

Air Recovery Kit



Innovative Technologies
Symposium for Plastics

Tuesday, July 31, 2007



This report is solely for the use of Sidel Group personnel. No part of it may be circulated, quoted, or reproduced for distribution outside Sidel Group organization without its prior approval. This material was used by Sidel Group during an oral presentation; it is not a complete record of the discussion.

Electrical Cost of Blowing line ?

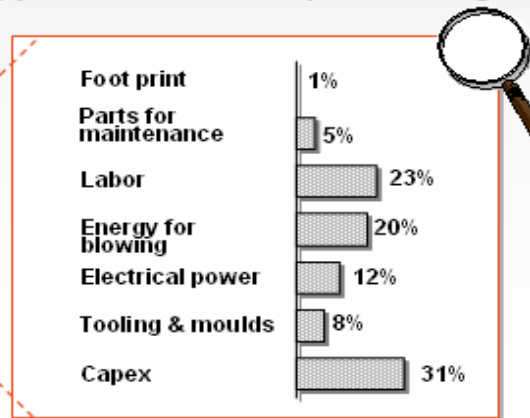
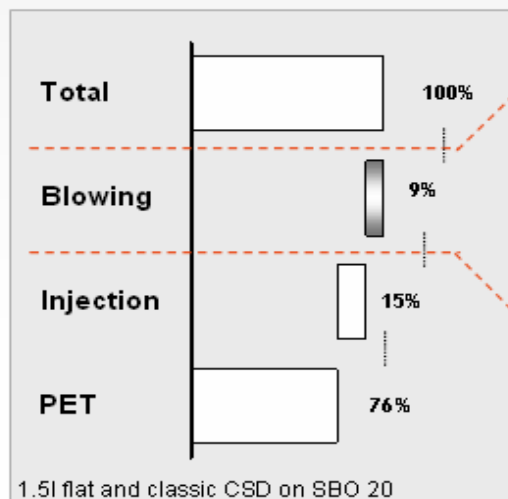
Blowing machines are heavy energy consumers

Energy costs inflate rapidly

- For the 40b, 1 Nm³/h = about 0.25 Kw
- For the 7b, 1 Nm³/h = about 0.13 Kw
- 1 Kw = € 0.065
- 1 000 one liter bottles to blow represent 15.3 Kw = € 1
- An SBO 20 consumes: 490 Kw/hour = € 32
10,000 Kw/day = € 650
3 Gw/year = € 195,000

Or \$ 235,000 !

- In the cost of blowing a bottle, the energy consumed by blowing represents:



Scope of supply: Machine, compressor, air recycling, tooling and moulds, training, FCA, MIR

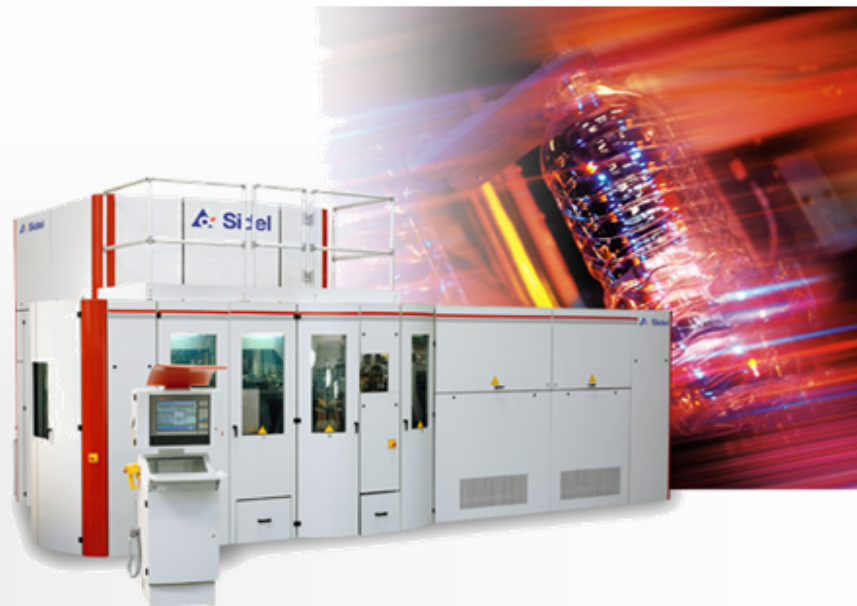
How to reduce cost ?

Principle

- Recovery, during production, of part of the pressure lost during the air exhaust phase

Objective

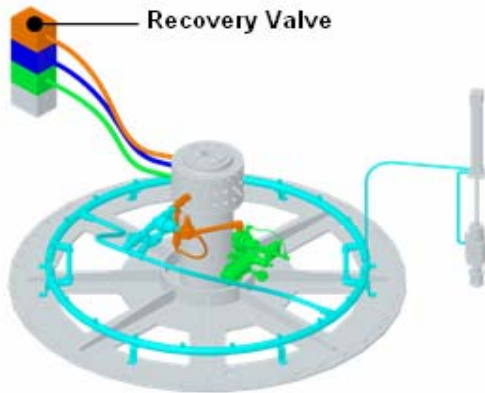
- Reduced consumption in pneumatic power



System Overview

Main Components

Ring for 7b and preblow air supply



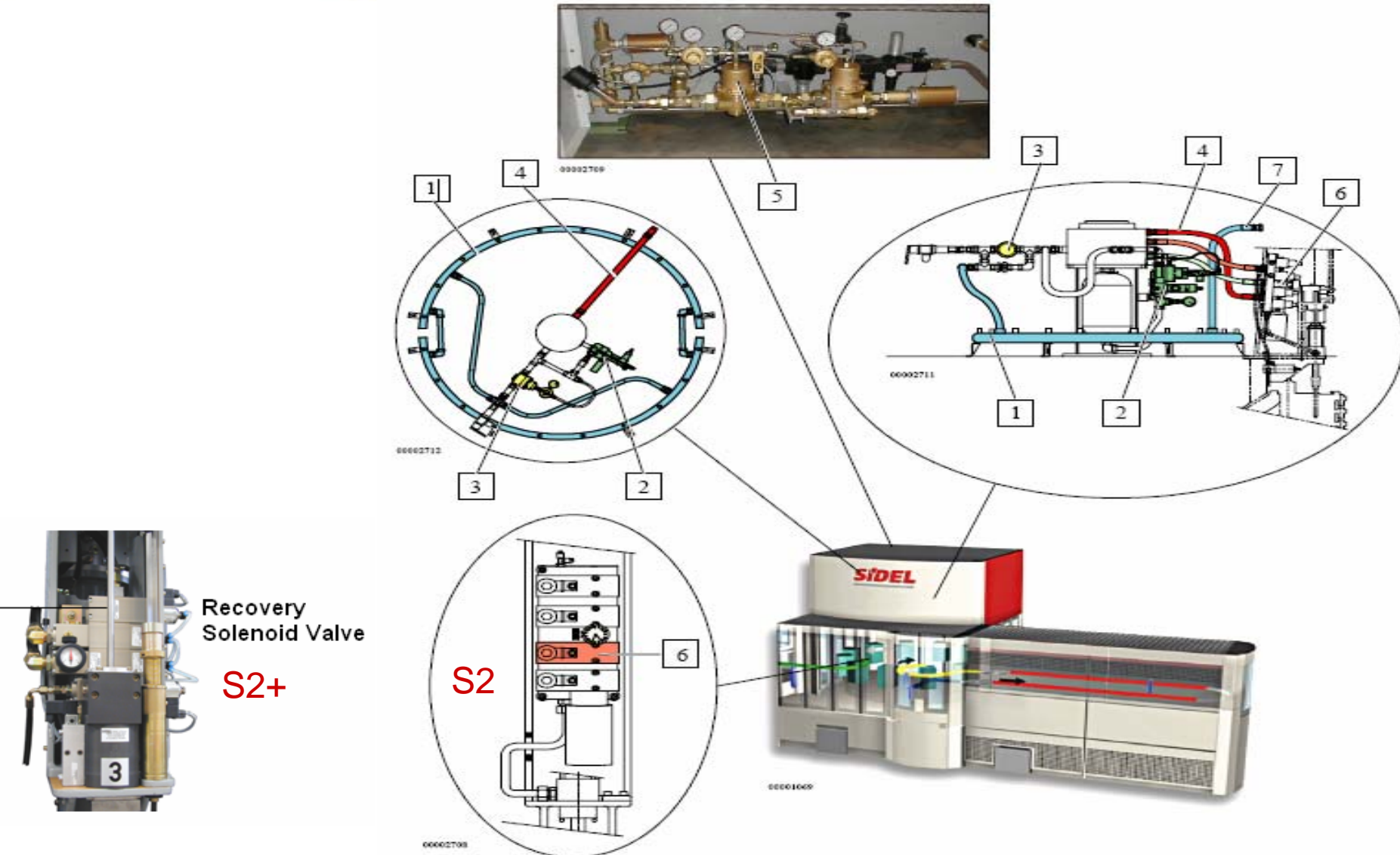
Recovery Solenoid Valve



Customer's Network

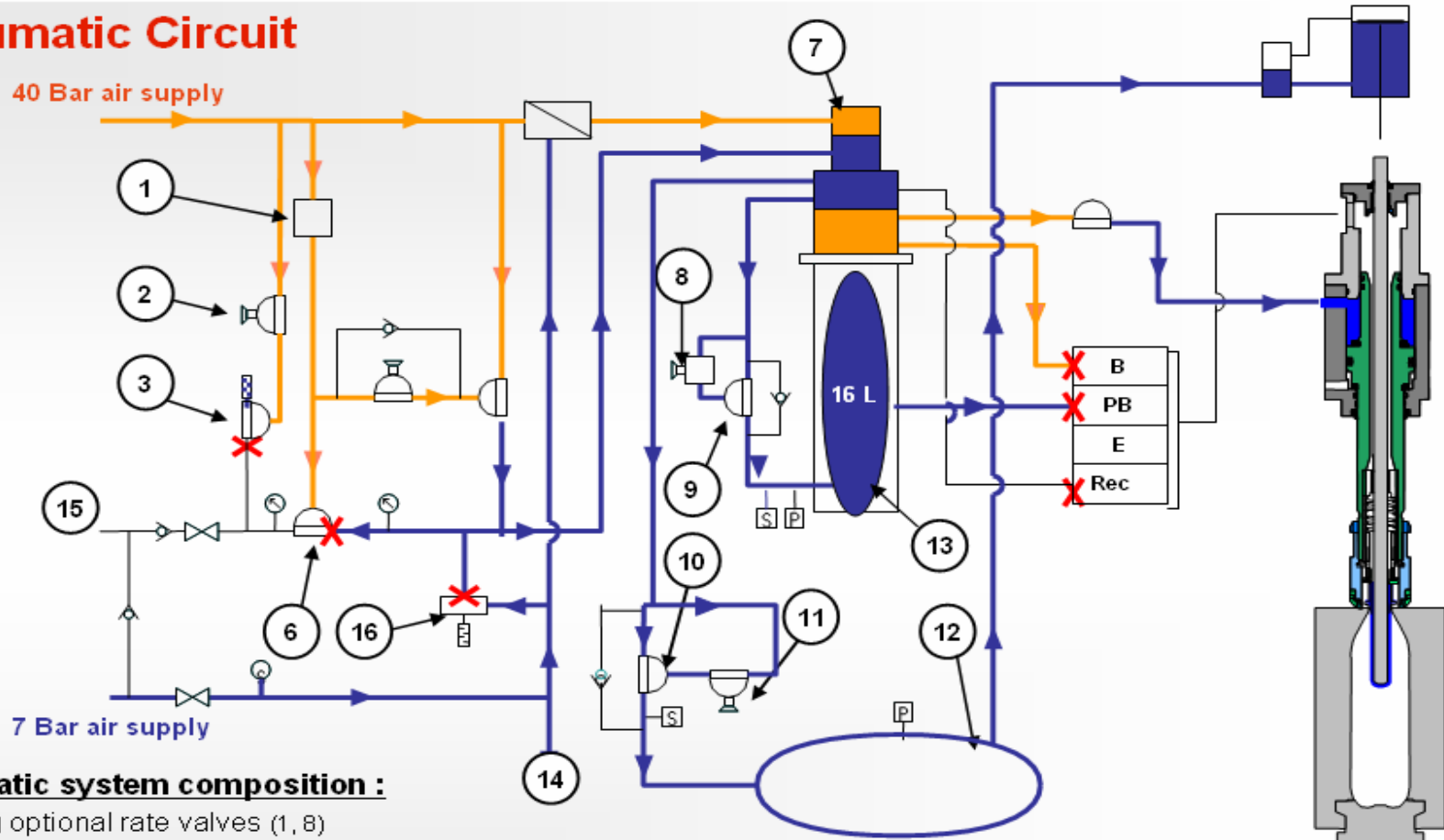


System Overview



System Overview

Pneumatic Circuit



Pneumatic system composition :

- 2 Driving optional rate valves (1, 8)
- 1 Drain valve (14)
- 6 Pressure reducing valves (2, 4, 5, 9, 10, 11)
- 2 Chutes (3, 6)
- 1 Distribution ring (12)
- 1 Rotary connection (7)
- 1 Preblow air reserve (13)

'Dead Volume' factor

Calculation

Bottle Volume	→ 1,5	→ 1,5 L		0,14 L
Bottle Full Fill	1,5	0,06 L		0,39 L
Nozzle		0,08 L	} Dead Volume	0,08 L
Cylinder + compensation		0,39 L		0,06 L
Valves		0,14L		
	Total Volume	2,17 L		1,5 L
	Dead Volume	0,61 L		
S2+	Dead volume	0.437 L		

2 Stages Blow Molding Process

Benefits

- Savings in 40b air of at least 15% and up to 40% depending on process parameters
- Savings in 7b air of 100% on 95% of the applications. Only 20 Nm³/h are necessary on start-up to prime system
- Provision of residual air for customer's use
- Constant bottle quality with no variation in process parameters
- Operating reliability. No maintenance necessary
- Reduced investment as compressors are sized to perfect fit
- Sidel experience and service

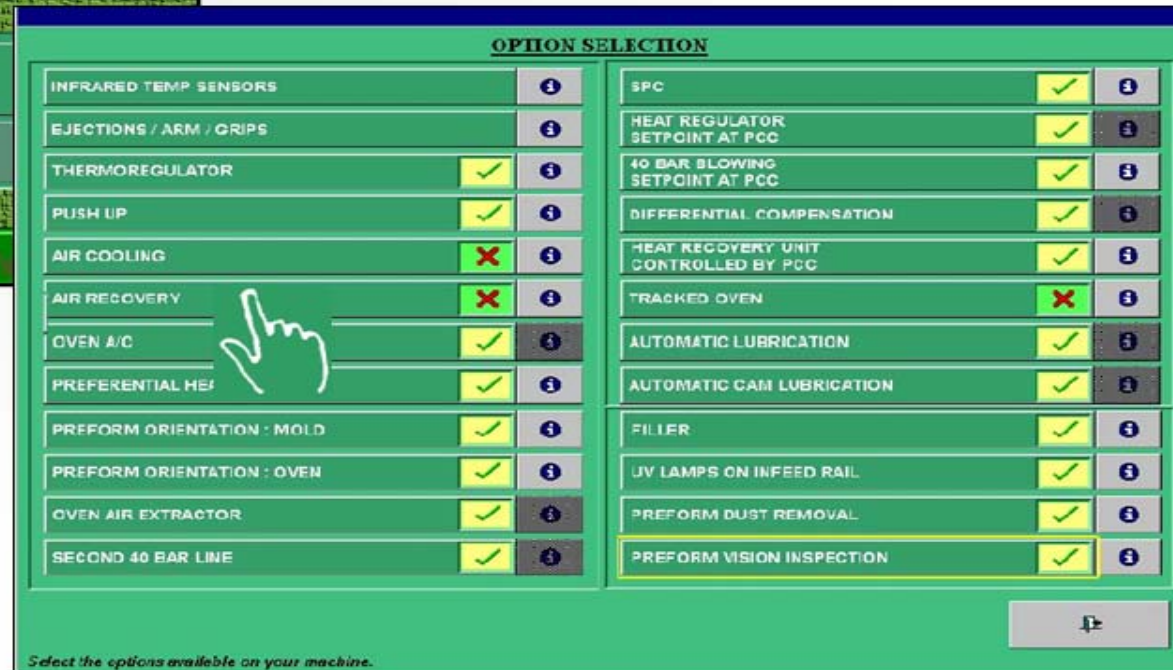
**Air consumption reduced up to 40% →
ROI between 10 and 18 months**

SYSTEM MANAGEMENT

Driving from PCC



← 1- Select options



2- Select Air Recovery* →

* From now onwards, the PCC application will include data generated by the option in its production calculation



Q/A ...
THANK YOU !

