

ENERGY SAVING COMPRESSED AIR SOLUTIONS

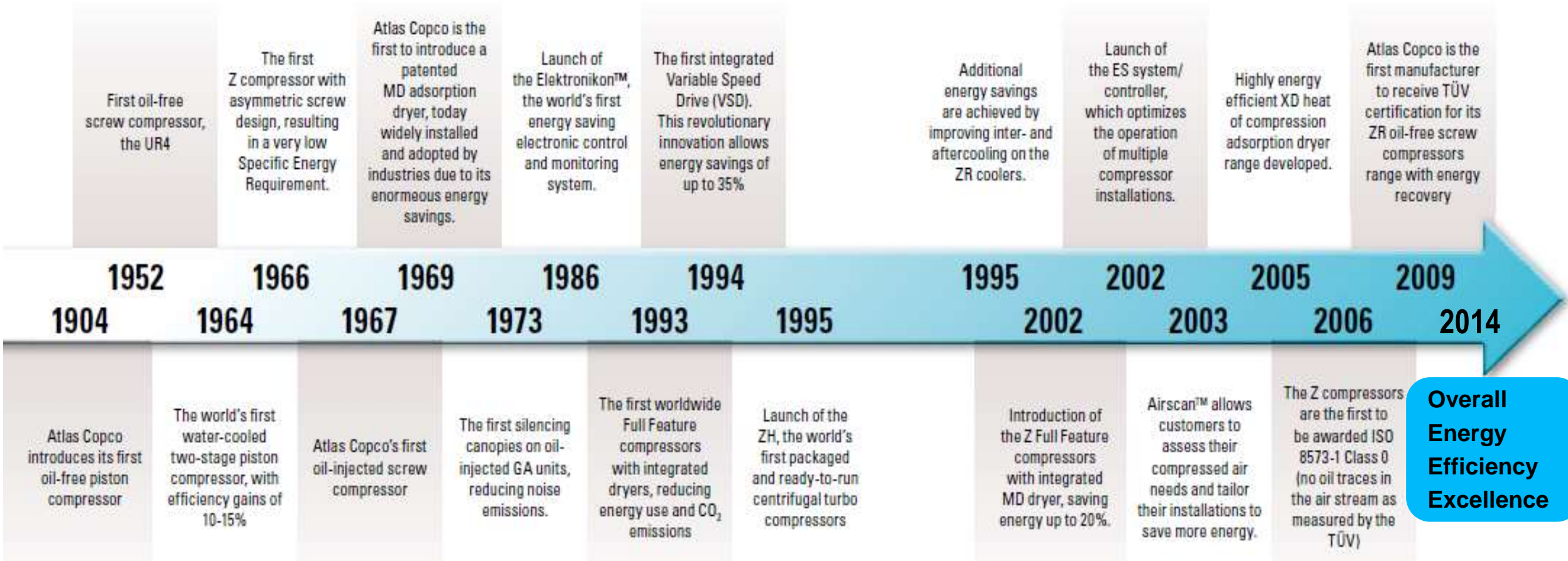
***BEE KNOWLEDGE EXCHANGE PLATFORM,
ALUMINUM SECTOR***



24th April, 2015



ATLAS COPCO – THE LEADER IN COMPRESSED AIR SYSTEMS



Over a century of innovation in energy saving features



WHY IS ENERGY IMPORTANT IN COMPRESSED AIR SYSTEMS ?

- From operating cost point of view : compressor room is one of the largest electricity user therefore is priority equipment

5 to 40% of total plant electrical consumption in Compressed Air System (CAS)

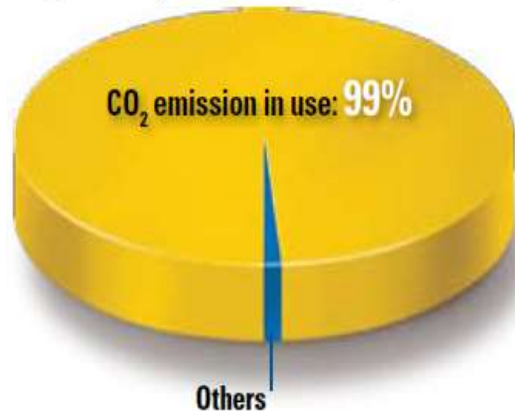
- Energy is up to 80% of a compressor's lifecycle cost and 99% of its carbon footprint

**2.0-2.7 MW
Air Compressor**

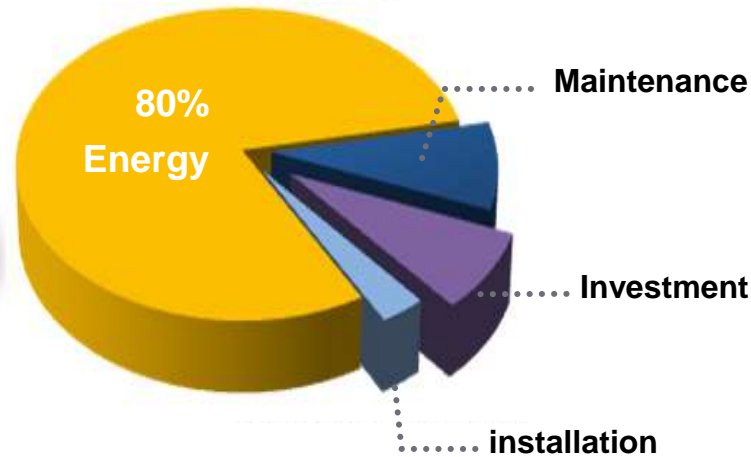
for every

**100,000 mt
Aluminum produced**

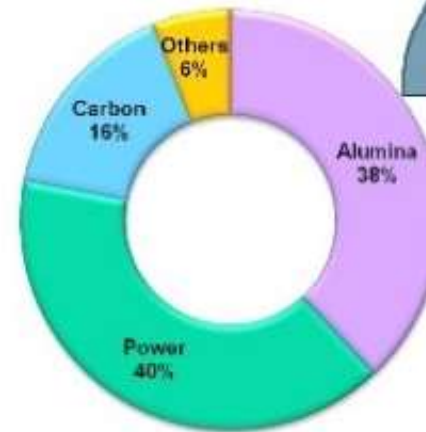
Typical CO₂ footprint of air compressors



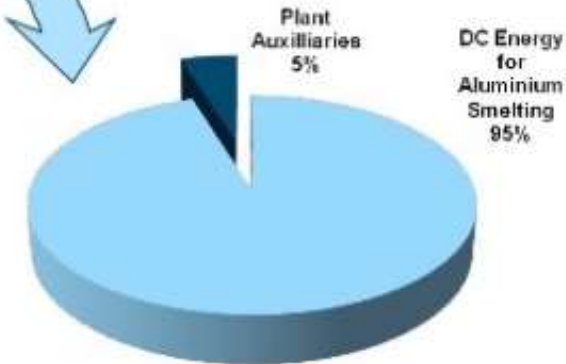
Total cost of ownership



Cost Break up



Energy Usage Break up



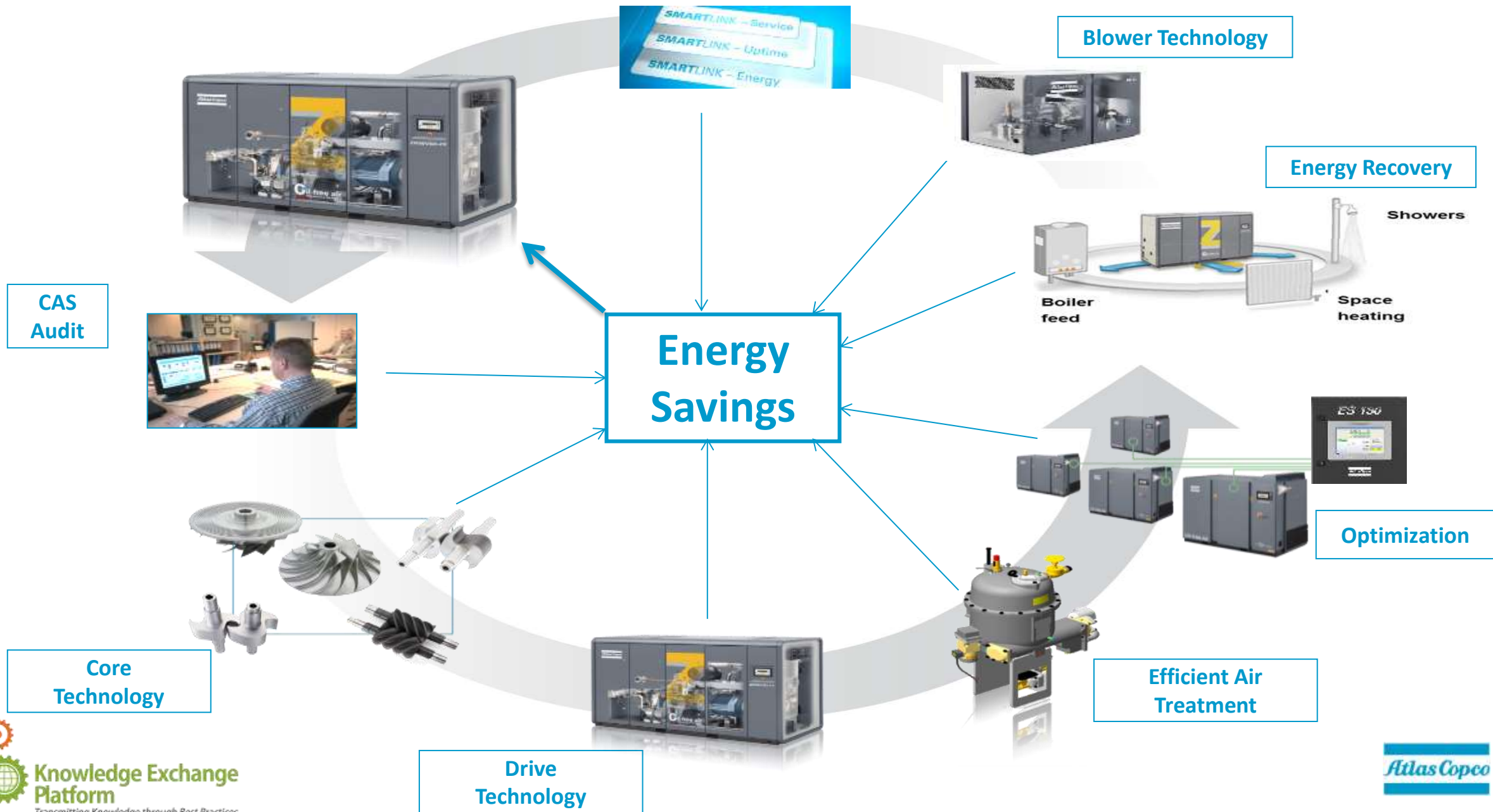
**For a plant capacity of 23 Lakh MTPA, Even by 1% reduction in Power Consumption
Savings will be INR 2.3 Cr every year**



SUSTAINABILITY



ENERGY SAVINGS - AGENDA



INEFFICIENT COMPRESSED AIR SYSTEM

Typical installation of compressed air system production

■ Main Improvement areas :

- Unwanted Blow-offs in centrifugal machines
- Variable frequency drive in Screw Compressor
- Energy Recovery
- Twin Tower Adsorption dryers
- Central control system
- Low Pressure Blowers

Pressure Drop of 1.5 Bar

Turbo/Fixed Speed



Pre-filter



Fine filter



Turbo



Pre-filter



Fine filter



Turbo



Pre-filter



Fine filter



Adsorption dryer

Adsorption dryer

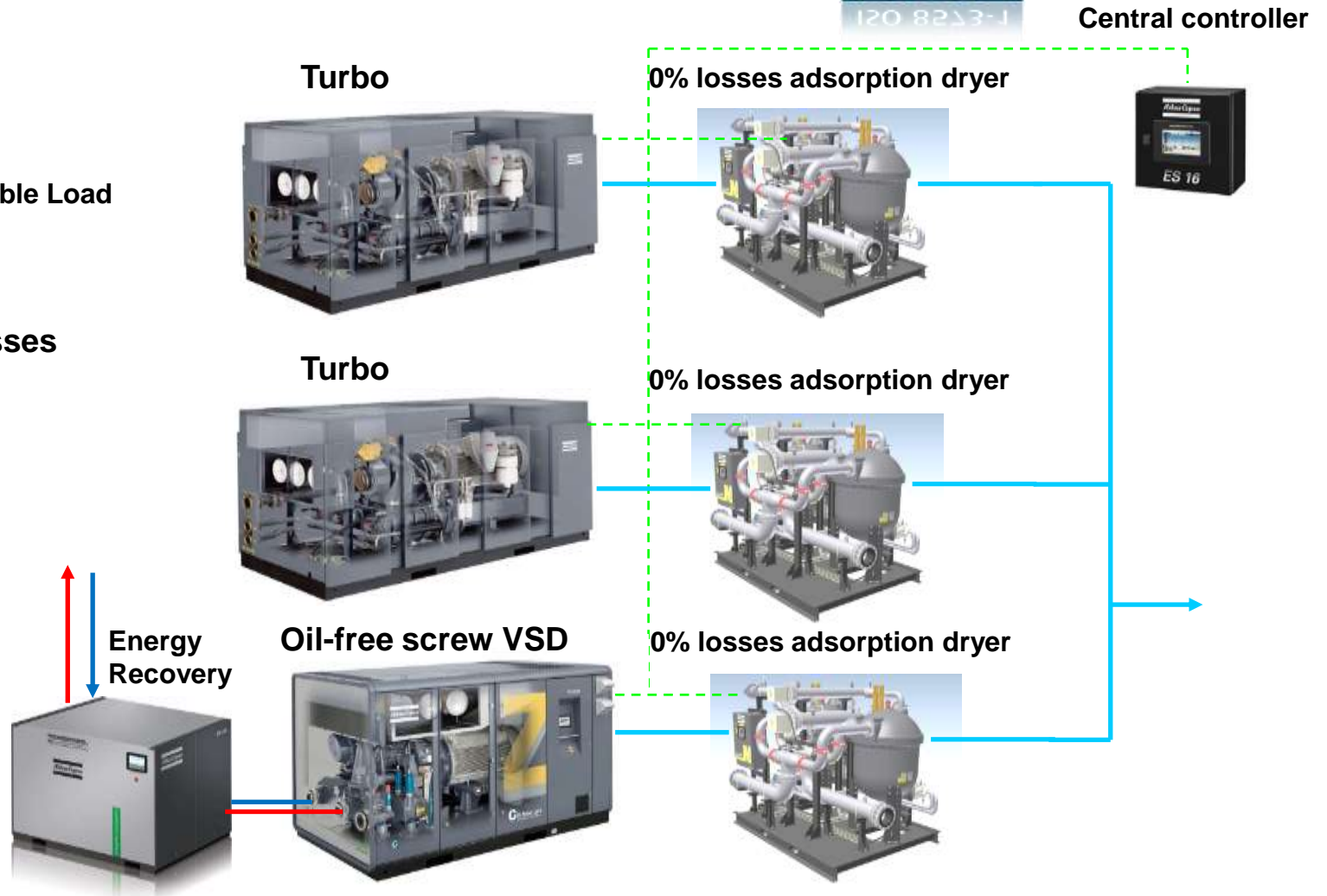
SER is to the tune of 0.192 KW / m3/hr

ENERGY EFFICIENT INNOVATIVE SOLUTION



■ Main innovative solutions:

- ❑ Hybrid technology
 - Oil-free screw variable speed drive for variable Load
 - Fixed speed centrifugal for the base load
- ❑ Heat-of-compression Dryers with 0% losses
- ❑ Energy Saving Central control system
- ❑ Remote Monitoring
- ❑ Energy Recovery system



Total energy savings upto 20%, SER can be reduced to 0.154 KW / m3/hr

MAXIMUM SAVINGS POSSIBLE

- Compressed Air usually represents **5%** of a typical Aluminium industry's electricity consumption
- **Energy Savings** possible :
 - Installing Hybrid compressors : Centrifugal + Oil Free Screw VSD : **INR 11.82 Cr**
 - HOC Rotary Drum-type Dryers : **INR 17.6 Cr**
 - Energy Recovery from Oil Free Screw compressors : **INR 9.46 Cr**
 - Central Controllers for optimum pressure generation : **INR 7.9 Cr**
 - Screw Blowers : **INR 1.11 Cr**



Total Savings : INR 47.89 Crore per Year

Equivalent to 72,000 Tons of CO2

INCENTIVE SCHEMES FOR ENERGY EFFICIENCY

Example : USA



2014 Program Application

This Application is to be used for projects completed with a Final Application submitted during the 2014 Program Year (Jan. 1, 2014 - Nov. 30, 2014).


Section 1 – Application

Incentive Application Checklist.....	2
Customer Information	3
Contractor Information	4
Third Party Payment Authorization	4
Final Application Agreement.....	5
Incentive Summary, Final Agreement Information and Account Holder Signature Page.....	6

Example : USA

Process Gas Incentive Worksheet

Process Gas

Check the **Michigan-Made** box  **only** if the piece of equipment is for a full unit replacement and not a retrofit for which you are seeking an incentive, meets the Michigan-Made bonus specifications **and** you can provide the manufacturer affidavit.

Ref #	Equipment Type	Incentive	Unit	# of Units	Total Incentive	
23-1	Furnace Tube Inserts	\$75.00	Insert			
23-2	High Efficiency Process Boiler (Water)	\$2.00	MBH			<input type="checkbox"/>
23-3	High Efficiency Process Boiler (Steam)	\$2.00	MBH			<input type="checkbox"/>
23-4	Tank Insulation – 1"	Low Temp (120°F – 170°F)	\$5.00	Square Foot		
23-5		High Temp (> 170°F)	\$9.00	Square Foot		
23-6	Tank Insulation – 2"	Low Temp (120°F – 170°F)	\$6.00	Square Foot		
23-7		High Temp (> 170°F)	\$10.00	Square Foot		
23-8	Air Compressor Exhaust Heat Recovery (Reservation Application Required)		\$25.00	HP	1,000	\$25,000.00

NOTE: Add or insert the measure reference number (left column) to all related specification sheets, invoices and other documentation.

0630/2013

Total Process Gas Incentives

Michigan-Made

All Measures

	\$25,000.00
--	-------------

0630/2013

To download an interactive application, go to: dteenergy.com/savenow

BEE – PAT / INCENTIVE SCHEME :

Proposals :

- Incentives on Energy Conservation & Efficiency to be extended to all major industries
- Incentives upon using following features :
 - Air Audit and Leakage reduction
 - Oil Free Screw Compressors with Integrated Variable Speed Drive
 - For high air capacity requirements (above 5000 cfm) : Centrifugal + Oil Free Screw VSD Hybrid combination
 - Integrated 'ZERO-Power' Heat-of-Compression Desiccant Dryer along with Oil Free Screw & Turbo compressors
 - Central Compressor Controllers suitable for combination of Screw & Centrifugal compressors
 - Screw Blowers for Low Pressure Conveying and Waster Water Treatment applications
- Being the Number 1 in the world, we have been consulted by the Energy Ministries of various countries like USA, France, etc.

***COMMITTED TO
SUSTAINABLE PRODUCTIVITY.***



Atlas Copco

