

## TRANSAIR

**Energy Efficient Compressed Air  
Distribution System**  
**COST SAVINGS of more than 30%**



**JOY DEWAN**

**Business Head: Transair**

Laminar Industries Pvt. Ltd.

(Formerly LEGRIS INDIA PVT. LTD.)

PARKER HANNIFIN : CHANNEL

MAIL: Joy.dewan@legrisindia.com

Mobile: + 91 8800452020

+ 91 8800115859



 **Laminar**  
WE KEEP BUSINESSES MOVING

# ORGANIZATION



**LAMINAR TECHNOLOGIES FORMERLY LEGRIS INDIA PVT LTD.** is a **Parker Hannifin** Channel Partner dealing in Fluid Connectors, Automation, Hydraulics and Filtration. We are a complete utility Piping Company for various fluid distribution like Compressed Air, Water, Inert Gases, Vacuum and also Cryogenic Solutions for all industrial Applications with a goal to achieve ENERGY SAVINGS.



# AIR TREATMENT



**Desiccant Dryer**



**Refrigeration Dryer**



**Nitrogen Generators**



**In Line Filters**



**Condensate Drains**





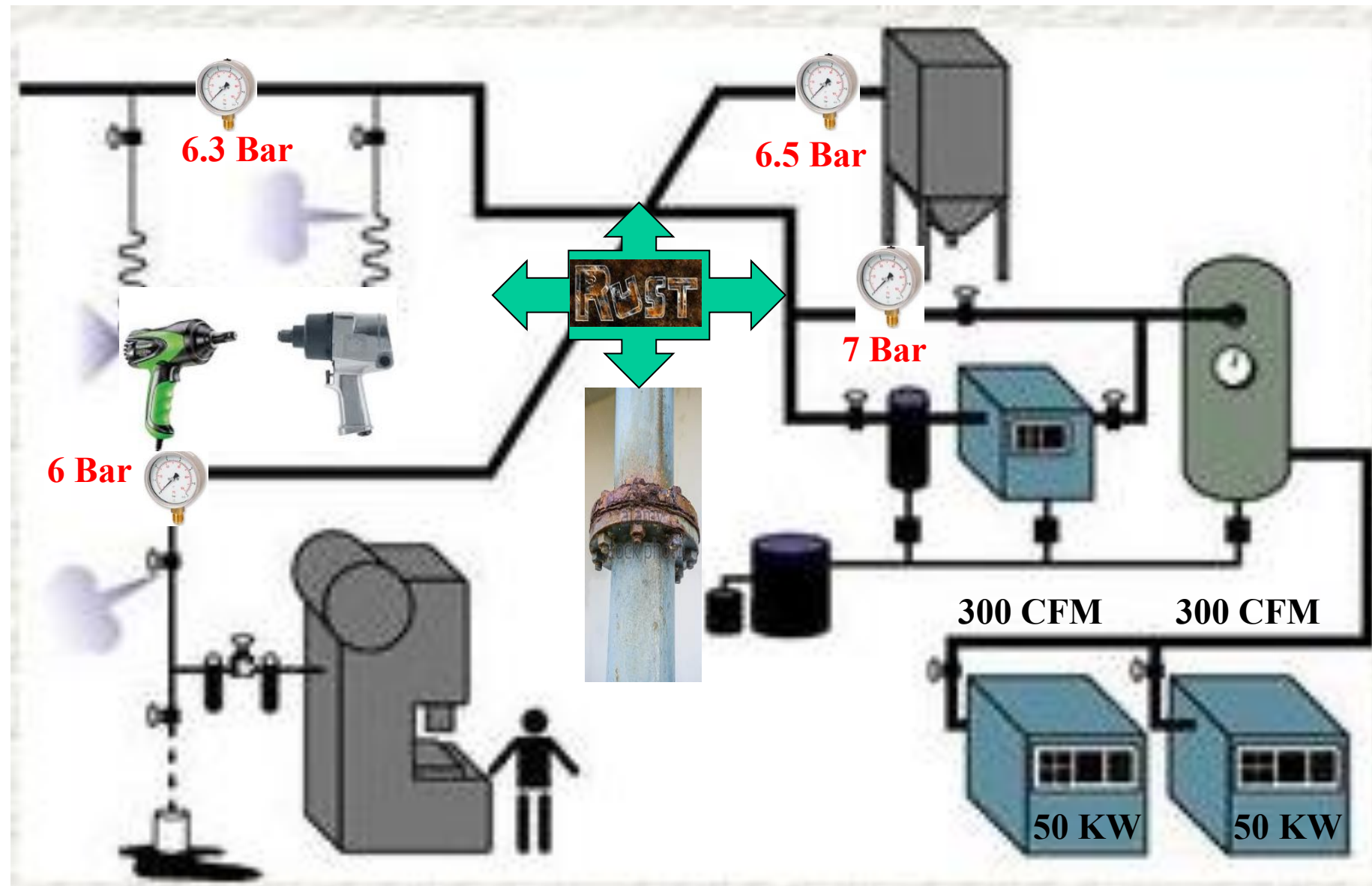
# What is compressed air network?

The link to make compressors, dryers, filters, tools, machine and in the end the whole factory work efficiently together





# COMPRESSED AIR PAINS



**LEAKAGE**

**PRESSURE DROP**

**AIR QUALITY**



**RUST NEVER SLEEPS**



**Rusted Pipe**

**Laminar™**  
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**Parker** **legris**

# COMPRESSED AIR CONSUMERS IN CEMENT APPLICATIONS



Pneumatic Cylinders



Pneumatic Solenoid Valves



Pneumatic FR/FRL

Compressed air plays a crucial role in virtually all steps of the cement production process.

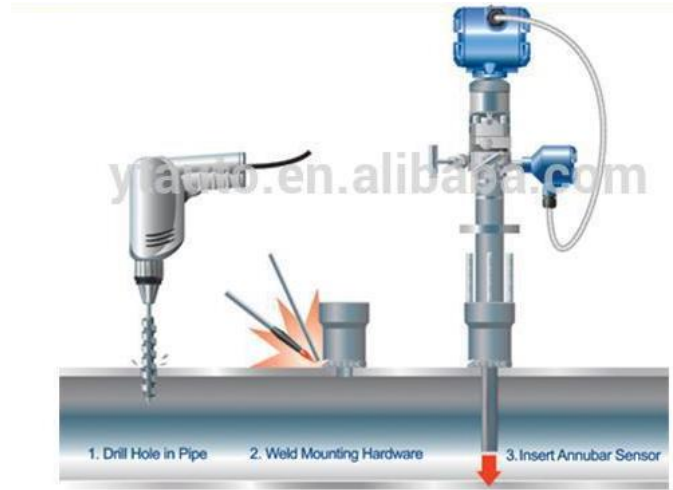
1. Conveying air for the transport of the cement from the mills to the silos.
2. Control air for several functional elements in pumps and control systems
3. Cleaning or blow out the filters.



# AIR AUDITS To Understand the LOSSES in Compressed Air :



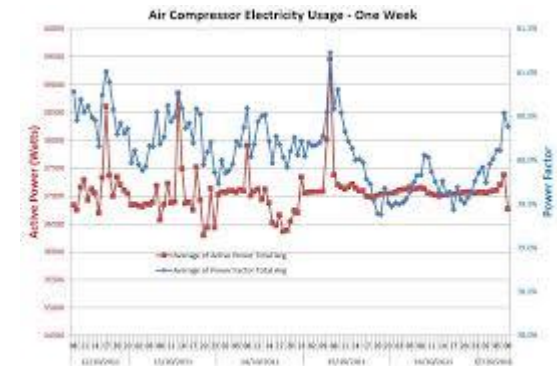
**LEAK DETECTION**



**FLOW MEASUREMENT**



**ENERGY MEASUREMENT**





# COMPRESSED AIR PIPEWORK MONITORING



[Humidity Sensors](#)



[Pressure Sensors](#)



[Temperature Sensors](#)



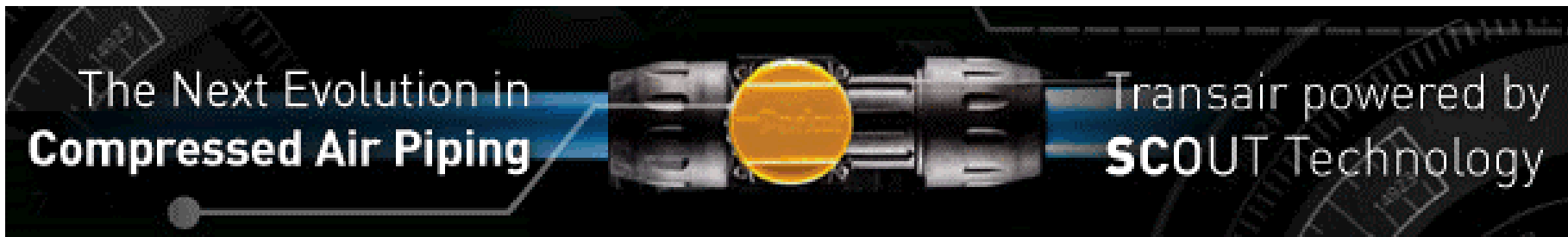
[Flow Sensors](#)



[Power Sensors](#)

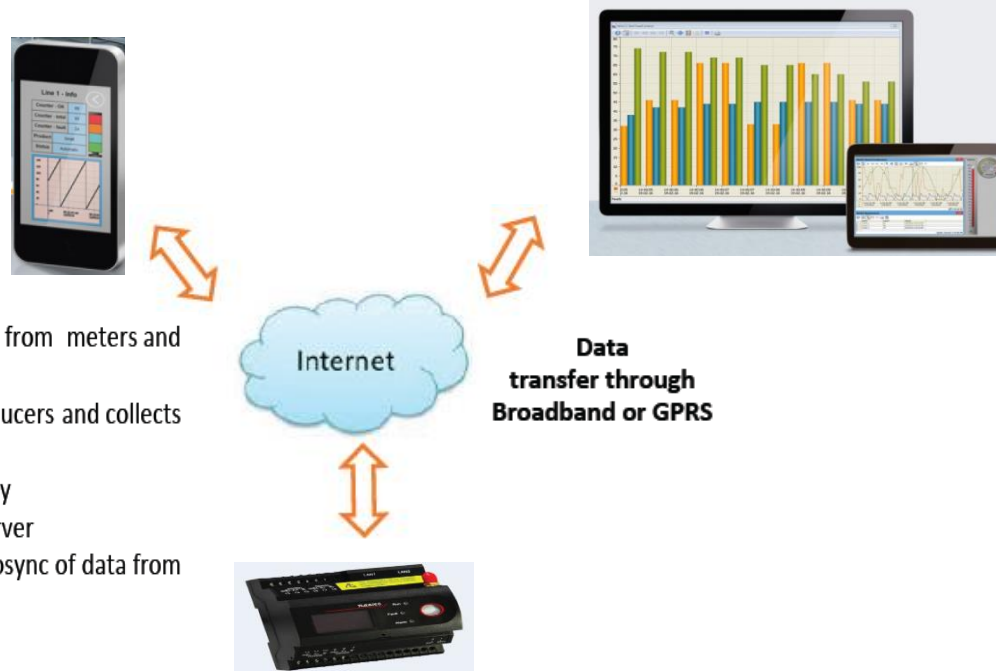


[Communication Hardware](#)



# INTERFACING WITH COMPRESSED AIR VITALS:

**We have Solution**



**Intelligent Cloud Gateway (iGate):** to collect data from meters and sensors and transmit the data to a cloud server

- Communicates with each of the meters/ transducers and collects data
- Logs data as per set intervals in the local memory
- Sends data over the Internet/GSM to a cloud server
- In case of Internet disconnection or failure, autosync of data from internal memory back to the server

**FLOW**

**TEMPERATURE**

**PRESSURE**

**DEW POINT**

**ENERGY**

# Typical Energy Loss Calculation in a Heavy Industry e.g. CEMENT :

Energy (KW) **1334**

Working Pressure (BAR) **7**

Flow (CFM) **8004**

Electricity Unit (Rs.) **7**

Operational Time	
Hrs/Year	<b>8400</b>
Working Days	<b>350</b>
Shift Hrs	<b>8</b>
No Of Shifts	<b>3</b>
Offs	<b>15</b>

Pressure Drop **0.8**

Leakage **20%**

Pressure Drop					Leakage			Total Loss INR	
BAR	Extra Power %	KW	Units	INR/Year	%	Units	INR/Year	Yearly	Monthly
0.8	6.40%	85	717,158	5,020,109	20%	2,241,120	15,687,840	20,707,949	1,725,662



Pressure Drop				
BAR	Extra Power %	KW	Units	INR/Year
1	8.00%	107	896,448	6,275,136
0.9	7.20%	96	806,803	5,647,622
0.8	6.40%	85	717,158	5,020,109
0.7	5.60%	75	627,514	4,392,595
0.6	4.80%	64	537,869	3,765,082
0.5	4.00%	53	448,224	3,137,568
0.4	3.20%	43	358,579	2,510,054
0.3	2.40%	32	268,934	1,882,541
0.2	1.60%	21	179,290	1,255,027
0.1	0.80%	11	89,645	627,514

**transair**

Leakage		
%	Units	INR/Year
5%	560,280	3,921,960
10%	1,120,560	7,843,920
15%	1,680,840	11,765,880
20%	2,241,120	15,687,840
25%	2,801,400	19,609,800
30%	3,361,680	23,531,760
35%	3,921,960	27,453,720
40%	4,482,240	31,375,680
45%	5,042,520	35,297,640
50%	5,602,800	39,219,600



# HOW CAN WE GET RID OFF

**TAG ALL LEAKS  
TO STOP WASTE  
AND SAVE MONEY**



# HOW TRANSAIR CAN HELP YOU:

**100% Pneumatic Solutions**

**Easier Handling**

**High Resistance**

**Completely Adaptable**

**30% energy saving** than any conventional piping system

**Compressed Air  $\propto$  Power (H.P.)  
Transair Saves Power**

**Components Guaranteed for 10 years**

**Carbon Credit Green House**

**Sizes Available from 1/2"-6"**

**Energy Saving Solution- Air & Gases**

# Transair® Benefits in Cement Plants :

- **Increased Flow Rate** : Transair® piping system provides 30% more air respect to traditional pipes
- **Energy Savings** : No leak and less pressure loss on your networks can lead to a 20% energy savings for compressed air.
- **Modularity** : Thanks to Transair®, it only takes 7 min to add a new outlet.
- **Lightness** : A 6m length of 168 mm Transair pipe only weighs 30kg reducing the possibility of overload.
- **Sturdiness** : Transair® resists UV radiation, thermal shocks, weather variation and is corrosion free.
- **Longer Lifetime** : Transair® Qualicoat painting provides chemical resistance to cement powder and makes them easy to clean. Plus, Transair components are guaranteed 10 years, and are maintenance free.
- **AIR Quality Consistency**: No Corrosion because of Aluminum as MOC



# 4 – How Transair can help you

## a) Reduce pressure drop



### UNINTERRUPTED FLOW

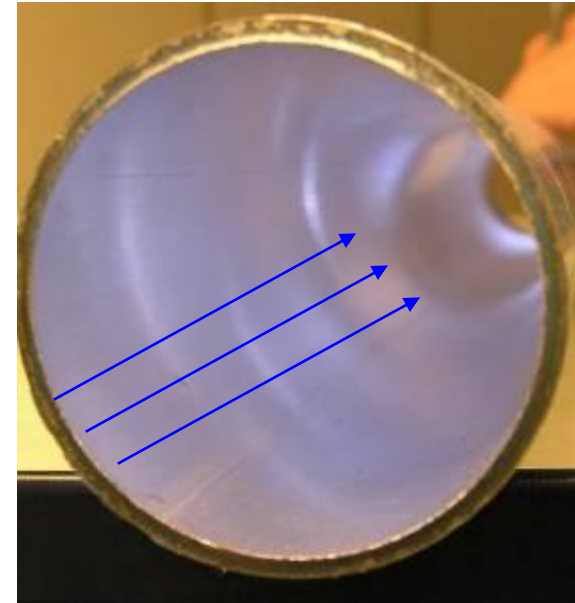
#### GALVANISED PIPE

- Rough Internal Surface
- Turbulent Flow
- Reduction of ID
- Increased Pressure Drop



#### TRANSAIR PIPE

- Laminar Flow
- Smooth Internal Surface
- Stable ID
- Stable Pressure Drop



# 4 – How Transair can help you



## a) Reduce pressure drop



New generation quick assembly brackets are recommended for vertical or horizontal take-offs, using either rigid pipe or flexible hose.

- > Integral water retention device
- > Very high flow
- > Quick installation without any cutting of pipe



## QUICK ASSEMBLY BRACKETS



## WALL BRACKETS





# 4 – How Transair can help you

## b) Optimised air treatment

As Transair is using **non-corrodible material**, there is no risk of contamination to the point of use

=> You can use less filter ; just to obtain the quality needed for your applications

=> Using less filter you'll have less pressure drop

=> **The cubic meter of compressed air is cheaper with Transair**



**Quality  
Certified**



# 4 – How Transair can help you

## c) Reduce leakage

Thanks to Patented Connection technology ..

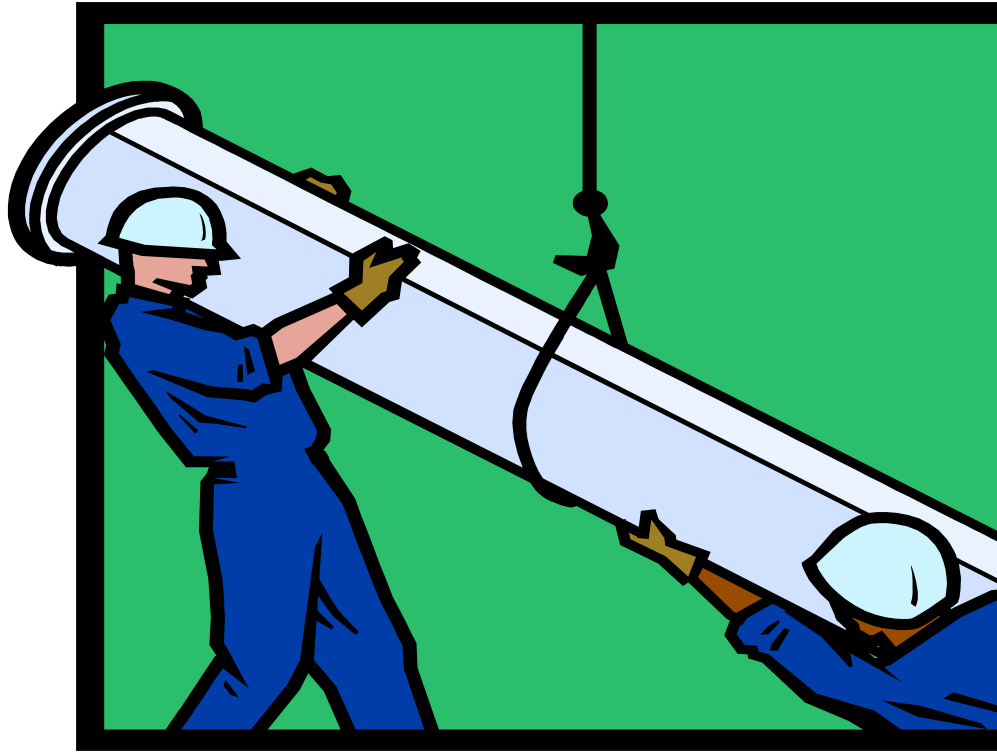
Transair will guarantee **an optimal sealing without limitation of time** :

=> Your compressed air production just have to cover your real needs

=> You pay only the compressed air you're using for production



# Easy Handling



Steel 88.9\* mm 6m long  
**= 40,5 kgs**



Transair aluminium 76.1  
mm 6m long  
**= 9,4 kgs**

\*comparison of diameters with comparable flow



# 10 Years warranty VS Conventional Piping

Alle TRANSAIR®-Produkte  
haben eine 10jährige Garantie.



# TRANSAIR CERTIFICATIONS

## Backing the Product Reliability



PARKER: TRANSAIR BAGS ALL CERTIFICATIONS THAT FOLLOW CANADIAN STANDARDS WHICH ARE TOUGHEST. THE FITTINGS ARE TESTED WITH SAFETY FACTORS OF 4





Save  
with  
Transair® !

## Technical tools available Designing a Piping System



# Transair helps you to size your installation



Transair Sizing Tools

**Parker** **legris transair**

## Transair Flow Calculator

ENGINEERING YOUR SUCCESS.

Home Choose your language: English

Project Name:

Customer contact:

Date:

**Project Data** Units

Gas:

Pressure:  bar(g)

Flow:  Scfm

Length:  m

Max pressure drop:  bar(g) or  %

Network:

Transair Range:

**Project Results**

**Sizing**

Transair® pipe diameter:

Transair® max flow:

Gas velocity:

**Pressure drop**

Transair® pipe:

New steel pipe:

Corroded steel pipe:

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**LEAKAGE: 15% in 5 Years is very Common**  
 For 300 CFM: 15% = 45 CFM ie 7.5 KW  
 Energy Loss for 1 Year: =  
 7.5kw X 5000hrs X Rs.8/Unit=Rs. 300000/-



**For Compensating 1 Bar Pressur Drop,  
 Motor Capacity need to be increased by 7%.**

**Pressure Differential of .3 Bar**  
 300 CFM compressor consumes 50 KW.Approx  
 7% extra motor Power means: 3.5 KW  
 Energy Loss for 1 Year: =  
 3.5kw X 5000hrs X Rs.8/Unit=Rs. 140000/-

**Poor quality compressed air** can result in a decrease in equipment uptime, as well decreased system performance throughout your facility.

Rusted Air Stucked the Pneumatic Cylinder



**Zero Leakage**  
**Least Pressure Drop**  
**Air Quality ISO8573 Certified**  
**Safest with BIG SAFETY FACTORS**  
**Flexible**

**TRANSAIR BETTER IN ALL RESPECTS OVER CONVENTIONAL PIPING**



# Energy Efficiency Calculator



**The TRANSAIR® ENERGY SAVINGS SOFTWARE for short return on investment with Transair !**

Project Name  2013-04-30

## COMPRESSOR ROOM

Pressure  bar  
 Compressor power  kW  
 Annual operating hours  hours/year  
 Type of dryer

## COMPRESSED AIR NETWORK

Flow in the main ring  Scfm  
 Length of the main ring  m  
 Closed main ring  yes  no

## TRADITIONAL SOLUTION

Pipe material   
 Internal diameter of the pipe  mm  
 Age of the network  years  
 % of leakage  %  
 Quotation (products and labour)  INR

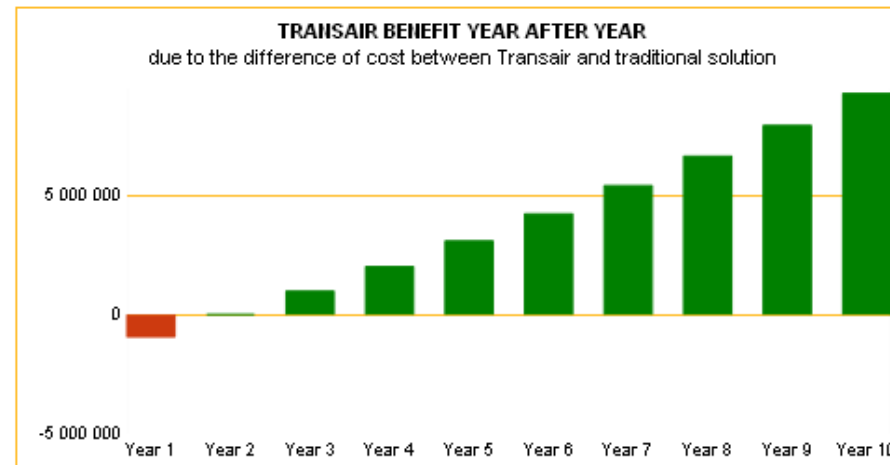
## TRANSAIR

Diameter of the Transair pipe  mm  
 Quotation (products and labour)  INR

## ECONOMIC DATA

Electricity cost per kWh  INR  
 Annual electricity inflation  %  
 Electricity carbon emission factor  kg CO2 / kWh

PAYBACK TIME OF THE TRANSAIR SYSTEM : **21 MONTHS**



**TRANSAIR PROFIT FOR 5 YEAR(S) : 4 893 207 INR**

For information, the estimated pressure drop and leakage volume saved each year with Transair is equivalent to **44 634 kg CO2**

Black Steel		transair
0,36 bar	Pressure drop	0,15 bar
<b>99 869 INR</b>	<b>Pressure drop cost per year</b>	<b>39 789 INR</b>
956 800 Nm3	Leakage volume per year	0 Nm3
<b>874 820 INR</b>	<b>Leakage cost per year</b>	<b>0 INR</b>
43 741 INR	estimated repair cost per year	0 INR
<b>1 018 430 INR</b>	<b>Total Annual Cost</b>	<b>39 789 INR</b>



# Transair is CERTIFIED GREEN!

- Green Certified by the USGBC!
- Qualifies for tax rebates for reduction in energy consumption and “carbon footprint”!
- All materials 100% recyclable!
- Qualifies for LEED rebates where applicable





This Certificate is issued to  
**PARKER HANNIFIN MANUFACTURING  
FRANCE SAS**

11 Fourth Chin Bee Rd (S) 619702

For

Product : TRANSAIR ADVANCED PIPE SYSTEM  
Brand : TRANSAIR  
Model : ADVANCED PIPE SYSTEM  
Rating : ✓ (Certified)

The product has been assessed according to the assessment criteria of Singapore Green Building Product Certification Scheme.



Director  
SGBC Pte Ltd

Certificate No.  
SGBPDC-12-033

Original Issue Date  
15<sup>TH</sup> May 2012

Last Revision Date

Valid Till  
31<sup>st</sup> May 2014

# Remember



*"A chain is only as strong as its weakest link"*



# **YOU CAN DO IT**

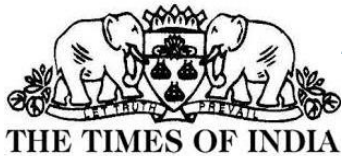
## **STOP EXPENSIVE LEAKS**



# SUCCESS “TRANSAIR”

Over 5000 Installations in India..

They all have shown their trust in us & have successfully solved their compressed air problems.....,



# Transair® in Cement Plants :

## Principal cement companies

- N°1 : LAFARGE, France



- N°2 : HOLCIM, Switzerland



- N°3 : CEMEX, Mexico



- N°4 : HEIDELBERG CEMENT, Germany



- N°5 : ITALCEMENTI, Italy



+ independents (CALCIA FR, CEISA ES...)



# Transair® in Cement Plants :



- **CEISA** : independent group of 4 Spanish societies (Cementos Especiales de las Islas, Hormisol Canarias, Granintra et Preincan – more infos on <http://www.ceisa.es>).

- **2002** : first Transair installation realized at CEISA Cementos Especiales plant, Canarias Islands (compressors = COMPAIR). Today it is over 1.000 meters of Transair network installed by CEISA.

- **Striking fact** : environment ultra aggressive (UV – dust – « salty » environment – outdoor installation).





# Transair® in Cement Plants :

**CEISA CEMENTOS ESPECIALES (ES) :**  
**conveying compressed air**



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# Transair® in Cement Plants :

## CEISA CEMENTOS ESPECIALES (ES) : « compressor room »



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# Transair® in Cement Plants :



- **CEMEX** : 3<sup>rd</sup> producer of cement in the world (15 production units in Mexico – 66 production units in total).
- **2005** : first installation realized at CEMEX in Mexico City (compressors = KAESER). Today, over 10.000 meters of Transair piping are installed at CEMEX MX (4 projects realized between 2005 et 2007)



# Transair® in Cement Plants :



**CEMEX (MX – Huichapan unit) : alimentation of silos**





# Transair® in Cement Plants :



**MX – Huichapan unit) : conveying compressed air (outdoor)**



# Transair® in Cement Plants :



**MX – Huichapan unit) : conveying compressed air (outdoor)**



# Transair® in Cement Plants :

**MX – Huichapan unit) : conveying compressed air (outdoor)**





# Transair® in Cement Plants :

## CEMEX (MX – Huichapan unit) : instrumentation





# Transair® in Cement Plants :

**CEMEX (MX – Huichapan unit) : conveying cement bag**



# Transair® in Cement Plants :



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# Transair® in Cement Plants :





# Transair® in Cement Plants :







**Compressors with interconnecting Transair Pipeline**



**Transair Steel Foundry**





**Transair Steel Foundry**





Before



After













Vibration Testing



Proper Sizing









**Transair Installation**



## TRANSAIR- Inside Compressor Room



## TRANSAIR- Underfloor





# TRANSAIR INSIDE TRENCH





## TRANSAIR- With Air Receiver



# TRANSAIR- Outdoor Header



## Other Gases:

Inert Gases, Nitrogen, Vacuum leaks are costlier than Compressed Air







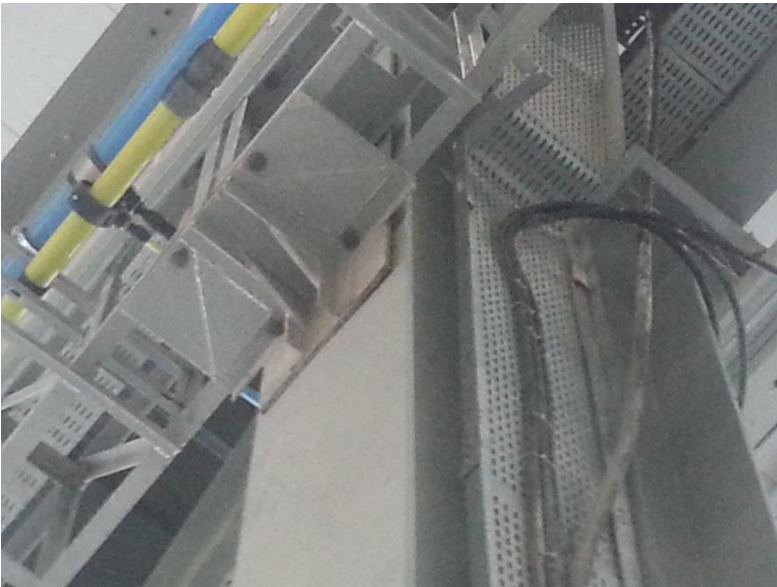
## MOST SIGNIFICANT

Retrofitting with TRANSAIR resulted into Energy savings making 2 out of 6 Compressors(600 CFM each) as **Standby...**





## Transair in RAILWAYS



# ENVIRONMENT PROTECTION THROUGH REDUCTION IN CARBON EMISSIONS

Total Installations	5000	Nos.
Average Consumption of Compressed Air	500	CFM
Average Corresponding Power to Above	83.33	KW
Minimum Energy Saving % per installation	20%	
Minimum Energy Saving KW per installation	16.67	KW
Energy Savings for 5000 Installations	83333	KW
Electrical Unit Cost	8	Rs.
Operating Hrs	6000	Hrs
Total Savings INR	<b>4,00,00,00,000</b>	<b>INR</b>

## CARBON EMISSION REDUCTION IN KG

$$83333 \text{ KW} \times 6000 \times .78 = \mathbf{38,99,98,440 \text{ KG}}$$

# Thank you for your time & attention

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