/1/50	14 max
D 360 IN	212	360	230/1/50	14 max
D 480 IN	283	480	230/1/50	14 max

## Desiccant Air Dryers

### Improve Air Quality Output, Reduce Operating Costs

Ingersoll Rand's innovative modular air dryers make it easier and more affordable than ever to deliver high-quality compressed air for instrumentation, process equipment, or production lines - virtually wherever it is needed:



- High-efficiency filtration and desiccant bed adsorption provide clean, dry air.
- Compact, fully integrated units install at point-of-use, so you pay for drying only the air required.
- Conservative pressure drop lowers power costs.
- Optional energy management system for larger units reduces purge air during partial loads.

Model	Capacity		Inlet/outlet		Max. Pressure	
	cfm	nm <sup>3</sup> /h	NPT/BSP	psig	barg	
D5IM	3	5	3/8"	175	12	
D14IM	8	14	3/8"	175	12	
D 25 IM	15	25	3/8"	175	12	
D 34 IM	20	34	3/8"	175	12	
D 41 IM	24	41	1/2"	232	16	
D 54 IM	32	54	1/2"	232	16	
D 71 IM	42	71	1/2"	232	16	
D 90 IM	53	90	1/2"	232	16	
D 110 IM	65	110	1/2"	232	16	
D 150 IM	88	150	1"	189	13	
D 180 IM	106	180	1"	189	13	
D 221 IM	130	221	1"	189	13	
D 299 IM	176	299	1"	189	13	

Model Capacity Inlet/Outlet Max. Pressure Dimensions Weight  
Connection in.(mm)  
scfm nm<sup>3</sup>/hr NPT/BSP psig barg W D H lb/(kg)

## Compressed Air Filters

### Proactive time-based replacement of your air filter

Reduces energy use, the largest percentage of your filtration operating costs (78%) - unlike the traditional reactive approach that focuses only on element change out cost (13%).



### Benefits for You:

#### A New, Easy-to-use, Proactive Approach

The Element Replacement Indicator is truly elegant in its simplicity: after six months of use, it provides a visual warning through an integral indicator to replace the element. That's it! How can such a simple solution provide such tremendous benefits? Easy.... with traditional usage-based systems, the focus is on extending filter element life - the filtration system's least expensive component - until the element is clogged to a predetermined level. This reactive mindset neglects the high energy costs associated with clogged filters and ignores the overwhelming economics of the proactive time based Element Replacement Indicator.

Filter Grade G/H/A/D	Flow Rates@7 bar g (100 psi g) m <sup>3</sup> /hr(cfm)	Pipe Size inch
Grade F35	35(21)	G1/2
Grade F71	71(42)	G3/4
Grade F108	108(64)	G3/4
Grade F144	144(85)	G1
Grade F178	178(105)	G2
Grade F212	212(125)	G3
Grade F395	395(232)	G1 1/2
Grade F424	424(250)	G1 1/2
Grade F577	577(340)	G2
Grade F791	791(466)	G2
Grade F985	985(580)	G2
Grade F1155	1155(680)	G3
Grade F1529	1529(900)	G3
Grade F1817	1817(1070)	G3
Grade F2123*	2124(1250)	G3
Grade F2378**	2378(1400)	G3

Above Filters also available upto 16500 cfm capacity.

\*H only \*\* A, G, D only

G - General Purpose Protection  
H - High Efficiency Oil Removal Filtration  
A - Activated Carbon Filtration  
D - General Purpose Dust Filtration

## Non Lubricated Module (NLM)

### The Top-Performing filtration module

Ingersoll Rand's NL Module is the best long-term buy in compressed air filtration. It provides true oil-free air while requiring virtually no maintenance or added cost for throwaway filter elements. Its high quality design means no system downtime from premature failure of poorly constructed elements.



The NL Module is a self-cleaning, coalescing-type filter separator designed to remove oil and water aerosols with a minimum of pressure drop. Its special fiberglass filtration system is capable of removing aerosol down to .5 parts per million by weight.

This reliable, remarkably efficient filter offers the following features:

- The unique pleated element design results in element life of upto 3 years under normal service.
- Based on field experience, expected pressure drop after 3 years is approximately 1.0 psig.
- It collects particles greater than 3 microns at 100% efficiency and filters out particles down to 0.1 microns at 99.98% efficiency.

Non-Lube Module Data: 99.99999% D.O.P. Efficiency. Removes oil and water liquid/mist down to 0.5 PPM by weight.

Model	SCFM Flow	Delta P Indicator	Inlet / Discharge
NLM 300	300	Standard	2.0 NPT
NLM 500	500	Standard	2.5 NPT
NLM 1000	1000	Standard	4.0" 150# ANSI Flg.
NLM 1500	1500	Standard	4.0" 150# ANSI Flg.
NLM 2100	2100	Standard	4.0" 150# ANSI Flg.
NLM 3600	3600	Standard	4.0" 150# ANSI Flg.

Maximum Pressure 150 psig  
Maximum Temperature 93°C

## Control Solutions

### X-Series Automation



#### A Better Way to View Your System

Simply add a VX module to any X81 or X121 network, complete some basic configuration, connect to your Local Area Network (LAN) or directly to a PC and view your compressed air system on your computer monitor. No special software is required.

With X-Series System Visualization you can monitor critical system and equipment parameters, drill down to individual compressors to view operational status and be alerted to any alarm messages. Complete system viewing from a local or remote PC has never been easier.

#### Benefits

- Convenient remote view of system and equipment status
- Critical parameter monitoring and fault notification
- Parameter graphing and trending
- System performance reporting and operating summaries
- Historical event recording
- Equipment maintenance scheduler
- Easy connection to the X-Series control network
- No special software to buy or maintain

### PacE : For Economic System Control



Installing a PacE unit will be the best decision you can make.

Storing air at high pressure is good working practice. The higher your stored pressure, the more volume you will have in your tank to meet peak system demands but letting high pressure air into your system is the worst thing you can do.

PacE prevents high-pressure air from entering into your system, providing protection for all your down stream production equipment. Over pressurizing tools and pneumatic components greatly reduces their life expectancy and leads to malfunction, costly repair and or replacement.

In addition to protecting your equipment, PacE will reduce your energy costs and provide valuable extra capacity from your air compressor.

- Energy savings – 7% for every 14 psi reduction in system pressure
- Single point system control
- Protection for all downstream equipment
- Prolonged compressor and equipment life
- Simple installation and operation

	PacE	PacE II
Connection Size (female)	1" Npt	2" Npt
Maximum Flow	250 scfm	650 scfm
Maximum Inlet Pressure	232 psig	150 psig
Control Range	145 psig – 7 psig	150 psig – 7 psig
Max Operating Temp.	80°C to -20°C	80°C to -20°C
Sensitivity	0.2% of Full Span	0.2% of Full Span
Repeatability	±0.5% of Full Span	±0.5% of Full Span

## Condensate Management & Receiver

### DRAIN VALVES

#### System Saver Drains (SSD-Plus)

The Ingersoll Rand System Saver Drains have an electronic level sensing capability which only discharges when condensate is present, thus preventing unnecessary loss of valuable compressed air. This intelligent sensing system operates with all levels of condensate from 100% oil to 100% water.

The System Saver Drains can be purchased as a bare drain valve or as a kit. The kit simplifies installation by supplying not only the bare drain valve, but also a ball valve and an adapter fitting.



Model	Maximum Operating Pressure PSIG	Electrical Requirements	Input Power (watts)	Compressor Capacity SCFM	Refrigerator Dryer SCFM	Inlet	Connections Outlet
SSD7-Plus	232	110-1-60/50 230-1-60/50	26 W	175	303	1/2" NPT (1)	3/8" i/d hose 10mm 1-4" NPT (1)
SSD14-Plus	174	110-1-60/50 230-1-60/50	26 W	349	607	1/2" NPT (2)	5/16" i/d hose 8mm

### DRAIN VALVES

#### Pneumatic No-Loss Drain (PNLD)

The Ingersoll Rand Pneumatic No-Loss Drain (PNLD) is a heavy-duty industrial drain valve that will not waste compressed air. The PNLD does not require the use of electricity, any pre-setting or manual intervention. The drain is compatible with all types of lubricants and has a 7/16th discharging orifice to prevent clogging.



The maximum pressure is 200 PSIG, and the operating temperature range is 35°F to 150°F.

Model	Compressor Capacity SCFM	CCN	Inlet	Connections Outlet	Pilot	Condensate Capacity (oz)	Dry Weight (lbs)	Single Cycle Discharge @ 100 PSIG (oz)
PNLD16	400	42528661	1/2" NPT (top) 3/8" NPT (bottom)	3/8" NPT	n/a	16	7	12
PNLD52	>400	42528679	1/2" NPT (top) 1/2" NPT (bottom)	1/2" NPT	1/8" NPT	52	13	44

### Air Receiver

We need an Air Receiver for...

- Adequate Storage to maintain pressure
- Maintain the required flow rate without significant pressure decay
- Primary receiver - Isolate the compressor from demand events
- Reduce / eliminate compressor cycling
- Allow the compressor to remain unloaded for a longer time
- Backup for compressor failure



Capacity	Diameter (mm)	Height (mm)	Weight (kg)
0.5M³	610	2032	175
1.0M³	762	2526	330
1.5M³	914	2588	569
2.0M³	914	3503	775
2.5M³	1067	3681	825
3.0M³	1067	3881	945
4.0M³	1422	3104	1350
5.0M³	1422	3805	1620
10.0M³	1676	5278	3089

- Air receiver manufactured as per BS5169 STD.
- Contact us for any non-standard/high pressure receiver requirements

## Air distribution solutions

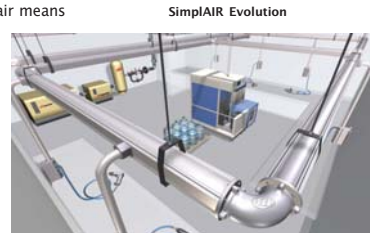


### Introducing compressed air distribution solutions (Piping ) Simplair. Simplicity, Versatility, Performance In One Integrated System

In the past, compressed air users have been burdened by the limitations of traditional piping systems – difficult installation and modification, poor air quality, and high-pressure losses are all common problems. Now, Simplair solves these problems with its unique 15 mm (½”) to 150 mm (6”) Piping System that makes installation fast, simple, and economical.

Thanks to a revolutionary design, Simplair means big benefits for your business like.

- Low operation costs
- Fast installation
- Simple connections
- High flow performance
- Low pressure drip
- Outstanding structural strength
- Lightweight components
- Non-corrosive



Constructed of anodized aluminum extrusion, Simplair is a modular piping system that's ideal for compressed air installations of any size. Yet despite its quick, easy assembly, Simplair offers unexpected flow rates of upto 8,000 cfm for compressor room applications and 16,000 cfm for most factory loop systems.

With Simplair, you gain advantages formerly unheard of in integrated piping systems.

#### Advantages

<b>Flexible Design</b>	Simplair's modular design means quick, easy installation. Even system modifications can be completed in seconds, minimizing downtime.
<b>Superior Performance</b>	The smooth bore of tubing prevents high-pressure losses, and allows higher flow rates than traditional piping systems.
<b>Easy Expansion</b>	Because outlets and connections can be made in seconds, expansion is simple with minimum cost and production disruptions.
<b>High Air Quality</b>	Each tube is anodized to prevent corrosion from forming inside pipes, affording contaminant-free air throughout the system.
<b>Leak-Free Seals</b>	Our positive "O" ring seal ensures that leaks will not occur at any stage of the system's life.
<b>Lightweight Material</b>	Simplair offers the same structural strength of traditional piping, but with less than a quarter of the weight, making it the perfect choice for roof structures, walls or machinery.
<b>Sleek Appearance</b>	Ergonomically designed to fit the demands of modern production facilities, Simplair can enhance any working environment.

## Audit Solutions

### Operations & maintenance (O&M) contracts

Ingersoll Rand takes the, over all responsibility of the compressed air system installed at customer's plant by not only maintaining but also operating it 24x7x365 through 'Operation & Maintenance Contracts' with or without parts. O&M contracts are designed based on customized need of Customers for not only IR compressors but also Non-IR compressors.

Outsourcing O&M to Ingersoll Rand means, we take care of complete plant management for compressed Air system, This helps customer to concentrate on their core business and other activities by allowing the experts to take care of the Compressed Air systems of the plant.



### Air Care "Our pledge : An absolute commitment to customer satisfaction"

As the owner of an Ingersoll Rand air compressor, you've made a critical investment for your company. The additional investment of the exclusive Ingersoll Rand Air Care Program ensures that you receive a responsive and flexible contract program providing planned maintenance for increased system reliability.

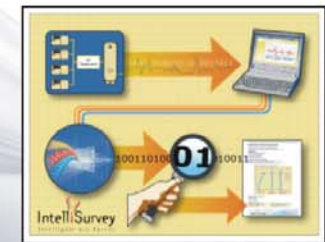
Air Care keeps your system operating at peak efficiency by a thorough knowledge of technology, state-of-the-art monitoring equipment and ongoing training of Ingersoll Rand's service professionals.

### Air Audit: What's in it for me?

The problems associated with operating a modern compressed air system are fairly complex and often camouflaged to the untrained eye. At the same time, many companies have cut back the internal resources dedicated to defining and solving those problems. That's where a professional Air Audit can help by addressing the total process of producing compressed air... not just the compressors.

Air Audits help plant operators optimize their systems and often result in turning off compressors! This may sound crazy, but it's true.

- Reduced operating costs
- Improved manufacturing productivity & Reduced capital spending.



### Remote Monitoring

Remotely monitoring the real time performance of the compressor plant installed at customer's premises and observe/analyze the operating parameters, alarms history & graphical trending to not only provide faster and prompt service support but also help give pro-active suggestions." An alarm or fault warning from the compressor's controller can notify an Ingersoll Rand service representative within seconds"

#### Advantages

- Reduced down time & Possibility to eliminate service call and save cost
- Pro-active actions possible & keeping track of health of the machines, becomes easy.
- Speedy planning & resource arrangement in case the counter actions are required
- Easier trouble shooting/diagnosis & Remote-technical support becomes easy

