

FROM AUDIT TO ACTIONS

HOW TO OVERCOME BARRIERS TO IMPLEMENT ENERGY EFFICIENCY ACTIONS AND INVESTMENTS

ECEEE Industrial Efficiency
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THE SAINT-GOBAIN WAY OF APPLYING TIPCHECK AUDITS

SG TIP-4-BEST programme

TIPCHECK 

Description and Objective

- SAINT-GOBAIN **T**hermal-**I**nsulation-**P**erformance audit programme
- to **B**oost **E**nergy efficiency, **S**afety and **T**emperature control
- by cutting total SG plants heat loss related energy consumption by **1/4 !**

THE SAINT-GOBAIN WAY OF APPLYING TIPCHECK AUDITS

The oil to ease the screwing: Integration in SG WCM programme

SG commitment to develop Zero-Waste-Plants

Sustainability facts in SG ISOVER Glass Wool Plants:

- **Energy consumption and CO2 emissions:**
-20% between 2000 and 2020 per produced ton
- **Water consumption:**
-30% between 1999 and 2013 per produced ton
- **75% of production waste recycled, target 100% by 2021**
- **Up to 80% recycled glass in raw materials; 50% in average**
- **More than 90% of all plants ISO 14000 certified**

Energy savings
are a key part of
SG's WCM targets!





TIP-4-BEST: THE VERY FIRST STEP



- ④ Convince and work with the very top management before starting up a program like this
- ④ Search for their support in terms of real targets
- ④ Be sure it is then communicated to all levels

THE SAINT-GOBAIN WAY OF APPLYING TIPCHECK AUDITS SG TIP-4-BEST program



Realisation internal:

- > Integration in WCM Energy Management Board in 2017
- > TIPCHECK audit mandatory for each energy-intense-SG plant –
Realisation of key component audits within next 5 years until 2021
- > Implementation of identified savings within maintenance schedule
- > Tracking and communication of achieved energy/ CO2 savings



Realisation external:

- > Implementation of external energy consultancy organisation and
develop TIP-4-BEST service offer to other external industries

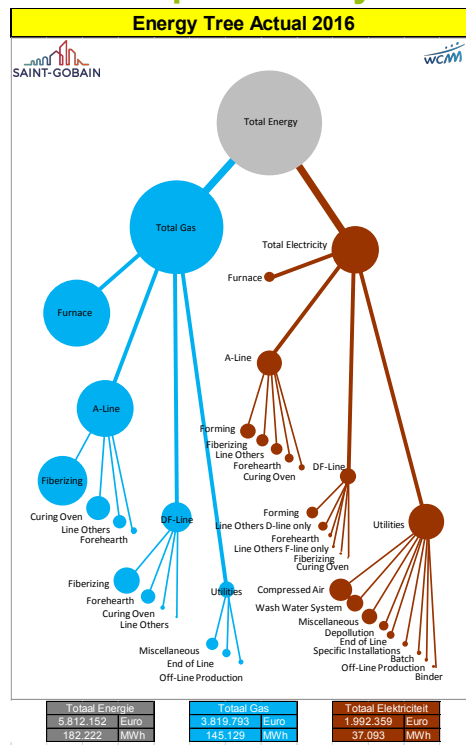


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Our process to understand the way that leads to decision

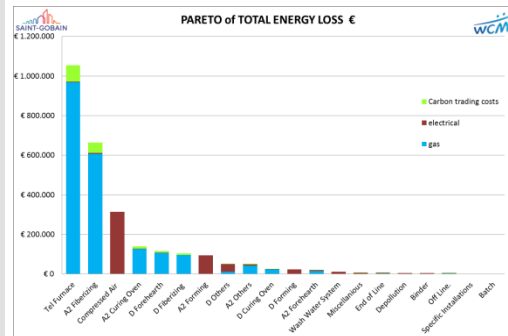
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Energy Consumption Analysis



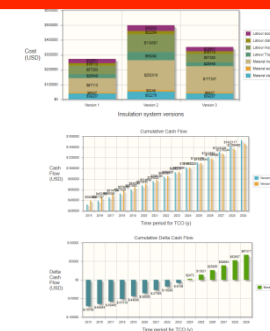
Audit Definition of Scope

Decision Board:
 Plant Manager
 EHS Manager
 Engineering Manager
 Production Managers
 Maintenance Managers
 WCM Facilitator
 TIPCHECK Auditors



Improvement Analysis and decision

Decision Board:
 Plant Manager
 Financial Manager
 Marketing Manager
 EHS Manager
 Engineering Manager
 Production Managers
 Maintenance Managers
 WCM Facilitator
 TIPCHECK Auditors



ISOVER
SAINT-GOBAIN



THE SAINT-GOBAIN WAY OF APPLYING TIPCHECK AUDITS

Constraints

- ④ Too many actors involved
- ④ Different targets, KPI's and priorities inside the organization
- ④ Technical difficulties
- ④ Lack of economic resources



TIP-4-BEST: DETAILED STEPS – AFTER THE AUDIT

Decision making meeting



Aim: Select corrective action to implement and include it in WCM energy board

Meeting attendees:

- Plant Manager
- EHS Manager
- Engineering Manager
- Maintenance Manager
- Financial Manager
- WCM facilitator

Meeting time: 2 h

Corrective actions in place



Aim: put in place new insulation system as defined

Players:

- Engineering Manager
- Maintenance Manager

Timing: depends on solution

Check effectiveness of actions taken



Aim: Feed-back about corrective actions and include it in WCM energy board

Players:

- EHS Manager
- Engineering Manager
- Maintenance Manager
- WCM facilitator
- TIPCHECK auditor

Check-up time (auditor): 2 hours (sampling)

Meeting time: 1 h

TIP-4-BEST: DETAILED STEPS – AFTER THE AUDIT

Decision making meeting



Aim: Select corrective action to implement and include it in WCM energy board

Meeting attendees:

- Plant Manager
- EHS Manager
- Engineering Manager
- Maintenance Manager
- Financial Manager
- WCM facilitator

Meeting time: 2 h

- @ Remind Group targets (top to down)
- @ Show clearly the benefits of the program in term of real figures (top to down)
- @ Get commitment from Plant Manager (top to down)
- @ Continue support during implementation of the corrective actions (down to top)

TIP-4-BEST: DETAILED STEPS – AFTER THE AUDIT

Corrective actions in place



Aim: put in place new insulation system as defined

Players:

- Engineering Manager
- Maintenance Manager

Timing: depends on solution

- @ Provide ready-to-use technical advice and solutions (down to top)
- @ Be open and sensitive to constraints at this level (down to top)
- @ Show benefits relative to their work for the future e.g. conditions improvement (down to top)

TIP-4-BEST: DETAILED STEPS – AFTER THE AUDIT

Check effectiveness of actions taken



Aim: Feed-back about corrective actions and include it in WCM energy board

Players:

- EHS Manager
- Engineering Manager
- Maintenance Manager
- WCM facilitator
- TIPCHECK auditor

Check-up time (auditor): 2 hours (sampling)

Meeting time: 1 h

- @ Make sure results are followed and checked inside organization
- @ Be sure everybody is aware and satisfied with the results (transversal)
- @ Creating a good project reference will be really helpful for future audits (transversal through the Group)
- @ Create the habit for future re-check



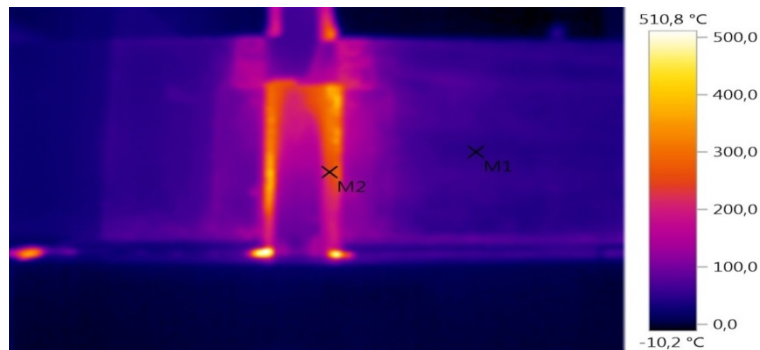
TIP-4-BEST: STATE OF THE ART

- ④ Message extended 'mouth to ear' between plants
- ④ A dedicated resource created by different plants to realize the solutions proposed after the audit
- ④ Keep on communicating results to top-management
- ④ Saving potential right now in the pipe-line:
 - ④ more than 500 k€
 - ④ ~10.000 MWh
 - ④ ~ 2.500 Tn CO₂

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EXAMPLE 1:
SAINT-GOBAIN GLASS SEKURIT. L'ARBOÇ.
3 OVENS & 9 AUX EQUIPMENTS



Potential savings

(non insulated parts + improvement existing insulation)

		Result
Investment demand	(€)	65.475
Payback	(Years)	1,98
Annual Heat Loss Savings	(€)	32.930
Annual Heat Loss Savings	(MWh p.a.)	393
CO2 reduction potential	(Tn p.a.)	80

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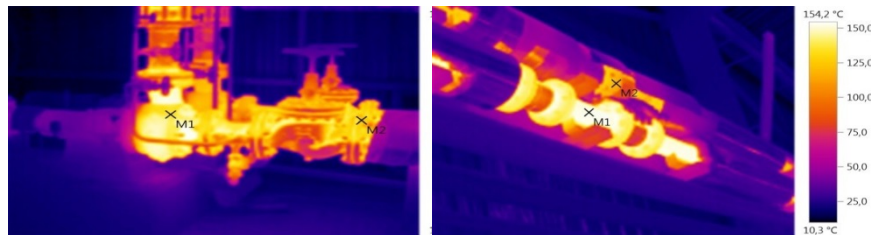
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EXAMPLE 2:

SAINT-GOBAIN GLASS. AVILÉS.

THERMAL OIL BOILER, HEATED WATER BOILER & FLOAT

SAINT-GOBAIN
SEKURIT



Potential savings

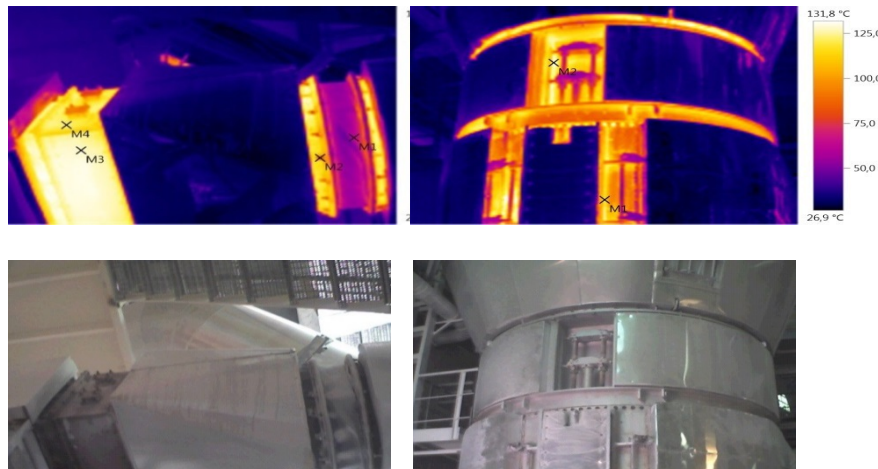
(non insulated parts + improvement existing insulation)

		Result
Investment demand	(€)	390.150
Payback	(Years)	1,25
Annual Heat Loss Savings	(€)	313.365
Annual Heat Loss Savings	(MWh p.a.)	3.888
CO2 reduction potential	(Tn p.a.)	785

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EXAMPLE 3A:
SAINT-GOBAIN PLACO. GYPSUM PLANT. QUINTO.
CALCINATION FURNACE



Potential savings

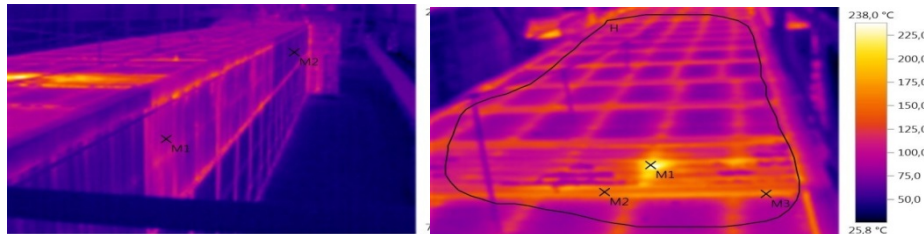
(non insulated parts + improvement existing insulation)

		Result
Investment demand	(€)	5.950
Payback	(Years)	0,93
Annual Heat Loss Savings	(€)	7.545
Annual Heat Loss Savings	(MWh p.a.)	248
CO2 reduction potential	(Tn p.a.)	50

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EXAMPLE 3B:
SAINT-GOBAIN PLACO. GYPSUM PLANT. QUINTO.
DRYER OVEN



Potential savings

(non insulated parts + improvement existing insulation)

		Result
Investment demand	(€)	28.952
Payback	(Years)	1,10
Annual Heat Loss Savings	(€)	26.420
Annual Heat Loss Savings	(MWh p.a.)	842
CO2 reduction potential	(Tn p.a.)	170



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TIPCHECK 

LET'S FIX THE NUTS AND BOLTS –
TOGETHER WE CAN MAKE A CHANGE...



THANK YOU FOR YOUR ATTENTION!