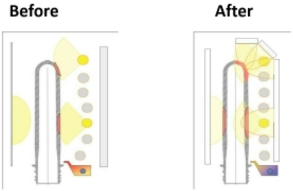
PRESENTATION

Technoplan Oven Energy Optimisation for PET stretch blow molding machines

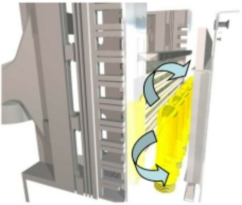
CERAMIC REFLECTORS

Using high performance ceramic material, with treated surfaces, the Infra-Red light reflection is enhanced, allowing the optimisation of the preforms body heating



SHIELD DESIGN AND VENTILATION

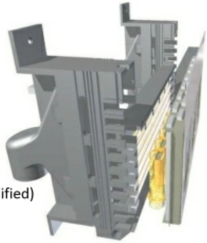
The shields are designed to improve the preform ventilation and achieve the right balance of air flow in the oven



ADVANTAGE

- A decrease in oven power consumption by **25%**
- Significant financial savings due to the reduced electricity consumption of the oven
- Easier profiling and better process window : **better heated -> easier to blow**

- Better maintenance cost :
    - no maintenance costs on the ceramics
    - the reduction of the lamps' intensity expands significantly their life-time
    - Lamps of the shutted-down ovens can be recovered
- Quick return on investment (< 18 months)
- Bottles continue to be produced without any drop in production rate and quality
- Rapidly installed without any major modification to the oven (only process is modified)
- Based on a proven and reliable technology



EXAMPLE

Before Optimisation

After Optimisation

MEASUREMENT

(SBO 16-Universal)

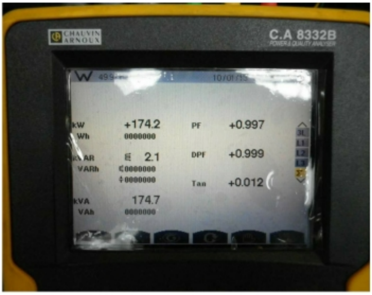
Before Optimisation

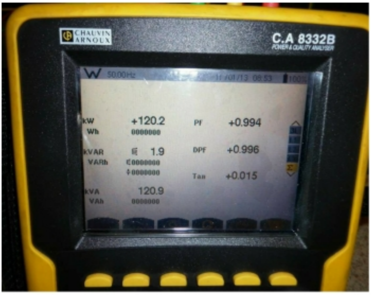
174.2 kW/h

54 kW/h spared
or
31%

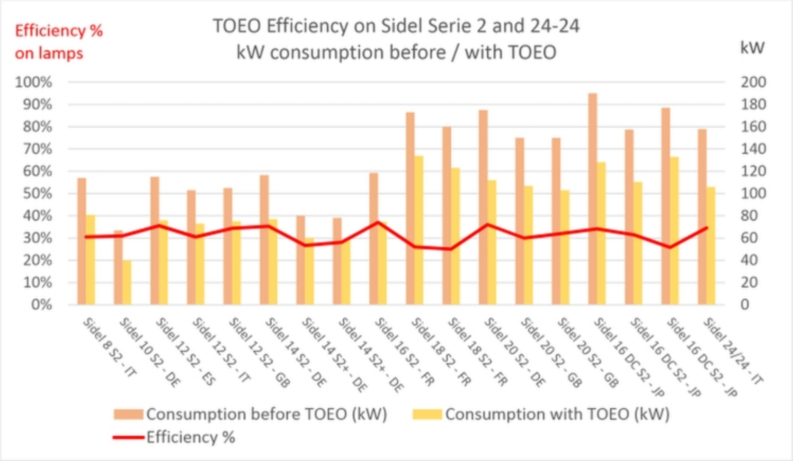
After Optimisation

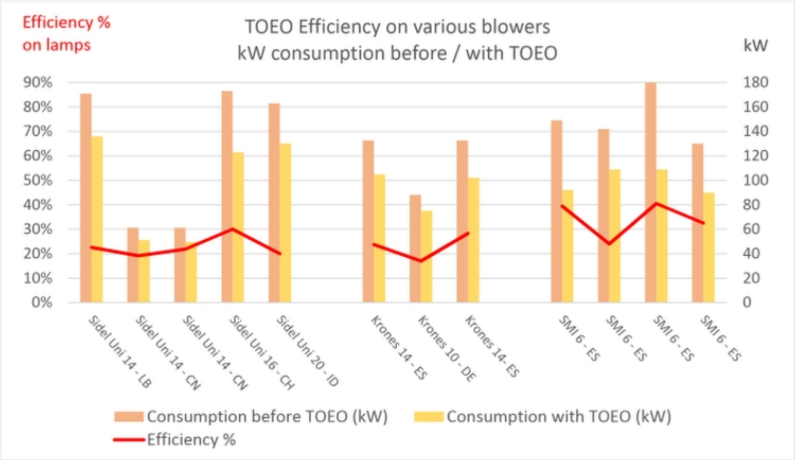
120.2 kW/h





Electricity savings exemples
with TOEO ceramic system





RAPPORTS D'EFFICACITÉ

TECHNOPLAN
ENGINEERING SA

Client : **Highland Spring**
City : Blackford
Country : Scotland, United Kingdom

HIGHLAND SPRING

TOEO : electricity consumption measurements

Machine (make & model): **Sidel 20-2 n°** 3
ID or SN : 5163

Measurements are recorded with a Voltmeter

- Production rate : 25'000 [b/h]
- Bottle volume : 1,5 [L]
- Preforms temperature : 158 [°C]
- Preform weight : 34 [gr]

P2 = 32
P1 = 9,5

A Consumption (kW), **before** TOEO installation : 150 kW

B Consumption (kW), **after** TOEO installation 107 kW

C Measured motor consumption 7 kW

Total spared electricity

F **= A - B** ==> **F =** 43 **kW**

G **= F / (A - C) x100** ==> **G =** 30 **[%]**

Remarks:

Would you recommand Technoplan TOEO : [✓ YES] NO (please encircle)

Date : 11 July 2014

Technicien's name :
Samuel GAUGUIN

Client's name : G. McMEEKING
email : grahamm@highlandspringgroup.com.

Technicien's signature :

Client's signature :
Company' stamp

HIGHLAND SPRING LTD
STIRLING STREET
BLACKFORD
AUCHTERARDER
PERTHSHIRE
PH4 1QA

TECHNOPLAN ENGINEERING SA

Client : **Highland Spring**
City : Blackford
Country : Scotland, United Kingdom

HIGHLAND SPRING

TOEO : electricity consumption measurements

Machine (make & model): **Sidel 20-2 n°** 4
ID or SN : 5701

Measurements are recorded with a Voltmeter

- Production rate : 32'000 [b/h]
- Bottle volume : 0,75 [L]
- Preforms temperature : [°C]
- Preform weight : 23 [gr]

P1 = 10,5 b
P2 = 35 b

A Consumption (kW), **before** TOEO installation : 150 kW

B Consumption (kW), **after** TOEO installation 103 kW

C Measured motor consumption 5 kW

Total spared electricity

F **= A - B** ==> **F =** 47 **kW**

G **= F / (A - C) x100** ==> **G =** 32 **[%]**

Remarks:

Would you recommand Technoplan TOEO : [✓ YES] NO (please encircle)

Date : 11 July 2014

Technicien's name :
Samuel GAUGUIN

Client's name : G. McMeeking.
email : grahamm@highlandspringgroup.com

Technicien's signature :

Client's signature :
Company' stamp

HIGHLAND SPRING LTD.
STIRLING STREET
BLACKFORD
AUCHTERARDER
PERTHSHIRE
PH4 1QA

TECHNOPLAN ENGINEERING SA

Client : **Highland Spring Group**
City : Pen-Y-Cae, Swansea
Country : United Kingdom

HIGHLAND SPRING

TOEO : electricity consumption measurements

Machine (make & model): Sidel 12-2
ID or SN :

Measurements are recorded with a Voltmeter

- Output / Production rate : 16936 [b/h]
- Bottle volume : 1 [L]
- Preforms temperature : 84 [°C]
- Preform weight : 29 [gr]

A Consumption (kW), **before** TOEO installation : 105 kW

B Consumption (kW), **after** TOEO installation 75 kW

C Measured motor consumption 18 kW

Total spared electricity

F = A - B ==> **F =** 30 **kW**

G = F / (A - C) x100 ==> **G =** 34,4 **[%]**

Remarks:

Would you recommand Technoplan TOEO : [✓ YES] NO (please encircle)

Date : 19 October 2015

Technicien's name :
Luc Lesage

Client's name : [redacted]
email : [redacted]

Technicien's signature :

Client's signature : [redacted]
Company' stamp

BLAEN TWYNI PLANT
GLYNTAWE
ABERCRAVE
SWANSEA SA9 1GS

TECHNOPLAN
ENGINEERING SA

Client : [redacted]
City : [redacted]
Country : Spain

[redacted]

TOEO : electricity consumption measurements

Machine (make & model): **ID or SN :**	**Krones 14S**

Measurements are recorded with a Voltmeter

- Production rate : 25'000 [b/h]
- Bottle volume 1,5 [L]
- Preforms temperature : [°C]
- Preform weight : 22 [gr]

Oven electricity consumption measurements

A Consumption (kW), **before** TOEO installation : 132,6 kW

B Consumption (kW), **after** TOEO installation : 104,9 kW

C Measured motor consumption 16,18 kW

Total spared electricity

F **= A - B** ==> **F =** 27,7 kW

G **= F / (A - C) x100** ==> **G =** 23,79 [%]

Remarks:

Date : 20/03/2014

Technicien's name :
Samuel GAUGUIN

Technicien's signature :

[redacted]

TECHNOPLAN
ENGINEERING SA

Client : [redacted]

City : [redacted]

Country : Spain

[redacted]

TOEO : 7-month confirmation measurements

Machine (make & model): **ID or SN :**	**Krones 14S**

Measurements of the 20 March 2014 : 23,7%

Measurements are recorded with a Voltmeter

- Production rate : 25'000 [b/h]
- Bottle volume : 1,5 [L]
- Preforms temperature : [°C]
- Preform weight : 22 [gr]

Oven electricity consumption measurements

A Consumption (kW), **before** TOEO installation : 132,6 kW (le 20/3/14)

B Consumption (kW), **after** TOEO installation : 102,1 kW le 22/10/14)

C Measured motor consumption 16,18 kW (le 20/3/14)

Total spared electricity

F **= A - B** ==> **F =** 30,5 kW

G **= F / (A - C) x100** ==> **G =** 28,3 [%]

Remarks:

Date : 22 octobre 2014

Technicien's name :
Samuel GAUGUIN

Technicien's signature :

Date : 22 octobre 2014

Client'
email :
Client'
Compar
[redacted]

TECHNOPLAN
ENGINEERING SA

Client : [redacted]

City :

Country : Spain

TOEO : electricity consumption measurements

Machine (make & model):
ID or SN : SMI H6

Measurements are recorded with a Voltmeter

- Production rate : 6000 [b/h]
- Bottle volume : 5 [L]
- Preforms temperature : 100 [°C]
- Preform weight : 64 [gr]

Oven electricity consumption measurements

A Consumption (kW), **before** TOEO installation 130 kW

B Consumption (kW), **after** TOEO installation 90 kW

C Measured motor consumption 7 kW

Total spared electricity

F **= A - B** ==> **F =** 40 kW

G **= F / (A - C) x100** ==> **G =** 32,5 [%]

Remarks:

Would you recommend Technoplan's TOEO ? YES (✓) NO ( )

Date : 10.04.2014

Technicien's name :
Antonino BATTIATO

Technicien's signature :

Date : 11.04.2014

[redacted]