



# REPORT

D5.1 Report on certification support for 1<sup>st</sup> industry project:

*Waste heat utilisation of two “fast cooling plants” to support the heat supply of the main ventilation system in the production site of a supplier of community catering*

Date	8 January 2019
Authors	Andreas Lindinger (Denkstatt Austria), Bethan Phillips (Verco)
Reviewer	Quitterie de Rivoyre
Project Name	I3CP
Project Number	754056
Deliverable Number	D5.1
Deliverable Title	Report on certification support for 1st industry project

## Contents

Description of players ..... 2

Description of project ..... 3

Steps taken for certification support ..... 4

Status ..... 9

Lessons learnt ..... 9

Benefits of the project Certification for the client..... 11



## Description of players

### **Project owner: GMS GOURMET GmbH**

The pilot project was implemented at GMS GOURMET GmbH (“GOURMET”), an Austrian supplier of community catering with about 1,500 employees. GOURMET operates company restaurants throughout Austria, cafes and restaurants in Vienna and two large kitchens in Vienna and St. Poelten.

### **Project developer: Denkstatt & Enertec GmbH**

Denkstatt & Enertec GmbH („Denkstatt-Enertec“) is a Vienna-based consultancy active in the fields of energy management and energy efficiency and specialised in energy analysis, conceptualisation of individual energy solutions (including technical implementation), realisation of energy concepts, and energy optimisation.

Christian Schützenhofer and Sonja Siegl who worked on the particular pilot project are both registered in the Austrian “Register of Qualified Energy Service Providers”. Registration is based on specific educational and professional requirements in accordance with §17 of the Austrian Energy Efficiency Act, which is reviewed by the Austrian Energy Agency.

### **In-country advocate: Denkstatt GmbH**

Denkstatt GmbH (“Denkstatt“) is a leading sustainability consultancy in Central and Eastern Europe and headquartered in Vienna. The company is an advisor on natural, social, human and financial capital and the Austrian partner in the Investor Confidence Project (ICP) Europe project consortium.

### **Quality assurance assessor: Verco**

Verco is a sustainability and climate change consultancy, based in the UK, with 27 years of experience with focus on low carbon growth, energy efficiency and clean energy development, including experience of developing finance programmes. Its two main roles on the ICP Europe are to provide EU-wide technical support, and to provide in-country advocacy for the project in the UK. Its technical role includes leading the development of the protocols and supporting tools, supporting the delivery of training to ICP credentialed Project Developers and Quality Assurance Providers, and providing Quality Assurance to projects seeking the Investor Ready Energy Efficiency certification.



## Description of project

### Description of the ECM



The pilot project is implemented at the production site of GOURMET in Vienna. The energy conservation measure (ECM) will use the waste heat of two fast cooling plants (by means of heat exchangers in the hot gas tube with partially condensation) to support the heating demand of three ventilation systems located in the immediate vicinity in the engineering room at the top floor of the facility.

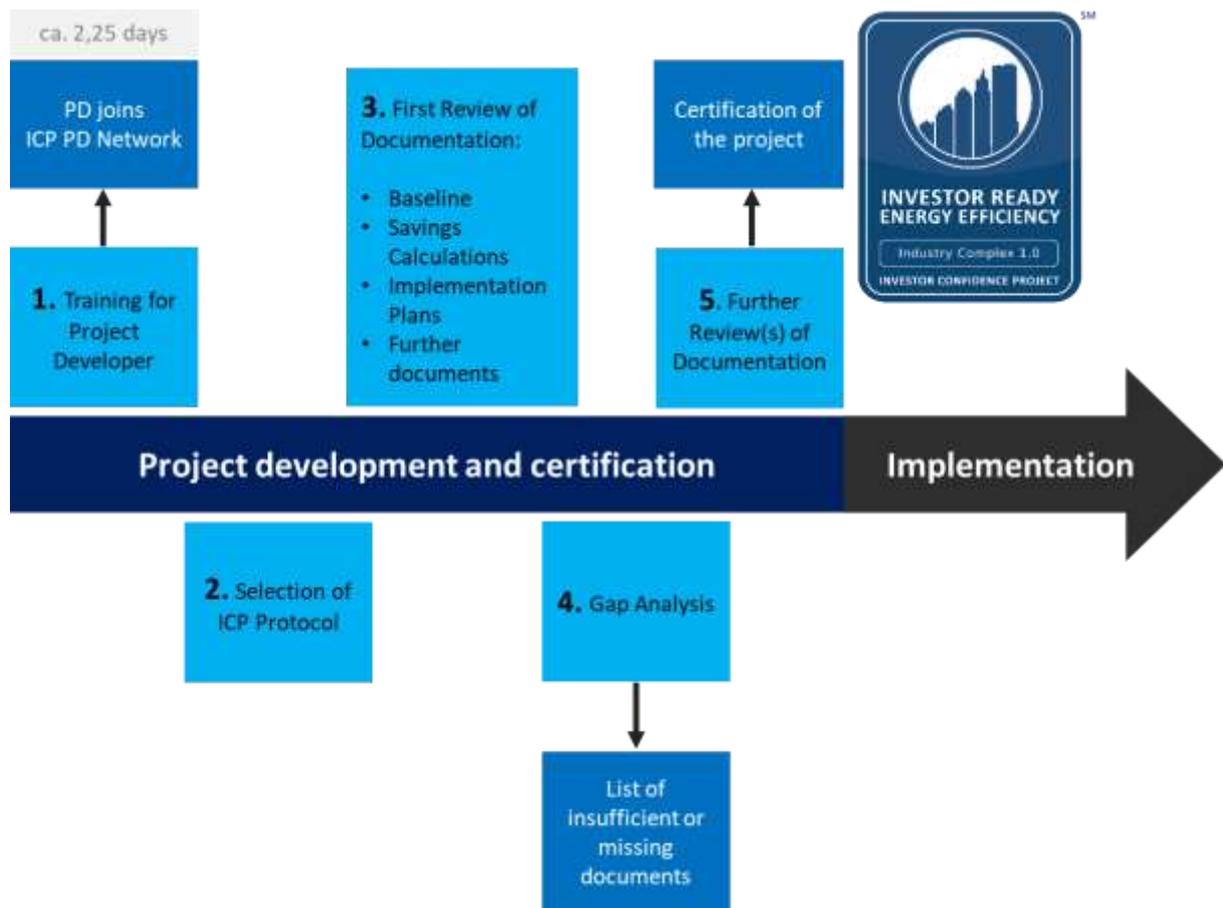
The three ventilation systems supply the main production and packaging areas, the patisserie and catering area, as well as the bistro (company restaurant) and conference rooms. Apart from the reduction in natural gas demand due to reduced heat demand, the implementation of the ECM also reduces electricity demand of the multicompressor refrigeration systems by increasing their energy efficiency ratio (EER) during summer.



## Steps taken for certification support

### Overview of the process

The following chart shows the general ICP process for project development, quality assurance and project certification – as applied in this pilot project:



### Project identification, MoU and kick-off

At the beginning of March 2018, Austrian ICP partner Denkstatt approached its daughter joint venture Denkstatt-Enertec about the opportunities for industrial pilot projects as well as the ICP framework, the ICP Complex Industry Protocols and the IPMVP standard in particular. Based on positive feedback from Denkstatt-Enertec, in the following weeks the requirements of ICP were discussed in detail and possible pilot projects were identified.

After discussions between Denkstatt-Enertec and project owners, two project owners agreed to have ICP applied to their industrial projects. On 26 March 2018, an MoU between Denkstatt and



Denkstatt-Enertec was signed to develop these two industrial pilot projects, with the following recommended action plan:

- Development of two industry projects by Denkstatt-Enertec according to the ICP Complex Industry Protocol and preparation of documentation (with the communication support of Denkstatt, in particular on language/translation issues) for reviews and certification through ICP Technical Team / Quality Assurance Assessor
- Technical Support (i.e. PD training, reviews of documentation incl. gap analysis, certification) on IREE Projects through ICP Technical Team / Quality Assurance Assessor
- Participation in free ICP Industry Training and application to ICP Project Developer Network
- Registration for ICP Technical Forum and Ally Network
- Participation in two remaining Austrian ICP Steering Committee meetings and presentation of project results in one of those meetings

Based on project progress, it was later decided that the GOURMET project should become the first of the stated two industrial projects to be developed and certified.

#### Training and PD Network Registration

On 27 April 2018, Denkstatt-Enertec took part in the ICP Online Training Webinar on the ICP Industry Protocols and then submitted the documentation required to join the ICP Project Developer Network for Industry. On 15 May 2018, Denkstatt-Enertec became the first project developer to join the ICP Project Developer Network for Industry.

In all, it took Denkstatt-Enertec around 2.25 days to do the ICP project developer training, study the requirements of the ICP framework and the respective Complex Industry Protocol, submit the required documentation, and join the ICP project developer network for industry. Throughout this process, Denkstatt as the Austrian in-country advocate acted as a point of first contact for Denkstatt-Enertec and provided support on questions on documentation, such as required qualifications, declaration of honour, etc., in coordination with the ICP Technical Team.

Verco's reviewed Denkstatt-Enertec's application to join the ICP Project Developer Network for Industry and Energy Supply, which is a pre-requisite for project certification. This involved reviewing the academic and professional qualifications and experience of the applicant, the Declaration of Honour, and the company's professional insurance. Denkstatt-Enertec had also attended a training session on the application of the protocols, which was delivered by RdA and Verco.

#### Application of ICP

In the second half of May 2018, Denkstatt acted as an intermediary between Denkstatt-Enertec and Verco to communicate who would be responsible for the quality assurance process at Verco, to



connect the respective people, to provide a general overview of the project, and to establish an initial timeline for the project.

Based on an initial project description, including the nature of the proposed ECMs and the availability of sub-metering data, Verco and Denkstatt-Enertec agreed that the ICP Complex Industry Protocol was the most appropriate protocol for the project. Denkstatt-Enertec started to work on the tasks and documentation required by this Protocol.

This Protocol follows the usual ICP five stage process:



Developing the project and preparing the documentation according to the ICP Protocol

*Baselining*

Denkstatt-Enertec followed the tasks and documentation requirements of the ICP Complex Industry Protocol for the Baselining phase:



A combination of IPMVP option C “Whole Facility” and Option B “Retrofit Isolation: All Parameter Measurement” was chosen for the project. For the natural gas savings due to the implementation of the ECM, the natural gas consumption of the facility was chosen as baseline (Option C). For the electricity savings, the electricity consumption of the submeter covering the two fast cooling plants was chosen as baseline (Option B). A baseline period from 01.01.2017 until 31.12.2017 was chosen.

Correlation analysis was performed for the natural gas consumption for heating degree hours (data from the weather station at the facility) and weekly production rates (tonnes/week). Both variables showed strong correlation with natural gas consumption and were therefore considered for regression analysis. In the case of electricity consumption for the two fast cooling plants, correlation analysis was performed for cooling degree hours and the weekly production

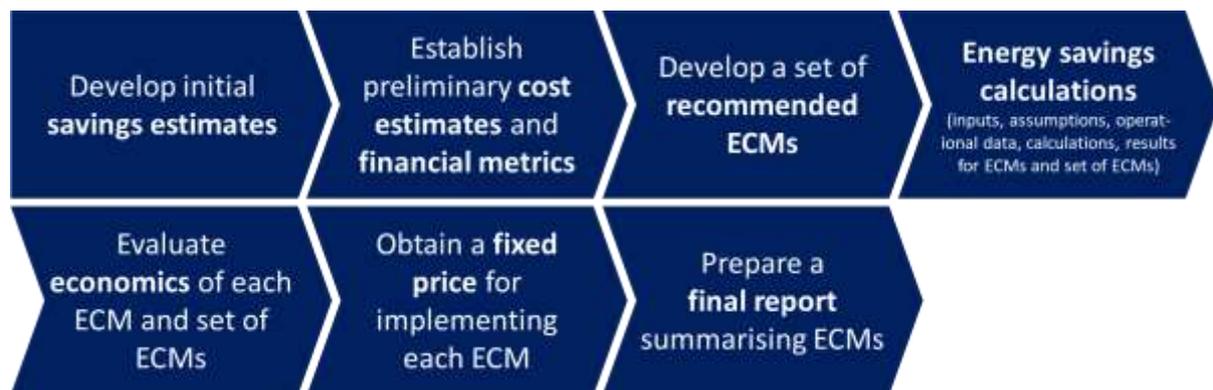


rates. Only the production rate showed to have a significant influence on this electricity consumption and was considered for regression analysis.

With regards to non-routine adjustment factors, natural gas consumption is dependent on the implementation / proper functioning of other waste heat recovery systems. Those systems are monitored by the building control system and issues that could occur are detected and can be considered accordingly in the calculation of energy savings for this ECM. Unexpected occurrences like shut downs or shifts in the type of products could have an impact on electricity consumption, but will be monitored by the project/maintenance manager and depending on the impact measures will be taken to be able to consider these effects in the energy savings calculation.

### *Savings calculation*

Denkstatt-Enertec followed the tasks and documentation requirements of the ICP Complex Industry Protocol for the Savings calculation phase:



Energy demand of the ventilation systems was simulated on an hourly basis dependent on the outside air temperature of the baseline period (building control system). Waste heat “production” and electricity consumption of the fast cooling plants were calculated based on hourly data from the building control system on the runtime of the multicompressor refrigeration systems.

Investment costs are based on contracted fixed costs from technology providers. The project has predicted annual energy savings of 635 MWh in natural gas and 135 MWh in electricity. A payback period of 6.3 years is calculated. The project is implemented by ENGIE and financed by GOURMET which also applied for an environmental subsidy from the Austrian Ministry for Sustainability and Tourism for the project.

### *Implementation plans*



As required by the ICP Complex Industry Protocol, Denkstatt-Enertec had to develop the following three plans for the three implementation phases:



For this, the existing ICP templates from the building sector were used as a starting point but had to be adapted to the specifics of an industrial project.

*Project-specific support/reviews and quality assurance*

Throughout this process (from baselining and savings calculations to the development of the three implementation plans), Denkstatt-Enertec provided its documentation electronically to Verco and Denkstatt (via Dropbox).

Accordingly, throughout this process, Denkstatt had an insight into the evolving project documentation and was in regular contact (through personal meetings, emails and phone calls) with Denkstatt-Enertec on the project’s progress and specific issues, with major updates in mid-June, mid-July, mid-September, and mid-October. Denkstatt stayed in the information loop throughout project development and quality assurance with participation in conference calls and regular checks of the project documentation. As Denkstatt-Enertec used the English version of the ICP Complex Industry Protocol and most documents prepared by Denkstatt-Enertec were in English, there was no major need for translation support.

Apart from that, in terms of dissemination, Denkstatt was in touch with project owner GOURMET to ensure that the project could be mentioned at a public event that Denkstatt co-organised together with the Austrian Climate and Energy Fund and other partners on 25 June 2018 in Linz. Moreover, Denkstatt-Enertec presented the project at the Austrian National Steering Group meeting in November 2018 and Denkstatt prepared documents for ICP communication purposes (e.g.



preparation of case study, inclusion in training announcements, and preparation of press release on project certification).

Verco, in its quality assurance role, provided support to Denkstatt-Enertec in developing the required documentation. Feedback was provided in a review tool, in spreadsheet format, which was created by Verco to cover each of the new protocols developed. The review tool generates the specific documentation requirements depending on the protocol being followed, and, as well as providing a record of which documentation has been submitted, it also provides a means of providing feedback to the project developer on any deficient areas. For this project, around four iterations of the review tool were completed, corresponding to each round of review. In addition to various emails between project developer and quality assurance assessor, several conference calls were also held to discuss the documentation submitted, with a particular focus on how the savings calculations had been developed – for most projects, this is an area which requires greatest effort by the quality assurance assessor.

In addition to the review of the documentation against the requirements of the protocol, technical guidance was also provided to the project developer. This included:

- Advice on the content of the three plans, using the templates available
- High level guidance on the content of the M&V plan, including selection of the appropriate Measurement & Verification approach, and requirements for addressing static factors
- Brief discussion on how to ensure that evaluation of regression analysis meets the requirements of the protocol (i.e. predicted savings should be greater than twice the standard error of the estimate)

## Status

The project became the first industry project to receive the Investor Ready Energy Efficiency™ Certification on 26 November 2018. The project is disseminated on a European and Austrian level in coordination with the project owner (particularly its communications department) and was presented at the Austrian National Steering Group meeting on 26 November 2018.

## Lessons learnt

Generally speaking, the following characteristics of this specific project can be considered as particularly beneficial to the successful completion of the pilot project:

- Existing client relationship of project developer with project owner (through previous energy audit)
- Existing project mandate, ICP certification as a valuable add-on for project owner
- No additional costs for project owner for ICP project development and certification



- Excellent technical know-how and broad industry project experience of project developer plus quick understanding of general requirements of ICP framework and specific issues
- Use of English version of ICP Protocol + PDS + Implementation Plans templates and preparation of documentation in English through project developer
- Direct communication between project developer and quality assurance assessor, while also keeping the ICP in-country advocate in the information loop
- Regular feedback between project developer and ICP in-country advocate
- Screen sharing sessions between the project developer and quality assurance assessor to discuss documentation submitted, particularly the baseline development and savings calculations
- Use of Dropbox to facilitate document sharing – in future, a proposed file structure may be provided by Verco to improve this process even further

A major issue for project owners and project developers is the additional effort (compared to “regular” project development) required on the project developer side for developing a project according to the ICP Protocol and having it IREE™ certified. Project developer Denkstatt-Enertec estimated this additional effort as follows:

Required documentation	Availability	Additional effort
Project description		5.0 hours
- Company and ECM descriptions	✘	
- Baseline description	✘	
- Savings calculation description	~	
Metered data for calculations	✓	-
Baseline (Excel calculations – correlation and regression analysis)	✘	10.0 hours
Savings calculation (Excel calculations)	✓	8.0 hours
Excel summary on calculations (incl. profitability)	✓	-
Qualifications of project developer	✓	-
Offers from providers	✓	-
OPV (Commissioning) plan	✘	3.5 hours
OM&M plan	✘	3.5 hours
M&V plan	✘	3.5 hours
- Meter specifications	✘	0.5 hours
- Schemes	✓	-
- Photos	✓	-
Coordination with QAA	✘	4.5 hours

#### Legend

- ✓ document available
- ~ documents partially available
- ✘ documents not available – additional effort



With regards to the three implementation plans, Denkstatt-Enertec considers the following requirements highlighted in red as additional documentation compared to “regular” project development:

<b>Operational Performance Verification (OPV)</b> Plan	<b>Operations, Maintenance &amp; Monitoring (OM&amp;M)</b> Plan	<b>Measurement &amp; Verification (M&amp;V)</b> Plan
<ul style="list-style-type: none"> <li>• Qualified OPV professional</li> <li>• Process targeted at implementation of ECMs</li> <li>• Training plan, systems manual</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing management regime</li> <li>• Performance indicators</li> <li>• Responsibilities, processes</li> <li>• Training plan, user manual</li> </ul>	<ul style="list-style-type: none"> <li>• Qualified M&amp;V professional</li> <li>• M&amp;V Plan according to IPMVP                             <ul style="list-style-type: none"> <li>– Whole facility (Option C)</li> <li>– Part of facility (Option A/B)</li> </ul> </li> </ul>

However, Denkstatt-Enertec’s ongoing work on a second industrial pilot project indicates that this additional effort should be significantly lower for subsequent projects.

It is also expected that fewer review iterations would be required for a second project, since the project developer has a clearer understanding of the requirements of the protocol, and also because it is likely that many of the documents (particularly the plans) will be very similar to those produced for the first project.

### Benefits of the project Certification for the client

Apart from the actual energy savings in terms of calculated natural gas and electricity savings, the application of the ICP framework provides additional benefits to project owner GOURMET. Based on feedback from project developer Denkstatt-Enertec, compared to the standard approach of developing such projects additional focus is put on:

- the normalisation of the energy baseline (correlation and regression analyses),
- the development of the implementation plans, in particular
  - tasks and responsibilities,
  - training documents and manuals, as well as
  - systematic monitoring and correction measures.

According to Denkstatt-Enertec’s view, the project owner particularly benefits from:

- more robust savings calculations and a more robust baseline for the verification of energy savings,
- an additional layer of quality assurance, and
- a stronger focus on proper project implementation (in addition to regular project development scope).

