

Setting	
Country	Czech Republic
Location	Hodonin
Project start date	January 2006
Project end date	December 2008
Technology keywords	Advanced technologies, High temperature technologies, Agricultural waste, Coal combustion, Forestry and energy crops
Host sector	Main Energy Producer

Technical summary of the project	
Objective of the project	Partial replacement of brown coal fuel combustion with carbon-neutral fuel like wood chips

Project description

Introduction

In years 2006 - 2008 biomass as secondary fuel has been introduced in power plant EHO CEZ (Elektrarna Hodonin, ČEZ, hereafter "EHO") in city of Hodonin, East Czech Republic. For this purpose two lignite-fired Circulating Fluid Bed (CFB) boilers K01 and K02, were subsequently retrofitted with new cofiring systems adopted to simultaneous burning of mix of coal with wood chips. EHO has become the biggest producer of electric power from biomass in the Czech Republic. The new system can even operate on pure biomass which is rarity in this range of capacity per unit. Compliance with stringent emission standards was fulfilled. Process economy and reliability were improved dramatically as well.



Plant Description

The EHO is one of the oldest power plants in the Czech Republic. It was built near a lignite mine and the Morava river (see photograph - above right).

With its installed electric output of 105 MWe and heat output of 250 MWh, it is the smallest lignite-fired plant of utility ČEZ a.s. In 1990 extensive reconstruction started with special attention to environmental protection. Currently EHO is a modern power station with a minimum environmental impacts. The EHO production in 1999 was 289 GWh of electric power and 1,109 TJ of heat. EHO is also the biggest exporter of cross-border heat per exporting of 800 TJ/a to Slovakia.

In 1998 two Circulating Fluid Bed (CFB) boilers K01 and K02, each capacity 170 t/h of steam were supplied and commissioned by AEE Austria. Both these boilers were later (2004-2005) retrofitted with new cofiring systems adopted to simultaneous burning of mix of coal with biomass as described in next paragraph.

Project History

Project of fuel switch from lignite to biomass started in EHO in 2004. CFB Boilers FK1 and FK2 were selected for purpose of retrofit for possible fuel mix of biomass (wood chips) with lignite. Since that time share of biomass fuel has been permanently increasing up to current state when 149 GWh of green electricity was generated last year. This corresponds to 136 kt/a of burned biomass, which is equivalent of 200 t/a of lignite being substituted with environmentally neutral fuel. At the same time dramatic reduction of SO₂ emissions has been achieved and reduction of desulfurization costs (consumption of lime) as well.

In 2007 another retrofit action for EUR 5 million was realized with boiler FK1, when the fuel burning system was adopted for burning of pure biomass. Latest technology improvement carried out in 2007 of boiler FK2 led to capability of this boiler to burn pure biomass. Fired with pure biomass this boiler is able to operate on 75% of its nominal capacity. Progress as per power production originated from biomass burning was increasing as follows

2004	51 GWh
2005	69 GWh
2006	88 GWh
2007	117 GWh
2008	149 GWh
2009	220 GWh (planned)
2010	300 GWh (medium term outlook)

Boiler FK2 is currently the biggest energy equipment utilization of biomass in the Czech Republic and one of the biggest in Europe. In this manner, biomass became the second biggest renewable energy source in the Czech Republic immediately following hydropower as the biggest RES. The switch of the lignite fuel for biomass required the change of combustion devices like main and stabilizing burners and pressure parts of the boiler. The combustion devices were supplemented with a band grate enabling combustion of wood chips.

The emissions are continuously monitored by AMC connected to the control system of the boiler and with remote data transfer to the internet website.

Project Provider: Austrian Energy Environment Group (AEE) was supplier and EPC contractor for development, projecting, production, installation and startup of both CFB boilers FK1 & FK2 as well as their retrofit on biomass operation. This company produces and supplies steam boilers as well as desulfurisation systems for combustion of coal, oil, and biomass, which satisfy the stringent standards of environment protection.

Environmental and social benefits

(Estimate of) Greenhouse Gases abated (in metric tons of CO ₂ -equivalent)	Carbon emissions	
	Year	tCO₂ / a
	2004	63,000
	2005	85,000
	2006	109,000
	2007	145,000
	2008	185,000
	2009	273,000
	2010 (outlook)	372,000
	2011 (outlook)	372,000
	2012 (outlook)	372,000
	2008-2012	1,574,000
Number of reduction units	Outlook for trading period 2008-2012 is 1,6 Mil. tCO ₂ total	
Socio-economic aspects	<p>This Project will make possible replacement of equivalent power being generated from brown coal from East Bohemia.</p> <p>Major project incentives were environmental but also economy reasons related to concentrations of SO₂ in flue gases as well as reduction of CO₂. Project economy was evaluated to 17 MEUR as Net Present Value. Total amount of more than one and half million ton of CO₂ is supposed to be reduced within the 2008-2012 period. Support of growing turnover in forest industry with equivalent growth in jobs by approximately 50 jobs.</p>	
Methodology used	Approved baseline methodology	

Economic data

Capital costs	10 MEUR
Financing scheme	Soft loan from domestic banks
Financing organisation	

Project developer

Name of the project developer	EHO CEZ (Elektrarna Hodonin, ČEZ)
E-mail and/or web address	olga.dvorecka@spinvest.cz
Contact person	Olga Dvorecka, Public Relations

Host organisation

Name of Host organisation	ČEZ, a. s. Duhová 2/1444, 140 53 Praha 4
E-mail and/or web address	eva.novakova@cez.cz
Contact person	Eva Novakova

Technology provider

Name of Technology provider	ŠKODA PRAHA Invest s.r.o. Duhová 2/1444, 140 74 Praha 4
E-mail and/or web address	olga.dvorecka@spinvest.cz
Contact person	Olga Dvorecka, Public Relations