

Web Based Remote Management of CHP Plants - Application Note

Introduction

A Combined Heat & Power (CHP) plant can take many forms. In essence however, it consists of an electrical generator combined with equipment for recovering and using the waste heat produced by that generator.

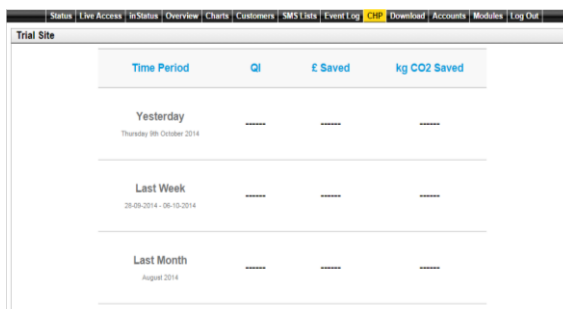
CHP schemes have a multiple of well-documented benefits. Apart from helping to generate substantive savings in fuel costs for the user, they have a vital role in helping to reduce carbon emissions.

The economic and environmental viability of a CHP operation is dependent on numerous variables, such as the size of the installation, generator fuel prices, hot water & steam demand, generator efficiency, running costs of the generating plant, cost of plant depreciation, available governmental incentive schemes and the compliance requirements of any applicable energy efficiency (carbon reduction) schemes. Some of these cost & demand variables will change frequently, up to several times a day and in some cases almost every minute (such as electricity, steam and hot water demand). Calculating, collating and demonstrating accurately the financial benefits obtained can therefore be a complex task. Dynamic demand management and control to optimise the savings from a CHP plant can be even more challenging. Equally, CHP plant users need the ability to accurately record, calculate and verifiably demonstrate CO₂ savings achieved by each installation.

Dexdyne's Remote Management System (RMS)

Dexdyne's RMS is designed to make the management of CHP plants easier and even more efficient. The system works, in essence, by securely and remotely capturing the live CHP plant data from its various sources and making this data available over the internet to authorised users. Without the need for any manual data collection or collation, the RMS system can, in a manner which is secure, accurate and auditable, amongst other things:

- Give live access to how the CHP plant (or plants) is performing
- Calculate cost savings achieved
- Calculate CO₂ savings achieved for emissions reduction compliance and/or monitoring purposes
- Calculate the Quality Index (QI) of each plant
- Enable live and historic comparisons of CHP performance to enable plant managers to optimise the operation of their CHP plants and/or validate the effectiveness of the plant(s)
- Generate automatic reports with such key information as may be required
- Generate SMS alerts if processes stray outside approved parameters (determined by the user)



Time Period	QI	£ Saved	kg CO2 Saved
Yesterday Thursday 9th October 2014	*****	*****	*****
Last Week 28-09-2014 - 05-10-2014	*****	*****	*****
Last Month August 2014	*****	*****	*****

Fig 1 – On-line screen showing KPI

Regulating CHP output remotely to further optimise plant efficiency

Provided that appropriate instrumentation exists on a site, Dexdyne's system can constantly monitor the demand from heat, steam and electricity meters. Based on the monitored parameters it can calculate and regulate the output of the generating plant in such a way as to optimise the savings in day time and especially at night time. This output can be controlled either directly by Dexdyne's DX3 remote communication terminal (RCT) or indirectly via a Building Management System (BMS) using the load settings provided by the Dexdyne RCT.

CHP State	ON
Generator Load	
Primary	100%
Secondary	100%
Cost of Operation	£237 per hour
System Saving	£198
Justification	
under automatic control with both engines at 100%	

Fig 2: CHP Status

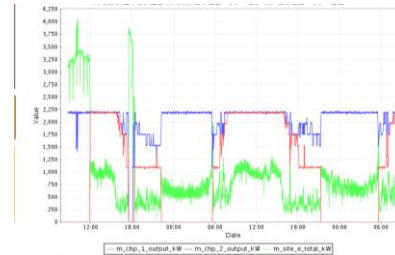


Fig 3: Dynamic Demand Management

A practical solution

The system has access to all current and historical logged data and therefore it can optimise its current decision – whether to control or simply monitor and log data for the purposes of reporting. Dexdyne's RMS solution can automatically provide the site energy officer with further valuable assistance by creating and e-mailing EXCEL spread sheets of calculated values.

Connecting Dexdyne's system is easy and straight-forward due to its flexibility. The system can interface to existing equipment such as BMS or individual meters over a Modbus RS485, M-Bus or a Modbus TCP connection.

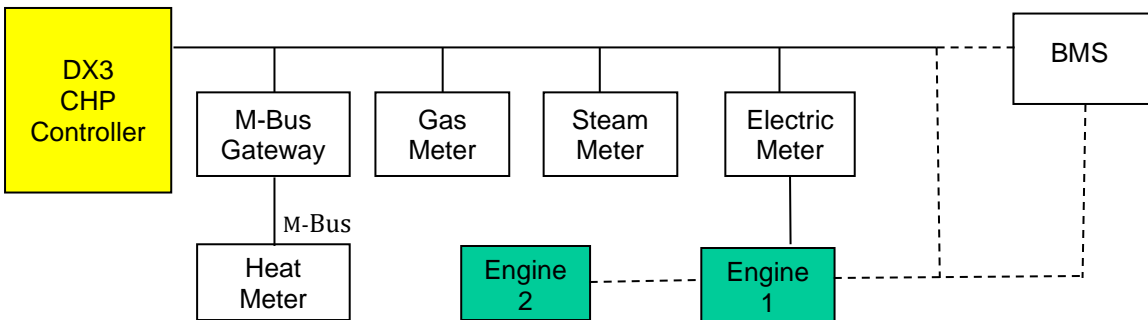


Fig 4: Example CHP Monitoring & Control System

You can find out more about how your investment in a CHP system can be monitored and optimised by contacting Dexdyne on:

tel: +44 (0)1285 658122
 email: bharat.gupta@dexdyne.com