

Meeting the Challenge: “Energy Savings AND Zero Contamination.”



Capital Markets Day 2006

Luc Hendrickx, President Oil Free Air Division

Atlas Copco

Meeting the Challenge:



Global warming

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The Bad News....



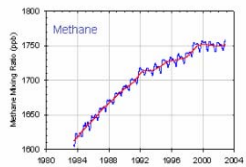
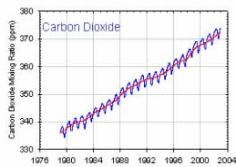
The Good News...



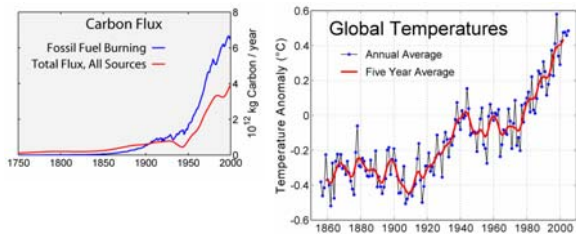
The "ERA OF DENIAL" is over

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Global Trends in Greenhouse Gas Emissions



Evolution of Fuel Use and Global Temperatures



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Customer Value of Oil Free Air

- Unsurpassed Reliability
- **Process Integrity**
- **Energy Savings**
- Ease of Installation
- Value Enhancing Aftermarket



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Unsurpassed Reliability



More than 50.000 machines sold
Billions of running hours



Customer Value of Oil Free Air

- Unsurpassed Reliability
- **Process Integrity**



Meeting the Challenge:



Zero Contamination



For some industries and applications oil-free air is vital



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Contamination-free



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Produktionsherkunft und -qualität
Produzierer und Lieferanten

TÜV TÜV Rheinland Group

10th Product Unit (Power Unit) in 100 kW
Atlas Copco Airpower 100
P.O. Box 100
Rue d'Industrie 801
2010 Wavre, Belgium

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Fax: +49 221 345-2001
E-Mail: info@tuvsouth.com
www.tuvsouth.com
Company: 11. January 2015

Type test certificate

Dear Sirs,

We have measured the total of content (aerosols, liquids and vapours) in the outlet air stream of an Atlas Copco Z series oil free rotary screw compressor. The measurements were done in accordance with the following guidelines and standards:

- ISO 8573-1 : 2001 Part 1 : Contaminants and purity classes
- ISO 8573-2 : 1998 Part 2 : Test methods for aerosol content method B1 (Jet flow method)
- ISO 8573-4 : 2001 Part 4 : Test methods for oil vapour and organic solvent content

This being a type test, covering the entire range of airspeed and water-cooled oil-free screw compressors, between 55kW and 300kW, a model was randomly selected for the tests. The tests were carried out at the outlet of the air compressor without any cooling or oil removal devices in between the compressor and the measurement point. Different pressures and temperatures were maintained at the measurement point to check if there was any variation in the measurements. The conditions of the test were:

- Temperatures at the measurement point : 20°C, 40°C and 50°C
- Pressures at the measurement point : 1 bar(a) and 8 bar(a).

Seite 1 von 2
0007036


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Customer Value of Oil Free Air

- Unsurpassed Reliability
- Proces Integrity
- **Energy Savings**



Meeting the Challenge:

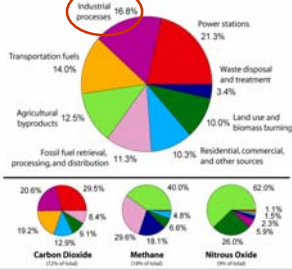


Save energy to save CO₂

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The Greenhouse Gas Emitters in EU

Annual Greenhouse Gas Emissions by Sector



Industry emits 16.8% of all GHGs

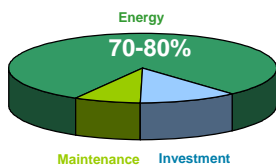
Above 10% or **80TWH** is for compressed air systems

Official studies indicate an energy saving potential of **33%** over a 15Y period, in existing compressed air systems.

* 33% savings would yield a 0,55% reduction or **11% of the Kyoto target !**

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Life Cycle Cost

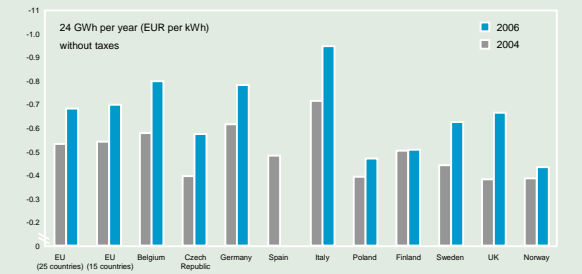


Energy typically accounts for 70- 80% of the compressor life cycle cost

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Market Electricity Prices

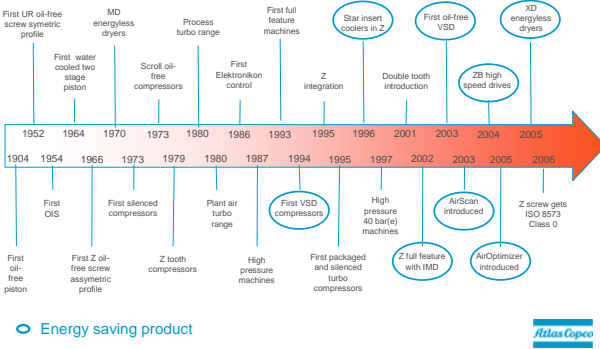
2004 versus 2006



▪ Cutting electricity consumption also makes strong economic sense



Innovation in Compressors

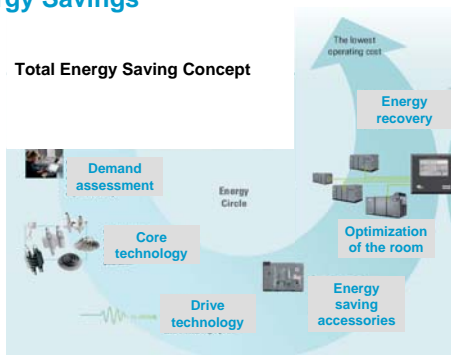


○ Energy saving product



Energy Savings

Total Energy Saving Concept



Technologies

Several compression and treatment technologies under one roof



Oil-free scroll compressors
1-15 kW



Oil-free tooth compressors
15-45 kW



Oil-free screw compressors
55-900 kW



Oil-injected screw compressors
5-500 kW



Turbo compressors
500-3500 kW



Matching air treatment equipment
Dryers, filters, drains, separators, etc

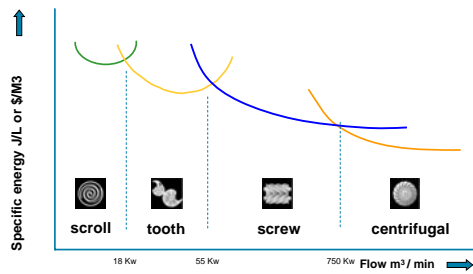


ES –energy savers
Optimization, monitoring, control

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Energy Cost per m3 of Air at 7 Bar

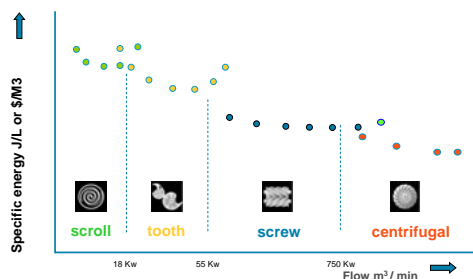
Atlas Copco has all the technologies available



An appropriate selection can save a lot of energy

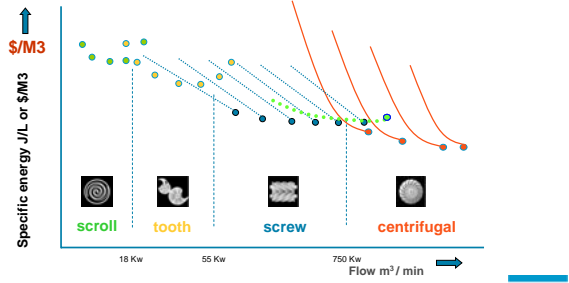
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Energy Cost per m3 of Air at 7 Bar



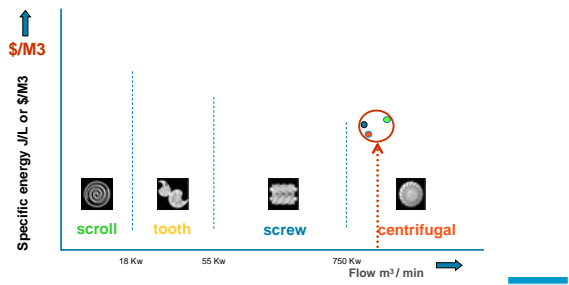
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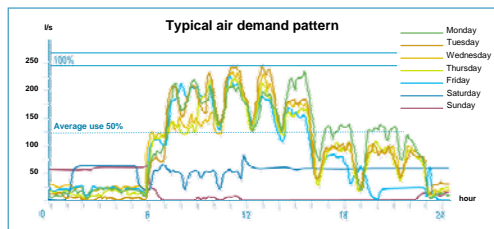
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Energy Cost per m3 of Air at 7 Bar



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Energy Savings

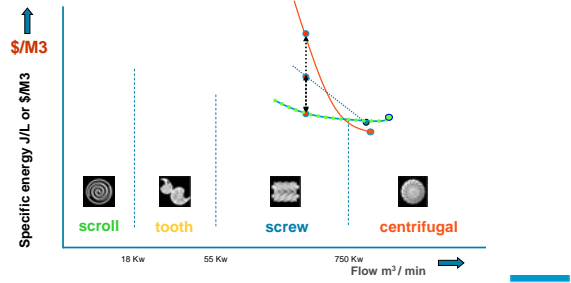


Measurement and simulation tools are available to calculate precise energy savings in a real environment

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Energy Cost per m3 of Air at 7 Bar

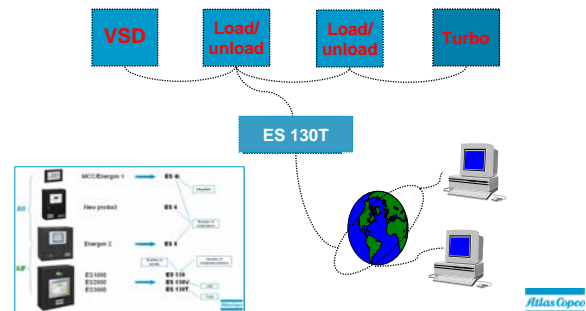
VSD technology can save a lot of energy and huge money



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Energy Savings

Master Controller



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Energy Savings

The Magic Formula



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Energy Savings

Hybrid Concept

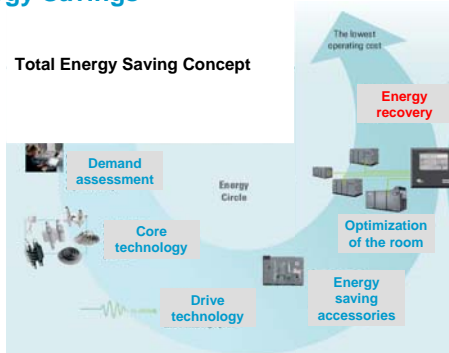


Depending on demand assessment multiple technologies (hybrids) are often applied to give large energy savings and operational flexibility (full and part loads)

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Energy Savings

Total Energy Saving Concept



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Energy Savings

Energy Recovery Systems

Recovery of energy for:

- Hot water for process
- Hot water for space heating
- Hot air for space heating

Integrated Energy Recovery System



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Customer Value of Oil Free Air

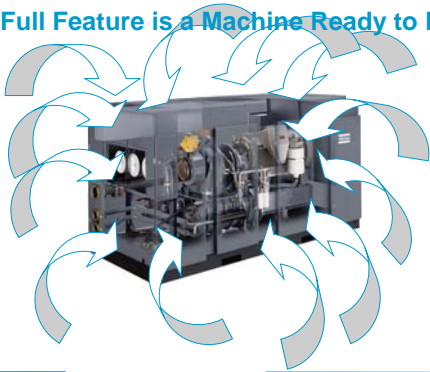
- Unsurpassed Reliability
- Proces Integrity
- Energy Savings
- **Ease of Installation**



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Ease of Installation

A Full Feature is a Machine Ready to Run



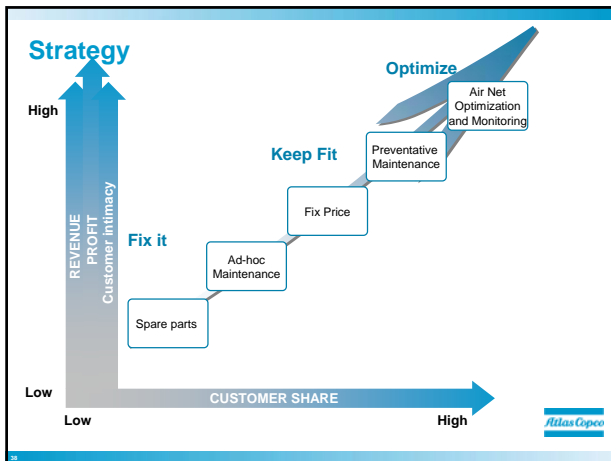
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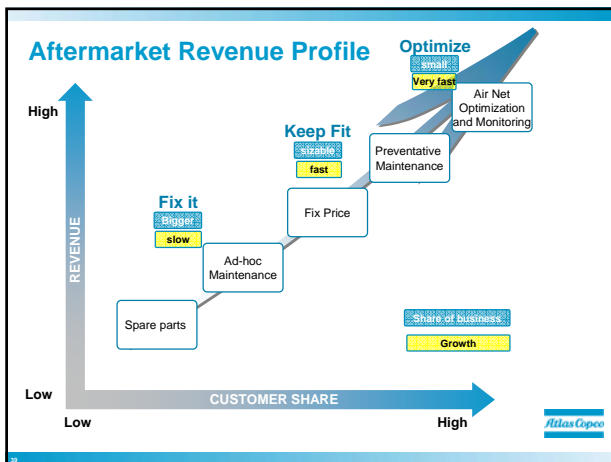
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**We are committed to your
superior productivity through
interaction and innovation.**

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