LIFE Project Number

LIFE09 ENV/GR/000307

Deliverable 5.1

Cold commissioning test protocol of the integrated installation

Reporting Date

30/06/2012

LIFE+ PROJECT NAME or Acronym

ENERGY WASTE

Data Project

Project location	Greece
Project start date:	01/01/2011
Project end date:	31/12/2013

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Project: Energy exploitation of non-recyclable urban waste in a sustainable waste –to –energy market "ENERGY WASTE"	**LIFE09 ENV/GR/000307**
Report title: Deliverable 5.1 Cold commissioning test protocol of the integrated installation	
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Summary:

The integrated installation that will be commission during the cold commission consists of the feeding system, the gasification reactor, the gas cooler (air-gas heat exchanger), the high efficiency cyclone, the air compression and distribution system and the automation & control system. The cold flow commissioning of the integrated installation will be the continuation of the cold runs which are focusing on the fluidisation behaviour of the feeding system and the gasification reactor only.

Status:	**Date:**	**Pages:**
General Public	30 June 2012	5

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1 Introduction

Cold commission is a basic procedure that will be followed in order to check the functionality of the installed machinery (i.e. motors, pumps, rotating devices), the response of the automation and control system and all the measuring instrumentation and the operation of the unit under ambient pressure conditions. Feeding system control, cold flow fluidisation monitoring (checking pressure drop profile) and air tightness are critical parameters that should be determined and secure under ambient conditions. Once the successful cold commissioning is completed, the unit will be ready for hot testing operation.

The integrated installation that will be commission during the cold commission consists of the feeding system, the gasification reactor, the gas cooler (air-gas heat exchanger), the high efficiency cyclone, the air compression and distribution system and the automation & control system. The cold flow commissioning of the integrated installation will be the continuation of the cold runs which are focusing on the fluidisation behaviour of the feeding system and the gasification reactor only.

2 Cold commissioning protocol

The following procedure will be followed as cold commissioning protocol.

2.1 Machinery and equipment inspection

Visual inspection at all parts and components of equipment and machinery will be done as an essential first step. All equipment will be tested without load to check their functionality.

2.2 Automation and control system and measuring instrumentation inspection

The electrical switchboard, the PLC card, all signals and commands will be checked one by one to secure the required operation profile. The visualisation of the process and the data recording system will be also tested. All measuring equipment will be tested.

Cold flow tests will be executed and the automation and control system will be calibrated for sustaining the critical process parameters (flow, pressure drop) in desirable ranges.

2.3 Cold flow testing

As last step in the cold commissioning is the cold flow testing. The successive steps that will be followed are presented in Table 2.1.

Cold commissioning is estimated to last 15 working days while troubleshooting might also be required if malfunctions will be detected. Troubleshooting duration is not reported because it depends on the nature of the emerging problem. Once the cold commission of the integrated installation is successfully completed, the operation under gradually elevated temperatures (from ambient to 800°C) will take place. At that time the unit gasification tests will begin.

Table 2.1: Cold commissioning protocol

	Cold commissioning procedure							**Duration**
Equipment	Functionality							1 days
A&C	Response							
Instrumentation		Functionality						2 days
Process			Tightness					1 day
				Flow control				2 days
				Pressure drop profile				
						System pressure drop profile		2 days
							System Calibration	7 days
							Overall testing	
Troubleshooting								

It is noted that the above-mentioned duration might change in case of unforeseen technical difficulties.