



Benefits of “Closed Loop” Air Compressor and Air Tool Technology

**Presented to: I-CAR ANNUAL MEETING
Technical Presentation
Championsgate, Florida
July 27, 2007**

The Lifeblood of the Body Shop...



- The most important thing: talented and reliable PEOPLE
- Plus, an endless supply of CUSTOMERS: location and reputation
- And the TOOLS to do the job right: the right tools ensure that the job is done correctly and doesn't come back
 - In most shops, those tools rely on one thing: a plentiful supply of CLEAN and DRY COMPRESSED AIR

Compressed air is “free”



- Do technicians understand (or care) about the cost of the air that drives their tools? Pacific Gas & Electric (PG&E) states that a ¼ inch air leak costs \$8,924 (average) in energy lost
- “Because the compression of air results in a substantial temperature rise, most of the potential pneumatic energy is dissipated as heat when the air cools to a usable temperature. Less than 10-20 percent of the energy input to the system is available for use at the air tool.” (PG&E)
- Five-year average costs for compressed air: 9% for equipment, 6% for on-going maintenance and 85% for the electricity used to generate and dry the air
- In many shops, air is an afterthought, with inefficient equipment relegated to an “out of sight, out of mind” location

If you don't see the cost of the air, it's free!

Understand the cost of air



ENERGY COST TABLE (ESTIMATED):

HP	kWh @ 115 p.s.i.	\$ per kWh	Cost per Hour	Hours Per Year	Energy Cost Per Year
30	0.75	\$ 0.085	\$ 1.91	3,900	\$ 7,458.75
25	0.75	\$ 0.085	\$ 1.59	3,900	\$ 6,215.63
20	0.75	\$ 0.085	\$ 1.28	3,900	\$ 4,972.50
15	0.75	\$ 0.085	\$ 0.96	3,900	\$ 3,729.38
10	0.75	\$ 0.085	\$ 0.64	3,900	\$ 2,486.25
HP	kWh @ 175 p.s.i.	\$ per kWh	Cost per Hour	Hours Per Year	Energy Cost Per Year
30	1.125	\$ 0.085	\$ 2.87	3,900	\$11,188.13
25	1.125	\$ 0.085	\$ 2.39	3,900	\$ 9,323.44
20	1.125	\$ 0.085	\$ 1.91	3,900	\$ 7,458.75
15	1.125	\$ 0.085	\$ 1.43	3,900	\$ 5,594.06
10	1.125	\$ 0.085	\$ 0.96	3,900	\$ 3,729.38

- A 20HP compressor operating at 175 PSI with a cost of \$.085/Kwh costs about \$7,460 per year to operate
- Each facility will be different, depending on the number of hours worked, number of tools in use, etc.

Air needs drying – add 15%



Determine the Water Volume

- This chart shows the amount of water vapor that is present in a cubic foot of air at various temperature and humidity conditions. Design conditions are based on sea level (14.7 PSIA), and 35¼ pressure dew point.
- Determine your drying conditions:
 - o Identify the maximum temperature and humidity condition at your location.
 - o Locate the factor at the intersection point of these two conditions.
 - o Multiply the CFM of your air compressor system by the factor.
 - o This is the total amount of water in gallons per hour that would be condensed when chilled to 35¼ F

Gallons Per Hour Per CFM

Percentage Of Saturation

Temp ° F	40	50	60	70	80	90	100
35	0.001	0.0012	0.0015	0.0017	0.002	0.0022	0.0024
40	0.0012	0.0015	0.0017	0.0021	0.0024	0.0026	0.0029
45	0.0014	0.0018	0.0021	0.0025	0.0028	0.0032	0.0035
50	0.0017	0.0021	0.0025	0.003	0.0034	0.0038	0.0042
55	0.002	0.0025	0.003	0.0035	0.004	0.0045	0.005
60	0.0024	0.003	0.0036	0.0042	0.0048	0.0054	0.006
65	0.0028	0.0035	0.0042	0.0049	0.0056	0.0063	0.007
70	0.003	0.0041	0.005	0.0058	0.0066	0.0075	0.0083
75	0.0039	0.0049	0.0058	0.0068	0.0078	0.0088	0.0097
80	0.0045	0.0057	0.0068	0.008	0.0091	0.0102	0.0114
85	0.0053	0.0066	0.0079	0.0093	0.0106	0.0119	0.0132
90	0.0061	0.0077	0.0092	0.0108	0.0123	0.0138	0.0154
95	0.0071	0.0089	0.0107	0.0125	0.0142	0.016	0.0178
100	0.0082	0.0103	0.0123	0.0144	0.0164	0.0185	0.0205
105	0.0095	0.0118	0.0142	0.0166	0.0189	0.0213	0.0236
110	0.0108	0.0136	0.0163	0.019	0.0217	0.0244	0.0271
115	0.0124	0.0155	0.0186	0.0217	0.0248	0.0279	0.031

- **A typical 20 hp compressor must remove over 5 gallons of water per day [11 hour day, 80 degrees and 70% humidity]**
- **15% added to \$7,460 (previous slide) is an additional \$1,119 in cost**

Compressed air pollutes



- Where is the shop's compressor? Is there a good source of clean air, or is the compressor in a hot, dirty, closed environment?
- The air compressor/air tool system is a source of airborne contaminants: "chemical soup" from air lines and tanks (condensation), worn tools (metals), and compressor room air is emitted as exhaust from the tools
- Exhaust from tools is a contaminant plus the blowing spreads contaminants
- The tools are a source of noise pollution in the shop; some tools (grinders, impact wrenches) can exceed 120 db
- Technicians are breathing the contamination and are subjected to high levels of noise pollution because of the tools they use

Some countries ban the emissions of pneumatic tools within 5 meters of the operator

How to conserve air



- Fix Leaks [easy to do]
- Install OSHA-compliant, low volume blow guns [easy to do]
- Convert the shop to electric tools [expensive]

But, conserving air doesn't solve the air and noise pollution problem; plus, we're still blowing exhaust around the shop, creating potential problems with dust/dirt in our repairs

The options are somewhat limited...

Overcoming the Challenges



- The challenges:
 - Conserve air, save money (plentiful air, reduced energy cost)
 - Provide clean, dry air to the shop (improved quality of repair and productivity of technicians)
 - Eliminate dust/dirt blowing in the shop (improve quality of repair and improved work environment)
 - Reduce noise (noise pollution abatement)
- The Exhausted Air Recycling System (E.A.R.S.):
 - New technology that solves each of these challenges
 - Creates a “closed loop” between the air compressor and the air tools
 - Implemented in body shops, globally – universal applicability

What is E.A.R.S.?



- **E.A.R.S. forms a closed-loop** that returns air under pressure from the exhaust of the pneumatic tools, effectively “supercharging” the air compressor and generating significant energy savings – in some cases > 40%
- **E.A.R.S. components are:**
 - ✓ Specially-fitted air compressors with the patented air return management manifold
 - ✓ A flexible, robust, light-weight piping system for both high-pressure air and low-pressure returned air
 - ✓ Dual hoses and high-flow fittings
 - ✓ A series of pneumatic tools specifically-designed to return the exhaust to the compressor
- **E.A.R.S. is:**
 - ✓ **Green** – recycling air helps the user, the shop owner and the environment
 - ✓ **Economical** – with an attractive payback in energy savings
 - ✓ **Safe** – quieter and cleaner than current technologies

How E.A.R.S. works



RETURNING THE AIR FROM THE TOOL

- From a standard air tool, the exhausted air is normally allowed to discharge directly into the atmosphere
- By fitting the air tool with E.A.R.S., we direct the exhausted air into a single port, so that a low pressure return hose can be coupled to the air tool, directing the exhausted air back to the manifold installed on the compressor



Two ports: high pressure air in, low pressure exhausted air, out

How E.A.R.S. works



USING THE RETURN AIR FROM THE TOOL

- E.A.R.S. turns exhausted air back into energy by improving the amount of air produced in one cycle of an air compressor
- By containing the air in a closed circuit, airborne moisture is not introduced to the compressor
- The manifold still allows the compressor to draw extra air from the atmosphere if the energy loss is greater than what is being returned by the E.A.R.S.-fitted tools
- This creates high pressure on the intake side of the compressor, so instead of only 1 bar of pressure (atmosphere) being able to enter the compressor cylinder, now we can have up to 2 bar, allowing the compressor to compress twice the volume of air in one revolution



How E.A.R.S. works



USING RECYCLED AIR – HEAT & MOISTURE

- When air is compressed, it creates high temperatures, but when it is released, it creates lower temperatures
- Return air (from E.A.R.S.-fitted air tools), in effect, cools the compressor by returning colder than ambient air
- High temperatures are a major problem in compressors, not only on the compressor itself, but also in the amount of moisture that the ambient air can absorb
- By fitting E.A.R.S. to the air system, the air does not come back into contact with the atmosphere or water, so the refrigerant dryer only needs to remove the condensation from the air that is drawn in through the compressor's standard intake



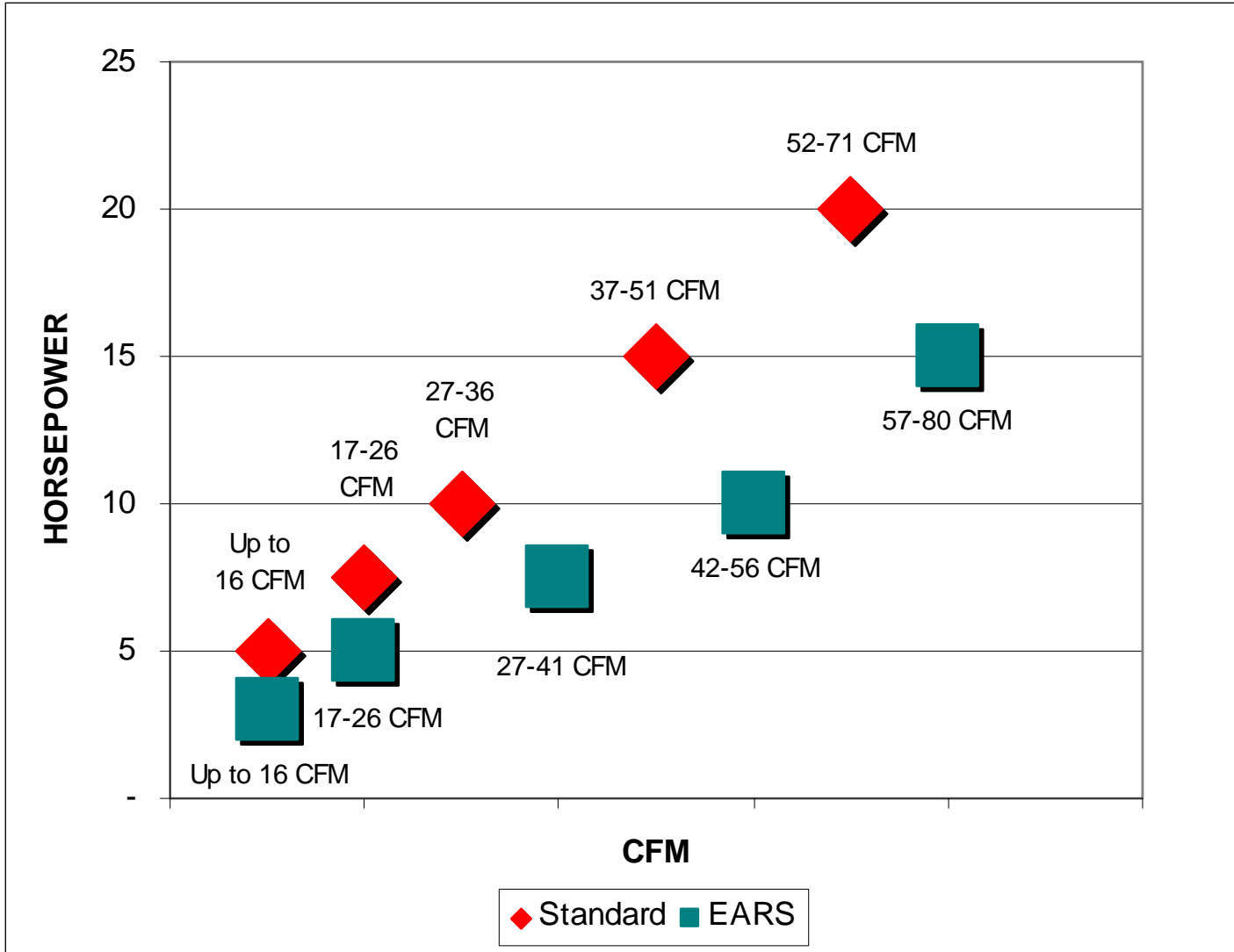
How E.A.R.S. works



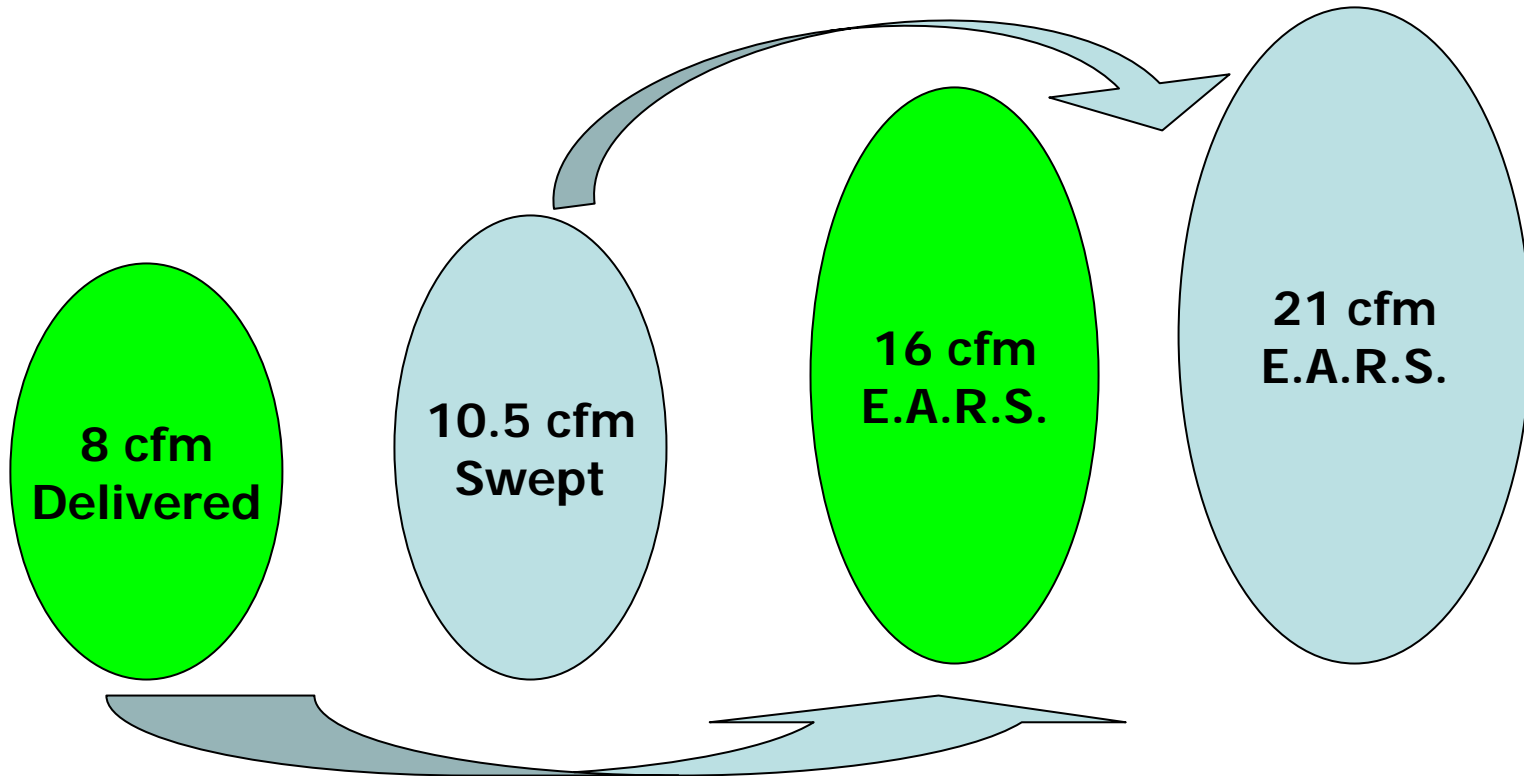
IN SUMMARY,

- E.A.R.S. captures the cleaner, dryer air exhausted from the air tool and returns it to the intake of the air compressor – creating a “closed loop”
- An ordinary air compressor “pulls in” 1 atmosphere of ambient air before compressing
- When fitted with E.A.R.S., there are 2 atmospheres by volume (@ 30 PSI) available to feed the intake side of the compressor.
- Just like a supercharger, the compressor is capable of DOUBLE the volume of air.

E.A.R.S. delivers more CFM for less HP



E.A.R.S. delivers more CFM for less HP



E.A.R.S. tends to double the SWEPT volume of a piston compressor in CFM delivery on systems when no pulley changes are required (electric motor has more capacity than is being utilized)

When a smaller pulley is required, expect to deliver double the original DELIVERED CFM rating of the compressor

Applicability across industries



- Anywhere that compressed air is used to power tools, E.A.R.S. can be employed
- Obvious applications: mobile service trucks, auto repair shops, auto body shops, manufacturing facilities, assembly facilities, and woodworking shops
- Can be configured for any size of operation, from the single operation that uses a small, electric-powered mobile compressor to a manufacturing facility with multiple compressors using hundreds of horsepower

What are the benefits?



- **Cost Management:**
 - ✓ Reduces energy consumption
 - ✓ Improves tool and compressor life
 - ✓ Reduces the size requirement for the compressor
 - ✓ Enabler for attracting/retaining skilled workforce due to the creation of a preferred work environment
- **Environmental Impact:**
 - ✓ Dramatic reduction in noise
 - ✓ Capture normally exhausted airborne contaminants
 - ✓ Improve overall working environment
- **Flexibility:**
 - ✓ Available as complete systems/tools or as retrofits (to both air compressors and air tools)
 - ✓ Ability to continue to use non-E.A.R.S. tools in an E.A.R.S. shop, as necessary

What are the benefits?



7.5 HP CECCATO Rotary Screw Compressor

Without E.A.R.S.

- Ceccato rotary screw compressor capable of Full air delivery of 22 CFM
- Test began with the compressor @ 130 PSI and a full air tank
- A CarTool brand ½ air drill (26 cfm) was run continuously
- At 3 minutes and 30 seconds, tank pressure was reduced to 72 PSI with the compressor running continuously
- The compressed air reached a temperature of 57 degrees C
- Recovery time to 130 PSI (after tool use was stopped): 55 seconds

With E.A.R.S.

- E.A.R.S. was fitted onto the same compressor, and the same test was run, starting at a lower pressure (122 PSI)
- After 9 minutes of continuous use, tank pressure was down to 88 PSI.
- The compressed air from the compressor was 49 degrees C
- Full recovery time: 35 seconds

**Productivity
improvement
+
Energy Savings**

What are the benefits?



3HP MCMILLAN C16 240V Single Stage Piston Compressor

Without E.A.R.S.

- This compressor was designed for a free air delivery of 11.6 CFM
- The compressor was operated to 122 PSI and a full air tank
- A CarTool brand ½" air drill (26 CFM) was run continuously
- At 57 seconds, the tank pressure was down to 42 PSI with the compressor running continuously
- The test was stopped as the tool would no longer have been functional at this pressure

With E.A.R.S.

- E.A.R.S. was fitted onto the same compressor, the same test was run, starting at the same (122 PSI) pressure
- At 6 min 30 seconds, the pressure had dropped to 72 PSI
- The compressor maintained 72 PSI steady for 9 additional minutes, at which time the test was stopped

**Productivity
improvement
+
Energy Savings**

What are the benefits?



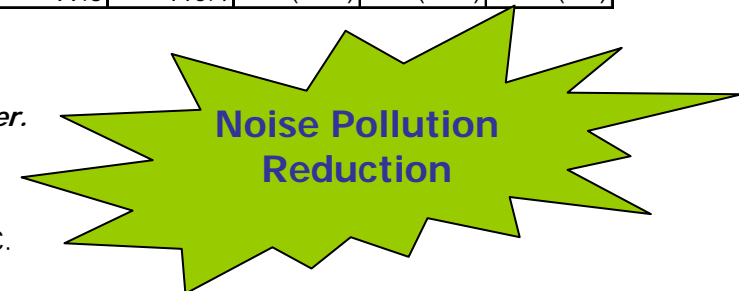
INDEPENDENT NOISE TEST RESULTS

		With E.A.R.S.			Without E.A.R.S.			DIFFERENCE		
		LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)	LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)	LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)
Free Running	Impact Wrench									
	At operator's ear	69.1	74.4	84.2	93.1	97.0	105.8	(24.0)	(22.6)	(21.6)
	1 metre away from operator's hand	68.1	70.2	82.6	96.8	99.7	111.9	(28.7)	(29.5)	(29.3)
Working	Tightening wheel nuts – at operator's ear	88.2	97.5	119.2	92.7	99.9	120.5	(4.5)	(2.4)	(1.3)
	Tightening wheel nuts – 1 metre from operator's hand	80.4	91.6	108.0	86.9	95.5	112.4	(6.5)	(3.9)	(4.4)

		With E.A.R.S.			Without E.A.R.S.			DIFFERENCE		
		LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)	LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)	LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)
Free Running	1800 rpm Screw Gun									
	At operator's ear	70.8	73.5	87.8	89.3	93.8	102.7	(18.5)	(20.3)	(14.9)
	1 metre away from operator's hand	72	73.8	89.1	94	97.6	106.3	(22.0)	(23.8)	(17.2)
Working	Self tapping screws into pine – at operator's ear	76.8	85.4	98.5	90.4	97.5	110.5	(13.6)	(12.1)	(12.0)
	Self tapping screws into pine – 1 metre from operator's hand	76.8	88.5	102.2	91.9	99.3	110.4	(15.1)	(10.8)	(8.2)

NOTE: Decibel ratings are logarithmic. A ten (10) db increase is 10 times louder. A twenty (20) db increase is one hundred times louder.

Example: A pneumatic tool that changes from 67 db to 89 db is 120 times louder.



What are the benefits?



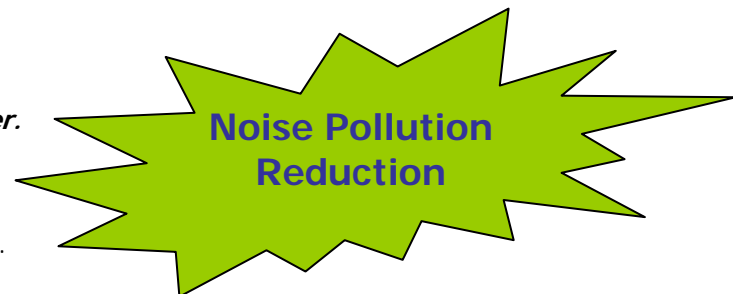
INDEPENDENT NOISE TEST RESULTS

		With E.A.R.S.			Without E.A.R.S.			DIFFERENCE		
		LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)	LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)	LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)
3/8" Drill										
Free Running	At operator's ear	71.4	75.6	89.3	86.1	87.9	99.1	(14.7)	(12.3)	(9.8)
	1 metre away from operator's hand	61.8	65.1	81	88.6	91.1	101.6	(26.8)	(26.0)	(20.6)
Working	Drilling into aluminium – at operator's ear	77.6	87.3	100.5	88.2	97	112.9	(10.6)	(9.7)	(12.4)
	Drilling into aluminium– 1 metre from operator's hand	79.5	89.7	103.4	89	97.9	113.9	(9.5)	(8.2)	(10.5)
	Drilling into 25mm pine– at operator's ear	76.7	85.7	98.5	88.2	91.1	103.1	(11.5)	(5.4)	(4.6)
	Drilling into 25mm pine– 1 metre from operator's hand	76.1	83.8	95.5	87.2	90.2	101.6	(11.1)	(6.4)	(6.1)

		With E.A.R.S.			Without E.A.R.S.			DIFFERENCE		
		LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)	LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)	LAeq dB(A)	SPLF Max dB(A)	C Peak dB(C)
150mm Random Orbital Sander										
Free Running	At operator's ear	83.7	86.8	98.3	90.5	95.4	108	(6.8)	(8.6)	(9.7)
	1 metre away from operator's hand	81.4	84.3	96.7	85.1	91.6	103.1	(3.7)	(7.3)	(6.4)
Working	Sanding 25mm pine – at operator's ear	86.6	88.7	100.6	88.9	90.8	103.9	(2.3)	(2.1)	(3.3)
	Sanding 25mm pine – 1 metre away from operator's hand	82.8	84.4	96.9	87.7	89.5	101.2	(4.9)	(5.1)	(4.3)

NOTE: Decibel ratings are logarithmic. A ten (10) db increase is 10 times louder. A twenty (20) db increase is one hundred times louder.

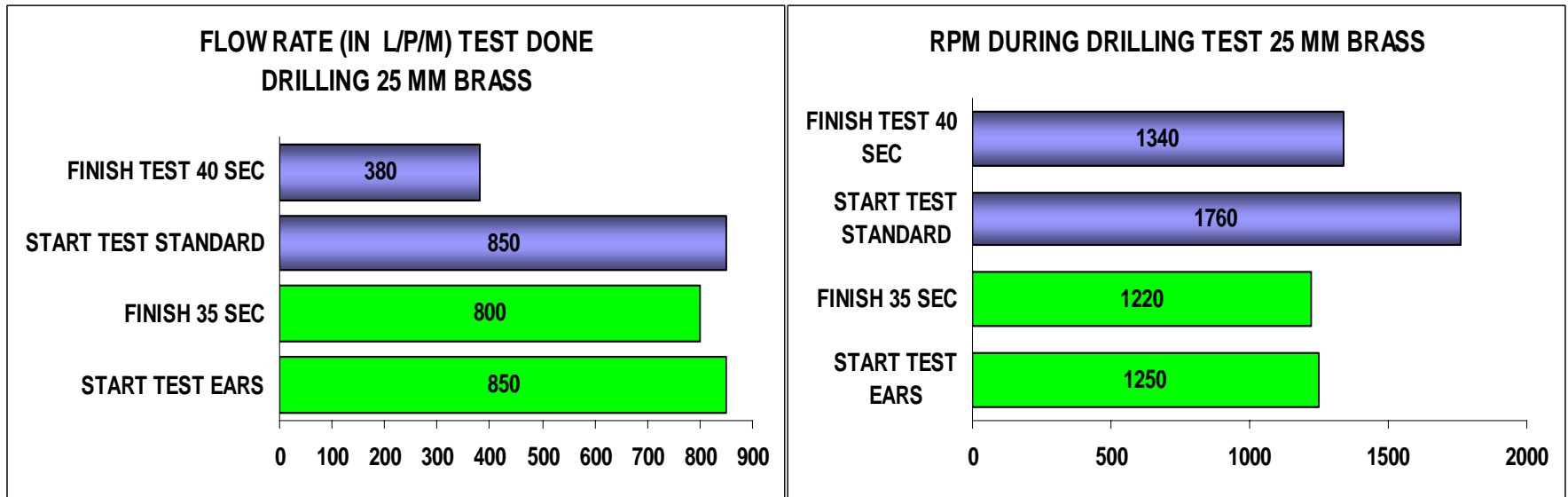
Example: A pneumatic tool that changes from 67 db to 89 db is 120 times louder.



What are the benefits?



FLOW RATE AND RPM COMPARISON



TEST DONE ON A 240V 3HP COMPRESSOR WITH A F.A.D OF 11 CFM (308 L/P/M) USING A 3/8 AIR DRILL 1800 RPM BEFORE MODIFICATION FOR E.A.R.S. TEST

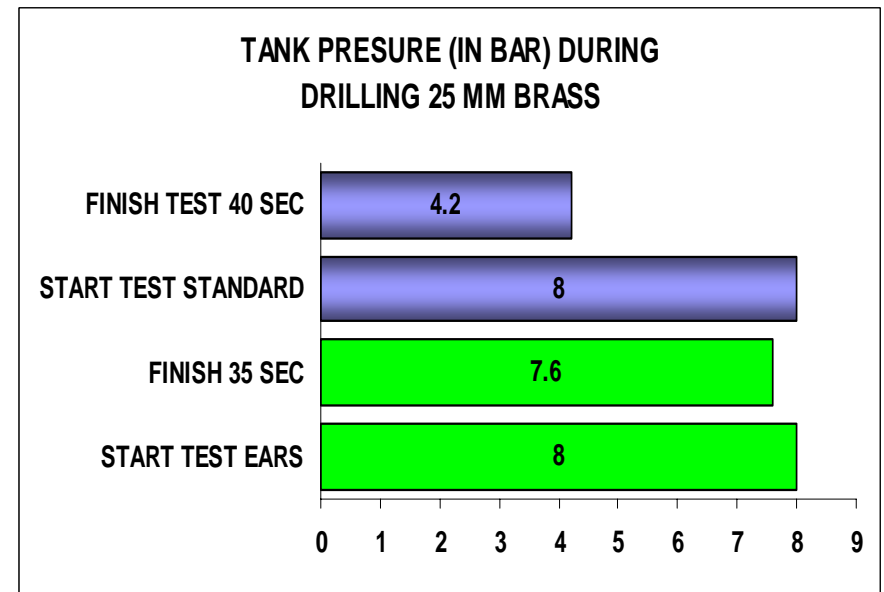
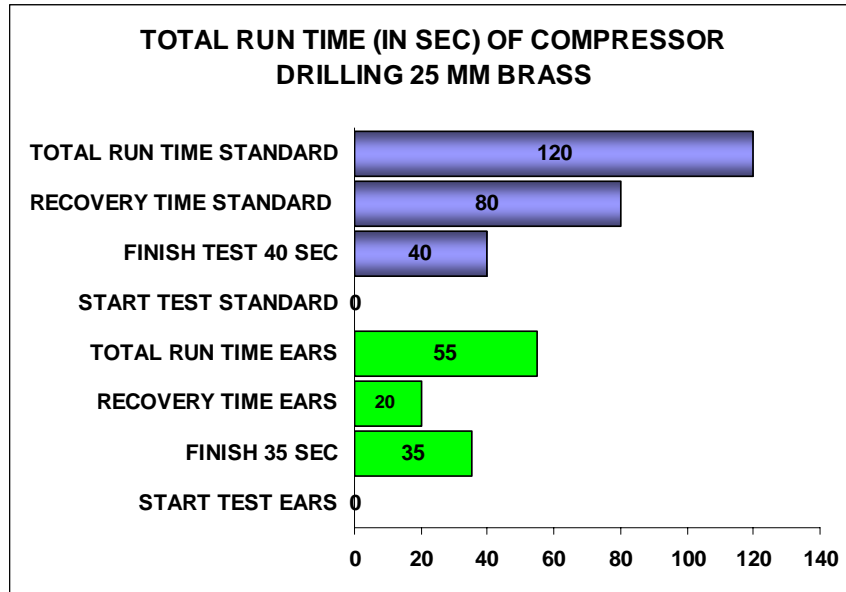
*Note the impact on flow rate and RPM with E.A.R.S:
The steady flow and RPM mean more consistent results when using pneumatic tools.*

**Consistent Air Quality
+ Productivity**

What are the benefits?



COMPRESSOR RUN TIME AND TANK PRESSURE COMPARISON



TEST DONE ON A 240V 3HP COMPRESSOR WITH A F.A.D OF 11 CFM (308 L/P/M) USING A 3/8 AIR DRILL 1800 RPM BEFORE MODIFICATION FOR E.A.R.S. TEST

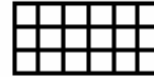
Note the impact on recovery time and tank pressure with E.A.R.S.: less air loss and less recovery time translates to energy cost savings.



Installation is fairly easy



E.A.R.S. System Pipe Drawing SCALE: EACH SQUARE REPRESENTS 1 METER



Collision Repair building
36 X 18 Meters
120 X 60 foot

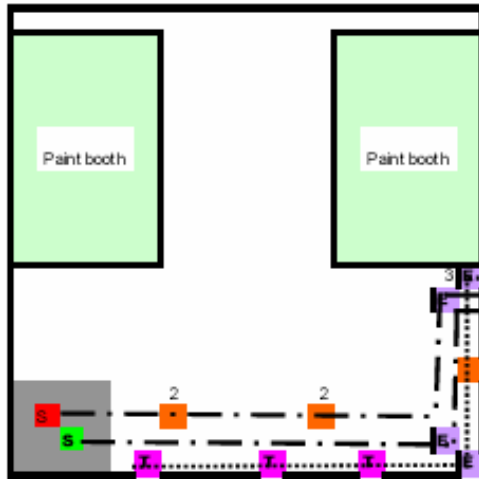


Return and High Pressure Loop

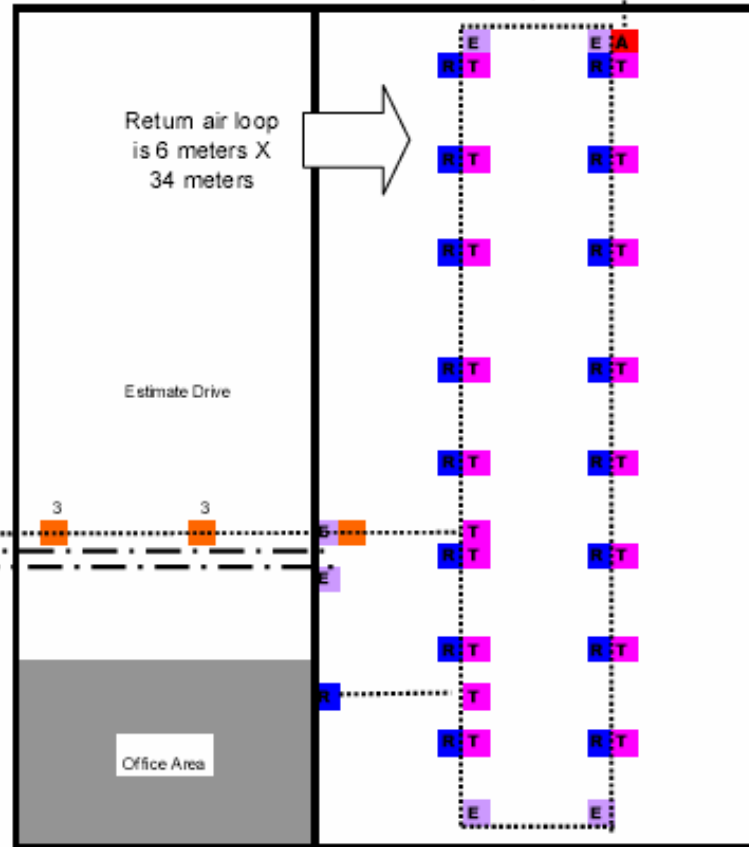
- E** 12 corner elbows
- T** 21 T's for E.A.R.S. return hose connection
- M** 2 E.A.R.S. Manifolds
- R** 17 Hose Reels
- A** 1 connection to EARS Manifold piping
(28) 6 meter lengths of 32 mm pipe
- J** (17) Straight Joiners
- S** (1) 120 gallon storage tank
- S** Existing 120 gallon storage tank

Buildings are estimated size

Estimated distance to storage tanks: 260 feet



Note: It takes 3 hp to power a 12 cfm (efficient) blow gun. It takes 9.5 hp to power a 1/4 air nipple at 30 cfm (low flow). A high flow 1/4 nipple will flow 50 CFM, require 14.5 hp at a cost of \$7,700 per year for electricity. A 1/4 hole will flow more than 3 times a 1/8 hole (leak)



Plan for body shop in the U.S.

Many ways to add value



A recent shop installation in Wisconsin



The compressor retrofit

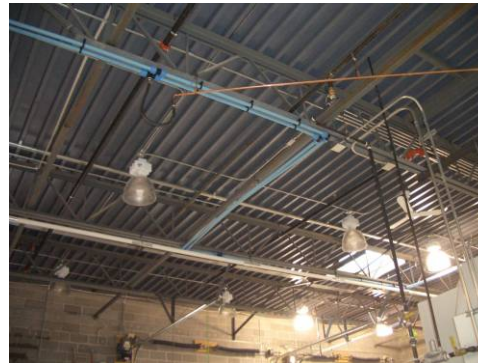


Hose and Pipe Drops

INSTALLATION DETAILS:

- Compressor retrofits: 10 hp 2-stage piston compressor and new 15 hp Screw compressor
- Return air line: 300 ft of ring main return line and complete high pressure ring
- Air drops: 17 (plus feed all lifts, racks and wall plates)
- Number of new air tools: 35
- Reasons for installation: Noise reduction; pollution abatement; compressor efficiency; energy cost
- Energy reduction: Estimated at 50% compared to owner's 2 other locations
- Pollution prevention: eliminate noise, reduce dust blowing on the operator and in the work shop
- Tool life: Eliminate over-revving tools, moisture reduction
- Investment: approximately \$34,125
- Payback parameters: Longer-lasting tools; tool productivity; reduction in power usage
- Payback: approximately 18 months

Pictures from recent installations



Compressors

Piping Systems

Hose / Hose Reels

More details about the system



+



+



+



+



COMPONENTS:

- E.A.R.S.-ready pneumatic tools: E.A.R.S.-fitted pneumatic tools (fully fitted from the factory) as well as dozens of tools available now with adapters for other tools coming soon
- High-flow fittings to ensure proper air flow
- Hose: Dual hose for air drops; shop also needs return air line
- E.A.R.S. manifold for the compressor: Manifolds ready and available for virtually all piston and rotary screw type compressors (for retrofits) as well as factory-fitted compressors available in many configurations and sizes

Air compressor – factory-fitted



- **E.A.R.S. air compressors are available purpose-built from the factory:**
 - They are designed to give maximum performance in a compact and economic size
 - E.A.R.S. compressors are rated for F.A.D., not by horsepower, as the typical E.A.R.S.-fitted compressor delivers 40% more air than a typically-configured non-E.A.R.S. compressor of same horsepower class
 - Piston-type and rotary screw models are available for all applications, suitable for new facility construction, replacement of failed air compressors, or for expansion opportunities
 - E.A.R.S.-fitted compressors use less energy and the initial capital cost is less than larger models without E.A.R.S., which provides the customer an immediate financial benefit



E.A.R.S.-Fitted Compressor

Air compressor – retrofit



- **E.A.R.S. is available for virtually all 5HP and above compressors in the form of the patented air return management manifold kit:**
 - This option is excellent for facilities that can benefit from the E.A.R.S. value proposition but already have well-functioning air compressors
 - This preserves the value of the incumbent air compressor(s) and provides the benefits of E.A.R.S. with an extremely attractive return on investment



Patented air-return management manifold kit



Patented manifold

Air piping system



- **AIR PIPING SYSTEMS** are necessary to deliver compressed air to the tools in the facility and, with E.A.R.S., to return the exhausted air from tools to the compressor
- Typically, high pressure air piping is installed using aluminum, copper, or galvanized steel
- With E.A.R.S., return air lines and high pressure lines can be installed using a new, flexible piping system:
 - The piping is high impact, flexible, durable, and 100% UV stabilized
 - It's incredibly easy to install
 - As such, it is designed as an affordable alternative
- **It gives all of the benefits – ease of installation, flexibility for future changes – without all the drawbacks and costs of conventional piping systems**

E.A.R.S. PIPE DN25 SDR9 PN20 S1 COMPRESSED AIR PE100 AS/NZS4130 070212 F1 MROP 1250KPa/20DEG

New, flexible piping system

Pneumatic tools – new & retrofit



- **High quality E.A.R.S.-fitted PNEUMATIC TOOLS are available purpose-built from the factory:**
 - Tools carrying the E.A.R.S. designation are designed with the system in mind
 - Special gearing, ergonomics, and design for exhaust recycling are included to ensure that the customer is ready to work within the E.A.R.S. shop environment
- **Retrofit kits for a variety of pneumatic tools from leading brands have been developed:**
 - This option is for the customer that wants to preserve the investment previously made in tools
 - Not all tools are able to be retrofitted (such as front-exhaust models)
 - Some tools require little or no modification at all (such as some models of sanders)



E.A.R.S.-Fitted Pneumatic Tools



Adapters for
Pneumatic Tools

Hoses and fittings



- To connect the tools to the main air supply line and the exhausted air return line, a line of DUAL HOSES and a high quality line of FITTINGS are available
- E.A.R.S. hoses are designed to be light-weight and compact, meeting the exacting standards of the professional
- A variety of options exists for all facilities and environments: straight hose, coil hose, and hose reels
- Various sizes and lengths are available to meet the specific needs of the facility
- Fittings for tools and hoses are designed for the most demanding of high flow situations and are of the finest quality from anywhere in the world



Coil-type hose



Straight hose



High flow fittings

Frequently asked questions



- ❑ How will E.A.R.S. affect my other (i.e., non-E.A.R.S.) air tools and equipment?
 - ✓ There is no negative impact on your existing installation of air & air powered equipment
 - ✓ The retrofitted compressor will deliver a more reliable source of clean, dry air
- ❑ Do I need to duplicate my entire air system for the return lines?
 - ✓ Only those areas of the facility that use E.A.R.S. tools need return lines fitted.
 - ✓ Installation is easy with low-pressure flexible piping that is readily available
- ❑ Are there size limitations (large or small) for retrofitting air compressors with E.A.R.S.?
 - ✓ Retrofits are available for nearly all sizes of air compressors
- ❑ Can my existing air tools be used?
 - ✓ The majority of handle-exhaust air tools can be retrofitted to E.A.R.S.
 - ✓ Dedicated, E.A.R.S.-designed tools may be more efficient, as non-E.A.R.S. air tools may have significant restrictions in the exhaust path
- ❑ Does E.A.R.S. work with 2-stage air compressors?
 - ✓ Yes it does
 - ✓ Potential energy savings may be reduced, due to the design of 2-stage compressors
 - ✓ All of the other benefits of E.A.R.S. will realized
- ❑ Does E.A.R.S. affect the life of my air tools or my air compressor?
 - ✓ Since your air compressor and air tools are now part of a closed loop system of clean, dry air, you should expect your tools and compressor to last longer

Summary



- E.A.R.S. helps conserve energy by using exhausted air (waste) to supercharge the air compressor. E.A.R.S.-fitted compressors use less energy per CFM generated, which saves the facility real money on energy costs... up to 40%
- E.A.R.S. dramatically reduces noise pollution at the technician/operator work location. The noise reduction is similar in magnitude as going from the noise of a lawn mower to the noise emitted by a sewing machine!
- E.A.R.S. improves the shop environment, as airborne oils and pollutants from pneumatic tools are no longer exhausted to atmosphere.
- E.A.R.S. improves the life of the tools and air compressors, as clean, dry, filtered air is re-circulated in the closed-loop environment that is created
- E.A.R.S. answers whatever challenge the facility is facing with an attractive return on investment



Thank You!

www.EARSNorthAmerica.com

Steve Baer

direct: + 1.847.404.6394

email: Steven.Baer@StrategicTQ.com

Cliff Kniesly

direct: + 1.913.530.5687

email: Cliff.Kniesly@StrategicTQ.com

*Post Office Box 6177
Lindenhurst, IL 60046
USA*

*Ph: +1.847.356.3220
Fax: +1.213.402.6687*