FOUNDRYBENCH

Supported by: Intelligent Energy Europe

Good Practice Guide

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Basics

As an outcome of the FOUNDRYBENCH project Good Practice Examples (GPE) should be collected and published.

This collection has taken place resulting in a spot view on the current situation in the Western European foundry industry (Finland, Sweden, France, Spain, Germany, GB)

Collected were all type of examples which the taskforce evaluated to be worth copying.

The results came from

- the energy analyses in foundries (see above)
- from other experiences of the collaborating institutes and consultants, i. e. own investigations
- from literature and former good practice advices which still are considered up-to-date and valid.

By increasing energy prices it is also reasonable to review techniques, which might have been not economic in the past but might get a better benchmark now.

Basics

The collection is standardized for database handling and will be put on the web-site of

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Is seems important and therefore shall be emphasized here that this small collection is all based on case studies and gives rough but very dense and informative introductions on a energy saving techniques, practices, or procedures.

Content

Among the examples are well known but not commonly employed solutions but also brand-new developments with only one application at the moment.

Good Practice Example Data Sheet

Name of transmitter	Franzen	Telephone no. transmitter	+49(0)211/6871-330			
who gives information?						
Choose Category (1-4)		System Mod.	X	Material subst.		
choose one or several		Technology	X	Working proc.		41
Acronym	Electricity generation I	*may be added by project staff*				

Headline

Electricity generation from wast heat - ORC steamengine

Source	Investigation		User	FGK	Literature	
of information	by FEEB proj.		Supplier		citable (!)	

Source identification

www.frankenguss.de

Address or citation

General description of the original state (if applicable):

Large amounts of free waste heat arising process related in foundries. As a result of temporal or spatial separation of supply and demand, respectively heat source and heat sink, the technical use is often difficult. In addition, the use of the most in the medium temperature range lying heat sources are limited to technical systems, which operate in this area with reasonable good efficiency.

Quantitative real example or realistic application description

Year of realization		2011	
Categories Technology	installed capacity	6 824 [electricity]	*MWh/y*
or System modification	specific consumption		*t/t; m^3/h ...*
	fraction of exchange		%
	related to former situation		
Category Material subst.	hourly throughput		t/h
	fraction of exchange		%
	related to former situation		
Category Working proc.	fraction of change		%
	related to former situation		

Amortisation calculation

Invest	about 6 000 000	€
Interest rate	funded with > 2.4 M€	%
Annuity		%
Operational costs	No information available	€/a

Return on invest 36-48 *months*

Photo: **ORC plant** (organic rankine cycle)
Dimensions (l, h, w) is approximately: 18.0 m, 7 m, 3.80 m; weight: about 40 t

Courtesy: Maxxtec AG, Sinsheim, Germany

Learning from nature

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Computerized shape optimization

Storage of heat

Intelligent control of compressors

Exchange of the recuperator

Energy monitoring systems

Low pressure air filter

Compressed air

Increase of energy efficiency by increasing the cut out

OxyFuel burner

Flameless porous burner

waste heat to dry varnish

Intelligent fan control

Energy requirements of different types of feeding systems

Heating premises

ITT Water and Wastewater - Borehole Thermal Energy Storage (BTES)

Content

(abstract)

Highest efficiency during cupola operation (optimum operating point)

Foundry connected to district heating network

Melting temperature and overheating for cupola coupled with holding electrical furnace

Procedural control for induction furnaces for melting and temperature holding

Automatic pouring units for High Power Thermal Plasma (HPTP)

Close Circuit in cooling water for heat treatment

Top hat heat treatment furnace / seal hearth insulation

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Pump cooling system control

Shelter against weathering of coke

Influence of packing density on the power consumption

Influence of the quality of scrap on the power consumption

In the following session some specific sectors / objectives of this collection will be presented ….