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INCREASING TRANSPARENCY OF ENERGY SERVICE MARKETS

Country Report on EPC Pilot Projects Evaluation and use of Code of Conduct

Netherlands

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Transparense project
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1 Introduction

Within the framework of the project TRANSPARENSE, which receives support from the program IEE (Intelligent Energy Europe) of the European Union, European EPC Code of Conduct has been developed (hereinafter Code) for energy service providers (ESCOs) implementing EPC projects. The objective of the Code is to increase the transparency of the EPC markets and ensure the high quality of the energy services provided by the ESCO. By adhering to the EPC core values and code of conduct, the ESCOs and customers develop a solid foundation for a working partnerships based on trust and confidence. They are expected to utilise the Code in order to further develop energy efficiency services to meet their goals and expectations which shall be evaluated at a later stage.

In addition, the developed EPC Code of Conduct will be tested and evaluated in at least 25 EPC pilot projects. This will also provide feedback on the Code. The outcome and results of the evaluation will be used in all country reports by the Transparense project partners in this work package.

This report presents the evaluation of the Code application in the pilot projects in the Netherlands. The major stakeholders (both client and ESCO side) in the pilot projects of the country have been interviewed. For this, detailed questionnaires have been used (see Annex), which were the main data source for the analyses included in this report.

The main objective of this evaluation is to assess whether the application of the Code in the Netherlands manages to ensure the defined quality criteria in practice, what the success factors are and which barriers might still exist, which should be further addressed.

2 Barriers and success factors for the pilot projects

The most important barriers and success factors seem to arise during the project preparation and procurement phases. For energy performance contracting, a thorough preparation and clear agreements provide great benefits in the entire project. Throughout the project, willingness by all parties to create a trusted relationship is also essential for its success. Another major advantage is that this provides more flexibility to everyone in the execution of the project. Trust and flexibility were enhanced in these projects by the fact that they were pilots, which allowed for trial and learning and probably more mutual understanding.

2.1 Barriers

A number of barriers have been identified, in the two EPC projects, regarding their uptake and implementation. These are roughly categorised following the project phases.

Project preparation & procurement phases

Both projects were pilots, for the client as well as for the EPC supplier. Additional time was needed in the preparation phase as there were hardly any available EPC examples to learn and gather information from. Project preparation took for the Hanzehal around two years, mainly for drafting of the contract (the legal part). The municipality had some trouble with the legal aspects and hired an expert for drafting the contract. It was also complex to determine the kpi's and distribute tasks and responsibilities within the project.

Also within the WTC Schiphol project drafting the contract was one of the challenges. The contract phase took one year, with six months for specifications. Especially kpi's and the consequences if these are not met, were perceived difficult. This was overcome by extensive, open communication between all parties.

In the Hanzehal project the EPC supplier experienced difficulty in obtaining financing, so it had to use its own equity. This carries a potential barrier in it, as small suppliers can finance only a small number of projects by own means.

For both projects there are no relevant experiences with tendering these EPC projects.

In the Hanzehal project the selection process was deviate from the procurement conditions, based on the 'hardship clause' of both the municipality's internal procurement rules as the European rules. Deviation is permitted when it applies to an innovation that is not yet or not sufficiently available on the market. In this case one party is selected to set up a project plan with contract, based on an open business case,. The agreement entailed that the project would be awarded if the contract would meet the requirements of the municipality. The objective of both parties was to learn from the case.

In the WTC project the contract was originally tendered as a maintenance contract, not as an EPC contract. Cofely covered the surplus costs of this maintenance contract by a guarantee on savings, to prevent extra cost for the tenants of the WTC office buildings. The guarantee on energy savings as the main characteristic of an EPC contract, was not a requirement in the tender.

Project implementation phase

No barriers were mentioned in the interviews in the project implementation phase. The ESCo's introduce and explain the process of energy efficiency measures implementation to the customer sufficiently and verify the up to date statuses of energy systems in the building within the contract.

Project verification & evaluation phase

In the Hanzehal project there were no barriers in the verification and evaluation phase. The EPC supplier VDI measures the energy use of the building continuously by data transmission and checks monthly savings. Twice a year meetings with the client takes place to talk about investments, maintenance and evaluation.

In the WTC Schiphol project is mentioned that Real Energy Savings cannot be measured. The calculation method to determine the energy savings is complex due to many parameters (use of the building, behaviour, weather and tariffs) affecting the real energy consumption. Besides, the effect of the planned renovation of the installations have to be measured, but are not part of the contract.

2.2 Success factors

Both projects were seen as a pilot for the client as well as for the EPC supplier. This reduced time pressure within the project and enabled co-development of the project. In both projects is mentioned that an open way of communicating, giving room to discuss all problems that are encountered, creates trust.

In the Hanzehal project an investment and a maintenance plan were drafted, to be evaluated and possibly adapted annually. In this way, the project planning has flexibility to account for maintenance investments on replacement time. Also possible windfall profits can be used for new investments somewhere else in the project (here; a budget remainder from roof insulation was used to buy solar panels). A key reason why the EPC contract was cost effective is that insulation measures were done, when replacement of the roofing was already needed.

In the WTC Schiphol project the agreed energy savings are already achieved in this project without investments, merely by optimizing the controls of the installation, thereby maintaining the comfort level in the offices as a result of Retro-Commissioning. In the WTC Schiphol project the coaching by experts was important and the development of a now monitoring software tool. For monitoring the comfort level already available data in the Building Management System are monitored in DiagnosTX, a Performance Monitoring System developed by Halmos Adviseurs, to stay within a bandwidth.

3 Pilot projects implementation

The following pilot projects and phases were included, as shown in table 1 below.

Table 1 List of pilot projects and phases included

Project name	Project phases that already STARTED			
	Phase I - Project Preparation and development	Phase II - Procurement Procedure (after client announces call for tenders by publication of contract notice)	Phase III - Implementation and operation phase (after signing of the EPC contract)	Phase IV - Measurement and Verification (based on the first consumption measurement)
Hanzehal	X	X	X	X
WTC Schiphol	X	X	X	X

Table 2 shows the level of implementation of the Code of Conduct, for each of the projects reviewed in the Netherlands.

Table 2 Overview of the Code of Conduct implementation

Project name	Code of conduct implementation			
	ESCO signed Code	Code included in tender dossier	Code included in contract	Other (please specify)
Hanzehal	X			
WTC Schiphol	X			Client CBRE and Schiphol Real Estate also signed the Code

3.1 Pilot project Hanzehal, city of Zutphen

The Hanzehal is a large sports and events facility building, owned by the municipality Zutphen, with a surface of 3700 square meters. The sports hall is originally build in 1968 and was rebuild after a fire in 1981. The Hanzehal exists of three sport halls in one building, that can be used together or separately. The EPC supplier Van Dorp Installaties VDI has signed the EPC contract in the beginning of 2013, but the preparation phase started two years earlier. Because it was seen as a pilot, no tendering process has taken place. For preparing the contract a legal advisor

is contracted. VDI install a package of energy saving measures: roofing renovation and insulation, wall insulation, solar PV, sensor lighting, solar water heating and a building management system. Still planned is heat recovery in the ventilation system. In the contract the ESCo guaranteed 30 percent savings on gas demand and 7 percent savings on electricity demand. The achieved savings are higher, 50 percent reduction of gas use and 23 percent reduction of the electricity use. This pilot project is a later stage project, the project was already in an implementing phase, when the code of conduct was developed in the Transparense project. The EPC supplier VDI is one of the first signatories of the code in the Netherlands and signed the code in 2014. ECN as Transparense partner has evaluated the project by interviewing the client and the ESCo at the end of April 2015 and filling in the questionnaire.

3.2 Pilot project World Trade Centre, Schiphol Airport

The World Trade Centre is a commercial office building, owned by CBRE and Schiphol Real Estate. The WTC is located at Schiphol Airport one of the prime business locations in the Netherlands and has a high performance level. The office building was built in 1996 and has a surface of 66.000 m2 GFA, existing of two building parts of multiple towers.

In 2013 a new tender was required, because the maintenance contract with Cofely ended. There was demand for sustainable management, considering the value for tenants. Tender documents are made by Halmos for this objective and the procurement process was started. From this procurement process Cofely was selected from 5 suppliers as most economic. The surplus costs of this maintenance contract were covered by a guarantee on savings, to prevent extra cost for the tenants of the WTC office buildings. The savings are guaranteed under the condition that comfort parameters are met.

The preparation of the tender started in January 2013. The tender was published mid-2013 and awarded end 2013. Contract specifications thereafter took over six months and the actual signing took place mid-2014.

There were no energy savings measures installed. The focus was on optimization of existing installations for heating, cooling and ventilation. Cofely invested in building installation knowledge (Retro-commissioning) and Performance Monitoring (Continuous Commissioning, FDD) at WTC. The installations were, technically reviewed, average complex. It is a very large building (66.000 m2 divided over multiple towers). Heat/cold storage is present in part of the building.

Cofely and building owners CBRE and Schiphol Real Estate have signed the code on 31 March 2015 during the National ESCo Conference. Cofely take part of the national steering committee for the Transparense project in the Netherlands. They knew the code before signing the WTC contract . ECN as Transparense partner has evaluated the project by interviewing the client, the facilitator and the ESCo in May 2015 and filling in the questionnaire.

4 Code of Conduct application and evaluation

In the interviews the application of the Code of Conduct was evaluated. In short, the projects seem to have incorporated more or less all the principles in the Code of Conduct. In some cases more than in others, whereas some activities go further than the principles, in the Hanzehal case financing by the supplier for example. It may be that for the EPC suppliers involved here, the principles are regarded as 'business as usual'. A key principle in the Code is the creation of trust. This in particular seems to be strongly strived for in the projects.

The questionnaires described the effort of suppliers with respect to the principles. The feedback received for each principle in the code is described here:

- The EPC suppliers aimed to deliver *economically efficient* projects to the client. In the case of Hanzehal for example, moments of investments were flexible and can be adjusted (e.g. adapted to maintenance needs), the trias energetica was applied in choosing savings measures, or benefits within the projects were used to finance the costs of other measures. In the WTC project agreed energy savings are already achieved in this project without investments by merely by optimizing the regulation controls of the installation, thereby maintaining the envisioned comfort level in the offices as a result of Retro-Commissioning.
- The suppliers state to be responsible for construction and technical maintenance of energy saving installations and measures, for which they contractually *assume performance risks*. In the case of WTC, it includes responsibility for well performed daily energy management on site.
- Suppliers fully *guarantee the energy savings agreed* in the contract, for which elaborate methods are used and discussed with the client. The additional energy savings (beyond the amount agreed) will be shared equally.
- *Long-term energy management is supported* by the suppliers, at least by means of regular reporting and discussion of results.
- In the interviews we feel the relation between supplier and client is rather close and friendly, as both sides value the mutual trust built up in the project which enables a *fair and transparent relationship*. Particularly in the case where a long-term relationship is expected. An example is that Cofely already started working in the WTC project even though the contract had not been signed yet. Involvement of independent consultants further stimulates keeping a fair relationship.

- *Support in finding financial means* was provided only in one project (Hanzehal), were the EPC supplier financed the investment from its own equity. In the WTC project there are investments in knowledge and man hours, but not in hardware. The costs of this are included in the surplus of this sustainable management- and maintenance contract. The client WTC Schiphol Airport pays this surplus on a yearly basis and includes this in service costs to the tenants of the office building. These service costs don't rise, because a reduced energy bill are also part of these service costs.
- In both projects the *use of qualified staff* seems to be a project objective, as no complaints in this area were mentioned (professional expertise is inevitable to perform EPC projects). In the WTC project training, a well-developed implementation plan and coaching by experts got extra attention.
- In both projects the code of conduct is regarded as *formulated in a clear and understandable way*.

Annex: EPC Project Evaluation

Methodology

Basis of the evaluation template and questionnaire is the European EPC Code of Conduct (JSI and SEVEn 2014) conducted in the framework of Transparense. The set of principles and values which are described in the Code of Conduct have been taken over for evaluation:

- Values: Efficiency, Professionalism, Transparency
- Principles: Cost Effectiveness, Sustainability, Relationship, Transparency, Comprehensiveness, Financing, Interest in success, Quality

For each pilot project, relevant information is compiled in 3 parts:

- Basic information on the project will be given in **Part A** - this may be filled in by the **Transparense partner**.
- In **Part B** the pilot project **customers** are enquired about the project with a clear focus also on ESCO (and facilitators) evaluation.
- **Part C** collects information from **ESCO**s how/if they consider the Code useful and appropriate

The templates for parts A, B and C are prepared as **separate documents** so the partners can have them separate when sending out to different persons.

The evaluation template request feed-back information during different phases of an EPC project on how effective and practical the EPC Code of Conduct was and also on how the pilot projects were carried out.

The four phases have been outlined in the Code of Conduct document as:

Phase I: **Project preparation and development**

Phase II: **Procurement procedure**

Phase III: **Implementation and operation phase of EPC/Code pilot projects**

Phase IV: **Measurement and Verification**

These phases form the structure of the Part B questionnaire - whereas the above mentioned values and principles will form the criteria and indicators. Each phase has its role in providing the feedback on the proposed EU Code and the pilot projects. The user of this evaluation template will have to decide if all phases are applicable for his/her procedure.

In all four phases a *quantitative evaluation* is foreseen in which data information will be collected – giving also a technical overview of the project. The data will be derived from the selected building(s). As the most important criteria for the selection of a suitable EPC projects are various effective measures and the subsequent calculation of savings these are included as well in the questionnaire. In addition, it also focuses on the amount of investments as well as the method through which the project is financed.

More evaluative and subjective question (*qualitative evaluation*) are also part of the evaluation. The goal of this qualitative evaluation is to select those parameters which have the most significant impact on the quality. At the same time, qualitative evaluation should reflect the satisfaction of the client in respect of the taken actions, technical solutions and the results achieved.

All three questionnaires of each project form the basis for the evaluation in the context of the country reports.

For each pilot project in a country, the filled in parts A, B and C are attached as Annex to this country report in the following.

Pilot Project Evaluation *Hanzehal*

In the following, please find attached the filled in evaluation questionnaires of pilot project '**Hanzehal**'.

PART A: Basic information on the project

Questionnaire filled in by

Name of the person	Gemeente Zutphen: Marnix van Os and Dirk Punt Van Dorp Installaties: Harold Kolkman *[Marnix van Os is an independent consultant who was employed at the Municipality of Zutphen at the time of the project]*
Organisation name	Municipality of Zutphen Van Dorp Installaties

Project description	
Pilot project name i.e. facility name	Hanzehal
Location (city, region)	The Netherlands, Zutphen
Country code	NL
Type of customer *(choose correct category)*	Municipality
Sector *(choose correct category)*	Sports facility
Number of buildings of each type *(e.g. 25 schools, 11 healthcare facilities, etc.)*	1 building, sports and events facility 'de Hanzehal', 3700 m^2
Main goal of the project *(e.g. comprehensive reconstruction of the energy system during six months by implementing measures saving heat, electricity and water)*	Energy savings in buildings
Measures (short description – max. 5 points)	• Roofing renovation and insulation • Wall insulation • Solar PV • Sensor lighting • Solar water heater • Building management system • Planned: Heat recovery ventilation
If there are other important	This ESCo contract facilitates savings on personnel costs for the municipality. A disadvantage is that the municipality can be less

aspects of the project, innovations and client´s advantages, not mentioned above, please, describe here	flexible as for management and maintenance, and maintenance costs will remain the same. At the end of the contract duration the property will be delivered according to established standards, in considerably better condition than at the time of commencement of the contract. Although this is not quantified, the value of the property increases.

Timing	From	Till	Duration
	[YYYY-MM]	[YYYY-MM]	[No. of months]
Project identification	2011-01	2012-12	1 year
Acquisition time span of the project *(time needed to pursue the client or ESCO to agree on testing the CoC within a pilot project)*			Later stage project, but it takes almost 1 year before commitment for evaluation
Procurement procedure	In the Hanzehal project the selection process was deviate from the procurement conditions, based on the 'hardship clause' of both the municipality's internal procurement rules as the European rules. Deviation is permitted when it applies to an innovation that is not yet or not sufficiently available on the market. In this case one party is selected to set up a project plan with contract, based on an open business case,. The agreement entailed that the project would be awarded if the contract would meet the requirements of the municipality. The objective of both parties was to learn from the case.		
Installation of energy efficiency measures	2013-01	2014-01	
Contract duration	2013-01	2023-12	11 years
Period of repayment			

Financing	
Total investment [EUR] *(if not available estimate)*	Total was 500.000 euro. From this amount 210.000 euro were spent for energy saving measures, the remaining part were the renovation costs.
Co-financing *(if project is co-financed by the customer or public funds explain and provide real or estimated volumes in EUR)*	Yes: an amount of 115.000 euro (only for the solar panels) was financed by the municipality.
Guarantee of savings *(explain how it is defined)*	30% on gas demand and 7% on electricity demand

Quantitative evaluation		Baseline *(initially before the project)*	Annual savings	
			Guaranteed	Achieved *(yearly average of available data for 2014-15)*
Final consumption of heat	[MWh/a]	587	176	316
Final consumption of power	[MWh/a]	160	11	37
Primary energy	[MWh/a]	987	204	409
GHG emissions	[tCO_2e/a]	188	40	80
Total operational costs *(energy costs, water costs, maintenance etc. – fill in what is available)*	[EUR/a]	65.000 energy costs	16.000 energy savings	28.000 energy savings


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Part B: Questionnaire for Clients (on ESCO and Facilitator)

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In addition, the developed EPC Code of Conduct will be tested and evaluated in EPC pilot projects. The outcome and results of this questionnaire will provide feedback on the Code and its usefulness.

Questionnaire filled in by

Name of the person	Gemeente Zutphen: Marnix van Os and Dirk Punt *[Marnix van Os is an independent consultant who was employed at the Municipality of Zutphen at the time of the project]*
Organisation name	Municipality of Zutphen

Pilot project name i.e. facility name	Hanzehal
Location (city, region)	Zutphen, The Netherlands
Country code	NL

Phase I: Project preparation and development

1	How was the first information on the EPC project obtained?	The initial phase entailed 2 years of orientation, EPC supplier selection and the exploration of possibilities. There were few other EPC examples available. The project was a pilot for both parties, and therefore a learning opportunity. Reason/idea for an EPC construction came from a contact at the municipality (Mr. Van Os, familiar with sustainable construction) together

		with installer Van Dorp, via a think tank.	
2	Were the above mentioned information sufficient and clear?	Yes ☐	
3	Did you have assistance for the energy efficiency project preparation?	Yes, needed assistance in drafting the contract	No ☐
4	Who prepared the preliminary analyses of suitability for using the EPC method for implementing the energy efficiency project?	The ESCo Van Dorp Installaties	
5	Was the planned time schedule of the project preparation kept - or were there any delays?	Project preparation took approximately 2 years, mainly drafting of the contract	
6	When it comes to the project preparation: were the customer expectations met?	on 1 to 5 scale: 1 = no 2 = almost not 3 = partly 4 = almost fully 5 = yes, fully	5 – Yes, fully
7	What was the value of expected energy saving potential?	30% on gas consumption and 7% on electricity consumption of baseline/original consumption	
8	What was the (approx.) volume of investment costs for implementing energy efficiency measures?	€500.000	
9	What were the biggest barriers in the phase of project preparation?	1 = complexity of EPC concept 2 = lack of information 3 = lack of trust 4 = quantify energy baseline 5 = raising finance 6 = other	1 = complexity of EPC concept 2 = lack of information 3 = lack of trust 4 = quantify energy baseline 5 = raising finance 6 = other
	How were the barriers chosen above overcome?	EPC supplier Van Dorp experienced difficulty in obtaining financing. Part of the financing was eventually taken care of by the ESCo from own equity. Another risk upfront was whether the hours in the start-up phase would be recouped	

		The municipality had some trouble with the legal aspects and hired an expert for drafting the contract. It was also complex to determine the kpi's and distribute tasks and responsibilities within the project. This project also includes the installation technical and architectural maintenance. Furthermore, it is a challenge for municipalities to justify these kinds of projects, that is to prove it is profitable. Because the exploitation of such an EPC project is accounted differently from when the municipality would have done this in-house. If the municipality manages this in-house, it is mainly investment and regular amortization and if they take care of the maintenance it will be accounted by means of reservations and erratic cost.	

Phase II – Procurement Procedure

There was no tendering process. It was seen as a pilot and developed by the municipality Zutphen and the ESCo Van Dorp Installations together.

Phase III – Implementation and Operation

1	Did the ESCO introduce and explain the process of energy efficiency measures implementation to the customer sufficiently?	Yes ☑	No ☐
2	Did the ESCO verify the up to date statuses of energy systems in the building within the contract?	Yes ☑, a Long Term Maintenance Plan was drafted. Van Dorp Installaties has verified and described the status of all relevant installations. This was compared to the maintenance plan of the	No ☐

		municipality.	
3	Did the customer find any differences in comparison with the tender, which was necessary to solve?	Yes ☐ *If yes, how was it solved?* …… ……	No ☑, there was no tender
4	Did the ESCO prepare a design/concept of project documentation for the implementation phase?	Yes ☑, both a Long Term Maintenance Plan as an Investment Plan.	No ☐
5	Was the project documentation for implementation of EE measures checked by an external expert company?	Yes ☐	No ☑
6	If the ESCO had any sub-suppliers, how was the quality of those?	on 1 to 3 scale: 1 = good 2 = moderate 3 = poor	Good
	Was it necessary to negotiate directly with the sub-suppliers?	Yes ☐	No ☑, the contract also includes the construction maintenance. There was a subcontractor (for the construction work), so Van Dorp remains the main contact. That is practical
7	How long lasted the EE measures implementation phase?	From January 2013 till Summer 2014. Some investments are planned for 2017.	
8	Time schedule of the EE measures implementation was kept or were there any delays?	Yes ☐ *If yes, what was the lengths of major delay?* …… ……	No ☑
9	Was the implementation of EE measures checked by an external expert company?	Yes ☐	No ☑
10	Were there any supervisor meetings between the ESCO and customer during implementation phase?	Yes ☐ *If yes, how many?* ……	No ☑

		……	
11	Were there any significant problem(s) in relation to the EE measures implementation?	Yes ☐ *If yes, what kind of problem and how was it solved?* …… …… ……	No ☑
12	Were installed EE measures transmitted into property of customer? If yes, when?	Yes ☑	No ☐
13	Had the client any comments to the EE measures implementation after its finalisation and after the equipment ownership had been transferred? If yes, what were the comments and how these were reflected by ESCO?	Yes ☐ *If yes, what were kind of comments?* …… …… …… *How were these reflected by ESCO?* …… …… ……*-1 in some cases – needs to be evaluated subjectively*	No ☑
14	Were the actual investment costs different from than volume stipulated in the contract?	Yes ☑, the costs for new roofing material and roof insulation were less than expected, which enabled them to invest in solar panels.	No ☐
15	Did the ESCO provide trainings for the operational personnel of the implemented EE measures sufficiently?	There was no need for training, the only task for personnel was to enter times of usage in the building management system	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
16	Were the overall expectations of the customer met – especially during the process of the EE measures implementation?	on 1 to 5 scale: 1 = no 2 = almost not 3 = partly 4 = almost fully 5 = yes	5 - Yes, the municipality is very enthusiastic and will try to apply this experience in new projects

Phase IV - Measurement and Verification

1	Did the ESCO introduce and explain the	on 1 to 5 scale:	5 – Yes, client has

	process of measurement and verification to customer sufficiently?	1 = no 2 = almost not 3 = partly 4 = sufficient 5 = very sufficient	access to the energy management system
2	Did the ESCO specifies rules and obligations - in relation to measurement of energy consumption - clearly to the involved personnel?	Yes ☑	No ☐
3	Who is providing measurement of the operation of the installed equipment?	1 ☑ ESCo (through data transmission)	
4	Who is providing verification of energy consumption and savings?	ESCo Van Dorp Installaties	
5	Is verification of consumption and savings provided according to guidelines stipulated in the tender?	Yes ☐	No ☑, there was no tender
6	Is verification provided in relation to the IPMVP (International Performance Measurement and Verification Protocol) or another standard form?	5 ☑, Van Dorp Installaties uses own method	
7	How often is the verification of consumption and savings provided?	Van Dorp Installaties measures continuously, checks monthly savings	
8	How often is the customer informed on the energy savings achieved?	Meetings between ESCo and client on investments, maintenance and evaluation take place twice a year	
9	Has the ESCO submitted to the customer a report on the achieved energy savings?	Financial settlement takes place on a yearly basis	
10	What was the value of the achieved energy savings?	54% of the gas consumption and 23% of the electricity consumption	
11	Was the volume of energy savings reached <u>higher</u> than the guaranteed level of savings stipulated in the contract?	Yes ☑, the difference is shared on a 50/50% basis	No ☐
12	Was the volume of savings reached <u>below</u> the guaranteed level of savings stipulated in the contract?	Yes ☐ *If yes, was the difference compensated by ESCO and how?*…… ……. …….	No ☑
13	Which main problems appeared during the measurement and verification phase?	None	
	How were these issues solved by the ESCO?	*(free text)* ……. …….	

14	Were the overall expectations of the customer met with respect to the actions taken by ESCO during the measurement and verification phase?	on 1 to 5 scale: 1 = no 2 = almost not 3 = partly 4 = almost fully 5 = yes	5 ☑ Yes

Part C: Questionnaire for ESCO

Within the framework of the project TRANSPARENSE, which receives support from the program IEE (Intelligent Energy Europe) of the European Union, European EPC Code of Conduct has been developed (hereinafter Code) for energy service providers (ESCOs) implementing EPC projects. The objective of the Code is to increase the transparency of the EPC markets and ensure the high quality of the energy services provided by the ESCO. By adhering to the EPC core values and code of conduct, the ESCOs and customers develop a solid foundation for a working partnerships based on trust and confidence. They are expected to utilise the Code in order to further develop energy efficiency services to meet their goals and expectations which shall be evaluated at a later stage.

In addition, the developed EPC Code of Conduct will be tested and evaluated in EPC pilot projects. The outcome and results of this questionnaire will provide feedback on the Code and its usefulness.

Questionnaire filled in by

Name of the person	Harold Kolkman
Organisation name	Van Dorp Installaties

Pilot project name i.e. facility name	Hanzehal
Location (city, region)	Zutphen, The Netherlands
Country code	NL

Below are listed the principles of the Code of Conduct for EPC. Please answer the questions for each principle:

1. EPC projects are economically efficient

The EPC provider aims at economically efficient combination of the energy efficiency improvement measures. Such combination of the measures maximises the net present value of an EPC project for the client (defined as sum of all the discounted incoming cash flows (operational cost savings) and all outgoing cash flows associated with implementing the project over the term of the contract).

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

Within the project not all investments were made at a certain moment at the beginning of the project. This has to do with the condition of the installations, and when they need to be replaced. Therefore in the preparation phase an investment and a maintenance plan were drafted, that will be evaluated annually and can be adjusted in consultation with the ESCo and the client. The instalment of an energy saving measure occurs, as much as possible, at a natural moment.

Van Dorp Installaties works via Trias Energetica, start with energy saving and successively meet the demand in a sustainable and efficient way. When it turned out that the cost of roof insulation was lower than expected, they proposed to invest this financial windfall in solar PV.

The fact that this project also includes insulation measures is partly due to the fact that there was a natural moment when construction maintenance was needed (such as new roofing).

Other maintenance (construction) does not necessarily have to be part of a EPC project to make it successful.

2. EPC provider takes over the performance risks

The EPC provider assumes the performance risks of the project during the whole duration of the contract. Such risks include, inter alia, risk of incorrect estimates of savings, design risks, implementation risks and operational risks.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

The ESCo VDI guarantees the annual energy saving and is responsible for construction and installation technical maintenance and therewith assumes all achievement risks.

What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

N/A

3. Savings are guaranteed by EPC provider

The EPC provider guarantees the achievement of the contractually agreed level of energy savings and/or related costs. In case an EPC project fails to achieve performance specified in the contract, the EPC provider is obligated by the contract to repay savings shortfalls over the life of the contract. The contractually agreed quantified energy savings should be defined in a fair and transparent manner based on realistic assumptions and appropriate methodology defined in the contract. At the end of the specific contract period the full benefits of savings revert to the facility owner.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

The ESCo VDI uses their own measurement and verification system, and has real time insight in the energy use. They evaluate the data on a monthly basis. More savings have been realised than stated in the contract and that extra saving will be divided on a 50-50% basis between the ESCo and the client.

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

N/A

4. EPC provider supports long-term use of energy management

The EPC provider actively involves the client in the implementation of an energy management programme during the contract period and eventually after the contract period by agreement. This supports the benefits from the project to sustain also after the contract period.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

2 – Almost fully

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

In the contract it was agreed that a kpi report would be delivered, this still needs to be delivered by Van Dorp. An external advisor was hired to provide support in drafting the contract.

5. The relationship between the EPC provider and client is long-term, fair and transparent

The EPC provider and the client work together very closely and as partners with the common objective to achieve contractually agreed level of savings. They strive to keep their relationship long-term, fair and transparent. They both provide access to their information which is relevant to the project in a non-distortive manner. They do not hide such information to the other party. Both EPC provider and client fulfil their obligations according to the contract terms. For instance, the client is committed to inform the EPC provider about any changes in the operation of its facilities during the contract duration that could affect the energy demand. The establishment of such relationship between the EPC provider and the client supports achieving their common interest to achieve the contractually agreed level of energy savings and to preserve long-term co-operative relationship.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

This project was a pilot, for the ESCo as well as for the client. They have taken 2 years' time for orientation and for the preparation phase.

6. All steps in the process of EPC projects are transparent

The EPC provider and client comply with all laws and regulations that apply to the EPC project in the country in which the project is implemented. The EPC provider and the client avoid conflict of interests and apply a zero tolerance policy against corruption and self-dealing.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

The manager of the sports facility has access to the energy management system. The manager just needs to enter the usage times on a weekly basis.

What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

N/A

7. Support in financing of EPC projects

The EPC provider supports the EPC client in finding the most suitable solution providing for project financing taking into account the credit risk of both parties. The capital to finance the EPC project can either be supplied out of the client's own fund, by the EPC provider or by a third party. Provision of financing by the EPC provider is an option, not a necessary part of the EPC project.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

Van Dorp has taken care of financing themselves. As a small supplier they cannot do this too often, but in this pilot case it was a very educational experience.

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

The ESCo could not obtain external financing and has financed the project from own equity. They cannot do this for multiple projects. A solution could be to, in the exploitation phase, arrange financing by a bank when the project has proven itself and the cash flow is clear. As far as we know, this hasn't been done for this project as of yet.

8. EPC projects require qualified staff

The EPC provider maintains a qualified staff in order to provide the right technical, commercial, legal and financial abilities. EPC provider ensures that the experts working for them have the adequate qualifications and capacities related to the implementation of the EPC projects in order to ensure e.g. sound engineering evaluation, design, project management, risk management and implementation of energy efficiency improvement measures. The client can use a specialized advisory company (EPC facilitator) that will steer the correct implementation and procurement of the EPC project on his side.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

There are no complaints

9. The EPC provider focuses on high quality and care in all steps of project implementation

The EPC provider uses certified procedures, high-quality and reliable equipment and products, and cooperates with reliable sub-suppliers. It adheres to the principles of ethical business conduct, meets its obligations towards sub-suppliers and conducts itself responsibly with respect to client and its representatives.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

No problems, there is an open communication.

10. General Question about the Code of Conduct

A) Was the Code of Conduct formulated in a clear and understandable way?

1 - Fully

If not, please describe suggestions for improvement:

N/A

Pilot Project Evaluation *WTC Schiphol*

In the following, please find attached the filled in evaluation questionnaires of pilot project 'WTC Schiphol'

PART A: Basic information on the project

Questionnaire filled in by

Name of the person	Jan Ewout Scholten en Ruud Schreuder/Cofely Arie Kraaijenoord/World Trade Center Schiphol Airport Ed Rooijakkers/Halmos adviseurs
Organisation name	Cofely World Trade Center Schiphol Airport Halmos adviseurs

Project description	
Pilot project name i.e. facility name	WTC Schiphol AIRPORT
Location (city, region)	Schiphol, Haarlemmermeer, The Netherlands
Country code	NL
Type of customer *(choose correct category)*	Commercial office, real estate property
Sector *(choose correct category)*	Office building
Number of buildings of each type *(e.g. 25 schools, 11 healthcare facilities, etc.)*	1 Office building, 66,000 m^2 GFA, existing of two building parts of multiple towers
Main goal of the project *(e.g. comprehensive reconstruction of the energy system during six months by implementing measures saving heat, electricity and water)*	The contract was originally drafted as a sustainability and maintenance contract. The surplus costs of this maintenance contract were covered by a guarantee on savings, to prevent extra cost for the tenants of the WTC office buildings. The savings are guaranteed under the condition that comfort parameters are met. These comfort indicators are more important than the savings. The WTC Schiphol Airport is located at one of the prime business locations in the Netherlands and has a high performance level, quality is therefore essential.
Measures (short description – max. 5 points)	• There were no energy savings measures installed. The focus was on optimization of existing installations for heating, cooling and ventilation. We invested in building installation knowledge (Retro-commissioning) and Performance Monitoring (Continuous Commissioning, FDD) at WTC. • The owners of the office building (CBRE and Schiphol) invest in renovation of installations themselves, outside this

	contract. • The installations were, technically reviewed, average complex. It is a very large building (66,000 m^2 divided over multiple towers). Heat/cold storage is present in part of the building.
If there are other important aspects of the project, innovations and client´s advantages, not mentioned above, please, describe here	

Timing	From	Till	Duration
	[YYYY-MM]	[YYYY-MM]	[No. of months]
Project identification	2013-01	2013-06	6 months
Acquisition time span of the project *(time needed to pursue the client or ESCO to agree on testing the CoC within a pilot project)*			
Procurement procedure	2013-07	2013-12	6 months
Installation of energy efficiency measures			No installation
Contract duration	2014-01	2018-12	Contract period of 5 years. This is considered quite long for all parties involved, the average period for a maintenance contract is 3 years. You don't know what either party will do in the future. And a property owner wants to be able to sell, preferably with the least possible obligations, to avoid extra cost when selling.
Period of repayment			The contract was structured in a way that tenants would

			break even. The costs of the maintenance contract with the EPC supplier is included in the service costs paid by the tenants, which is compensated by the lower energy bill.

Financing	
Total investment [EUR] *(if not available estimate)*	No investment
Co-financing *(if project is co-financed by the customer or public funds explain and provide real or estimated volumes in EUR)*	Yes, client pays extra fee for this sustainable maintenance and management contract, approx. 100,000 €/year.
Guarantee of savings *(explain how it is defined)*	100,000 €/year energy costs savings

Quantitative evaluation		Baseline *(initially before the project)*	Annual savings	
			Guaranteed	Achieved *(yearly average of available data for 2014-15)*
Final consumption of heat	[MWh/a]	6000		900
Final consumption of power	[MWh/a]	8000		700
Primary energy	[MWh/a]	26000		2650
GHG emissions	[tCO_2e/a]	4692		486
Total operational costs *(energy costs, water costs, maintenance etc. – fill in what is available)*	[EUR/a]	More than 1 million	100,000	150,000

Part B: Questionnaire for Clients (on ESCO and Facilitator)

Within the framework of the project TRANSPARENSE, which receives support from the program IEE (Intelligent Energy Europe) of the European Union, European EPC Code of Conduct has been developed (hereinafter Code) for energy service providers (ESCOs) implementing EPC projects. The objective of the Code is to increase the transparency of the EPC markets and ensure the high quality of the energy services provided by the ESCO. By adhering to the EPC core values and code of conduct, the ESCOs and customers develop a solid foundation for a working partnerships based on trust and confidence. They are expected to utilise the Code in order to further develop energy efficiency services to meet their goals and expectations which shall be evaluated at a later stage.

In addition, the developed EPC Code of Conduct will be tested and evaluated in EPC pilot projects. The outcome and results of this questionnaire will provide feedback on the Code and its usefulness.

Questionnaire filled in by

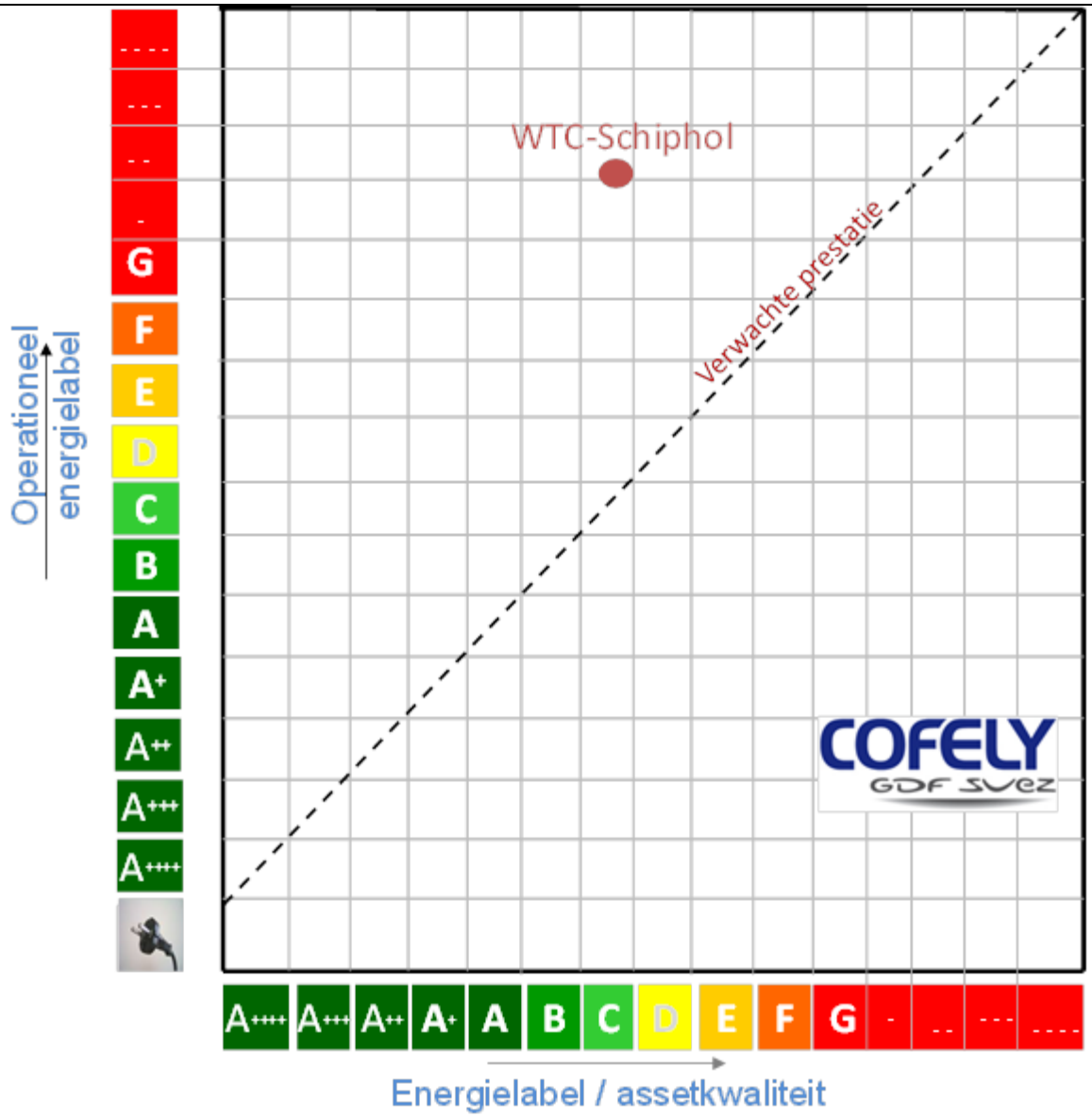
Name of the person	Arie Kraaijenoord/World Trade Center Schiphol Airport Ed Rooijakkers/Halmos adviseurs
Organisation name	World Trade Center Schiphol Airport Halmos adviseurs

Pilot project name i.e. facility name	WTC Schiphol Airport
Location (city, region)	Amsterdam, The Netherlands
Country code	NL

Phase I: Project preparation and development

1	How was the first information on the EPC project obtained?	The project was drafted because of a new maintenance contract. There was a tender procedure for a sustainable management and maintenance contract with 5 suppliers.

2	Were the above mentioned information sufficient and clear?	Yes ☐	No ☐ *If no, please comment why not:* …… ……
3	Did you have assistance for the energy efficiency project preparation?	Yes ☑ Consultancy agency (Halmos) provided support in the tender and is, during the contract period, also involved, mainly in monitoring.	No ☐
4	Who prepared the preliminary analyses of suitability for using the EPC method for implementing the energy efficiency project?	Consultancy agency Halmos with the client WTC Schiphol Airport	
5	Was the planned time schedule of the project preparation kept - or were there any delays? N.a.	Yes ☐ *If yes, how long was the major delay?……..*	No ☐
6	When it comes to the project preparation: were the customer expectations met? N.a.	on 1 to 5 scale: 1 = no 2 = almost not 3 = partly 4 = almost fully 5 = yes, fully	 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐
7	What was the value of expected energy saving potential?	Cofely has their own method to estimate the savings potential by means of a benchmark. Goal of this operational benchmark is to compare the energy consumption related to the Asset Label (Energy Performance Certificate) of a building with the operational energy consumption (converted to the same label classes). This benchmark is used to obtain a quick, but provisional, indication of the existing savings potential of a building. Analysis of the total energy consumption at main meter level (based on hourly measurements) provides a further indication of the savings potential.	



8	What was the (approx.) volume of investment costs for implementing energy efficiency measures?	No investment, just approximately 100.000 €/year surplus for the maintenance contract
9	What were the biggest barriers in the phase of project preparation?	Drafting the contract and agreements regarding guaranteed savings and comfort and consequences if conditions are not met
	How were the barriers chosen above overcome?	Taking a long time to discuss the various alternatives for agreements within the contract with WTC Schiphol, Cofely and Halmos.

Phase II – Procurement Procedure

1	How did they obtain information for preparation of the EPC project procurement?	With help from the consultant In 2013 a new tender was required, because the maintenance contract with Cofely ended. There was demand for sustainable management, considering the value for tenants. Tender documents are made by Halmos for this objective and the procurement process was started. From this procurement process Cofely was selected from 5 suppliers as most economic.	
2	Were the above mentioned information sufficient and clear? See above	Yes ☐	No ☐
3	Did you have preparation assistance for the EPC procurement?	Yes ☑ *If yes, please specify who assisted:* From Halmos Adviseurs	
4	Was the planned time schedule of the procurement process kept - or were there any delays?	Yes ☐ *If yes, how long was the major delay?* …… ……	
5	How long did it take to sign the contract between ESCO and customer (after the first publication of a contract notice)?	The preparation of the tender started in January 2013. The tender was published mid-2013 and awarded end 2013. Contract specifications thereafter took over six months and the actual signing took place mid-2014.	
6	How many ESCOs expressed their interest in the EPC procurement? How many ESCOs submitted their tenders (i.e. offers)?	*(free text)* 6 suppliers are selected for the procurement process.	
7	Were ESCOs required to fulfil any qualification criteria?		No
8	Did the customer negotiate with the ESCOs the conditions of their tenders during the procurement process?		No
9	What was the volume of savings provided by the winning tenderer (ESCO)?	10 % on the energy bill	

10	How guarantees the winning tenderer the expected volume of savings?	*(free text)* *See above.*	
11	What was the volume of the investment costs proposed in the winning tender?	No investment, costs involved the maintenance and management contract	
12	Who decided that the procurement procedure will be implemented?	WTC Schiphol Airport	
	Was there an official approval required (e.g. by the City council etc.)?		No
13	Who decided on the final choice of the winning tenderer?	WTC Schiphol Airport	
	Was there an official approval required (e.g. by the City council etc.) and if yes, by whom?		No
14	What were the biggest barriers during the procurement process?	*(free text)* ……. ……. …….	
	How were the above mentioned barriers overcome?	*(free text)* ……. ……. …….	
15	Were the expectations of the customer met within the procurement process?	5 = yes, fully Mutual trust is essential for energy performance contracting. This was already in place, the parties knew each other already because of the previous maintenance contact. An example of this is that Cofely started half a year ahead of time while the contract still had to be signed. Another advantage is that Cofely already knew the installations, according to the advisor this saved six months of training. Understanding each other's risks is only possible after selection of a supplier, after having bilateral negotiations.	

Phase III – Implementation and Operation

1	Did the ESCO introduce and explain the process of energy efficiency measures implementation to the customer sufficiently?	Yes ☑	No ☐

2	Did the ESCO verify the up to date statuses of energy systems in the building within the contract?	Yes ☑ All ESCo's have participated in a survey within the tendering process.	No ☐
3	Did the customer find any differences in comparison with the tender, which was necessary to solve?	Not relevant	
4	Did the ESCO prepare a design/concept of project documentation for the implementation phase?	Not relevant	
5	Was the project documentation for implementation of EE measures checked by an external expert company?	Not relevant	
6	If the ESCO had any sub-suppliers, how was the quality of those?	Not relevant	
	Was it necessary to negotiate directly with the sub-suppliers?		
7	How long lasted the EE measures implementation phase?	It's about building (building physics, installation and processes in the building) knowledge, a.o. by monitoring, this occurs throughout the entire contract period. The monitoring process was set up in the first year and is ongoing.	
8	Time schedule of the EE measures implementation was kept or were there any delays?	Not relevant	
9	Was the implementation of EE measures checked by an external expert company?	Not relevant	
10	Were there any supervisor meetings between the ESCO and customer during implementation phase?	Not relevant	
11	Were there any significant problem(s) in relation to the EE measures implementation?	Not relevant	
12	Were installed EE measures transmitted into property of customer? If yes, when?	Yes ☐ *If yes, what kind of problem and how was it solved?*	No ☑, CBRE (real

		…… …… ……	estate manager) and Schiphol Real Estate are co-owners of WTC, the installations are their property.
13	Had the client any comments to the EE measures implementation after its finalisation and after the equipment ownership had been transferred? If yes, what were the comments and how these were reflected by ESCO?	Not relevant	
14	Were the actual investment costs different from than volume stipulated in the contract?	Yes ☑, the regulation cost in 2014 was 50% higher than expected, but this investment at the beginning of the contract period can be earned back by means of extra savings.	No ☐
15	Did the ESCO provide trainings for the operational personnel of the implemented EE measures sufficiently?	on 1 to 5 scale: 1 = no 2 = almost not 3 = partly 4 = almost fully 5 = yes	No, not necessary. Cofely takes care of management and maintenance on site.
16	Were the overall expectations of the customer met – especially during the process of the EE measures implementation?	on 1 to 5 scale: 1 = no 2 = almost not 3 = partly 4 = almost fully 5 = yes	Client WTC is enthusiastic about achieved results

Phase IV - Measurement and Verification

1	Did the ESCO introduce and explain the process of measurement and verification to customer sufficiently?	on 1 to 5 scale: 1 = no 2 = almost not 3 = partly 4 = sufficient 5 = very sufficient	Yes, the client receives a status report on a monthly basis
2	Did the ESCO specifies rules and obligations - in relation to measurement of energy consumption - clearly to the involved personnel?	Yes ☑ The measurement is done by smart meters. There are clear agreements on communication	

		of the buildings energy use.	
3	Who is providing measurement of the operation of the installed equipment?	2 ☑ ESCO (directly on site) Cofely is responsible for measurement and verification as specified in the contract. There is a building management system, a control room in the WTC, where monitoring by Cofely takes place. Additional measurements are not necessary. They do however use new software for the analysis of *comfort and energy*. For monitoring the comfort performance monitoring method is used, Appendix B of the Dutch ISSO 31 publication. Therefor already available data in the Building Management System are monitored in DiagnosTX, a Performance Monitoring System developed by Halmos Adviseurs, to stay within a bandwidth. Cofely manages and uses this system.	
4	Who is providing verification of energy consumption and savings?	Cofely	
5	Is verification of consumption and savings provided according to guidelines stipulated in the tender?	Not relevant, no guidelines in the tender, process was for maintenance contract	
6	Is verification provided in relation to the IPMVP (International Performance Measurement and Verification Protocol) or another standard form?	Yes, in an addendum in the contract Cofely worked out the method on IPMVP protocol standards.	
7	How often is the verification of consumption and savings provided?	Monthly	
8	How often is the customer informed on the energy savings achieved?	Yes, the report is discussed on a monthly basis	
9	Has the ESCO submitted to the customer a report on the achieved energy savings?	Yes, yearly	
10	What was the value of the achieved energy savings?	10 % of baseline/original consumption	
11	Was the volume of energy savings reached <u>higher</u> than the guaranteed level of savings stipulated in the contract?	Yes ☑	
12	Was the volume of savings reached <u>below</u> the guaranteed level of savings stipulated in the contract?		
13	Which main problems appeared during the measurement and verification phase?	Real Energy Savings cannot be measured. The calculation method to determine the energy savings is complex due to many parameters (use of	

		the building, behaviour, weather and tariffs) affecting the real energy consumption. Besides, the effect of the planned renovation of the installations have to be measured, but are not part of the contract.	
	How were these issues solved by the ESCO?	An Energy Appendix in the contract describes the above mentioned method. The consultant (Halmos) monitors the appointments, the measurements and the calculations.	
14	Were the overall expectations of the customer met with respect to the actions taken by ESCO during the measurement and verification phase?	on 1 to 5 scale: 1 = no 2 = almost not 3 = partly 4 = almost fully 5 = yes	The method using monitoring of parameters that are important for comfort works well!

Part C: Questionnaire for ESCO

Within the framework of the project TRANSPARENSE, which receives support from the program IEE (Intelligent Energy Europe) of the European Union, European EPC Code of Conduct has been developed (hereinafter Code) for energy service providers (ESCOs) implementing EPC projects. The objective of the Code is to increase the transparency of the EPC markets and ensure the high quality of the energy services provided by the ESCO. By adhering to the EPC core values and code of conduct, the ESCOs and customers develop a solid foundation for a working partnerships based on trust and confidence. They are expected to utilise the Code in order to further develop energy efficiency services to meet their goals and expectations which shall be evaluated at a later stage.

In addition, the developed EPC Code of Conduct will be tested and evaluated in EPC pilot projects. The outcome and results of this questionnaire will provide feedback on the Code and its usefulness.

Questionnaire filled in by

Name of the person	Jan Ewout Scholten en Ruud Schreuder/Cofely
Organisation name	Cofely

Pilot project name i.e. facility name	WTC Schiphol Airport
Location (city, region)	Amsterdam, The Netherlands
Country code	NL

Below are listed the principles of the Code of Conduct for EPC. Please answer the questions for each principle:

1. EPC projects are economically efficient

The EPC provider aims at economically efficient combination of the energy efficiency improvement measures. Such combination of the measures maximises the net present value of an EPC project for the client (defined as sum of all the discounted incoming cash flows (operational cost savings) and all outgoing cash flows associated with implementing the project over the term of the contract).

A) Have you implemented the principle within the pilot project? /Scale Fully 1-5 Not at all

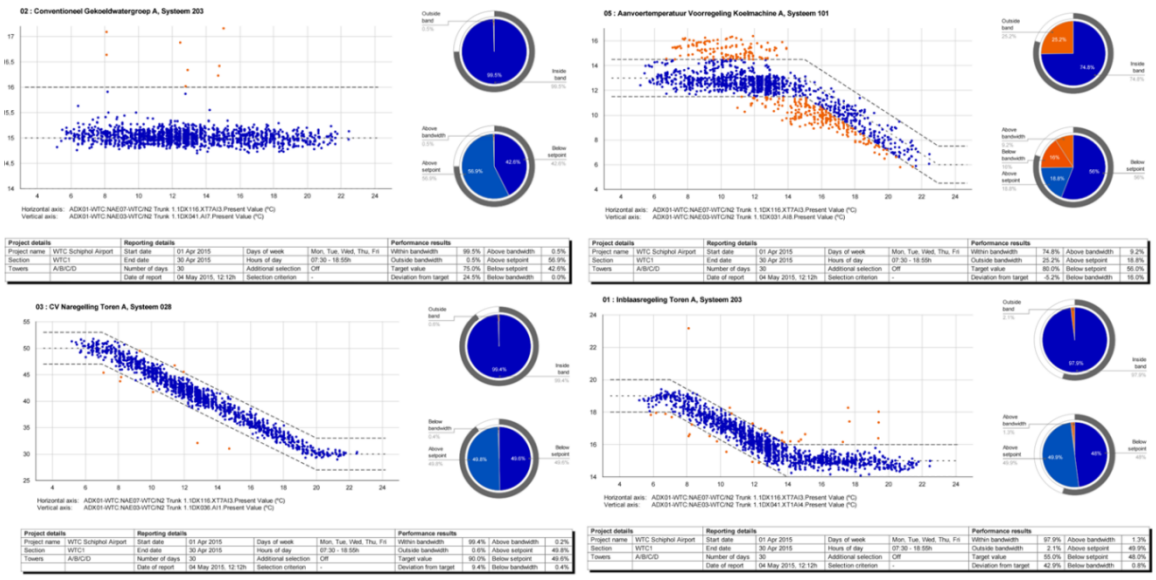
1 - Fully

Without investment, agreed energy savings are already achieved in this project merely by optimizing the controls of the installation, thereby maintaining the comfort level in the offices as a result of Retro-Commissioning.

What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

Two seemingly conflicting goals are included in the contract: achieving energy savings and maintaining comfort level in the building. Both goals are independently monitored.

Therefore Retro-Commissioning is set up and implemented in continuous commissioning rules (FDD – Fault Detection and Diagnosis).



2. EPC provider takes over the performance risks

The EPC provider assumes the performance risks of the project during the whole duration of the contract. Such risks include, inter alia, risk of incorrect estimates of savings, design risks, implementation risks and operational risks.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

The ESCo Cofely guarantees the annual energy savings and is responsible for technical maintenance of the installation and daily management on site in the building and takes over all performance risks. Therefore Cofely is using the EnergyNavigator (developed by Cofely), an Energy Analysis and Monitoring System based on Energy Signatures, to detect and monitor Energy Savings and the DiagnosTX (developed by Halmos Adviseurs) Performance Monitoring System to guarantee the installation performance.

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

N/A

3. Savings are guaranteed by EPC provider

The EPC provider guarantees the achievement of the contractually agreed level of energy savings and/or related costs. In case an EPC project fails to achieve performance specified in the contract, the EPC provider is obligated by the contract to repay savings shortfalls over the life of the contract. The contractually agreed quantified energy savings should be defined in a fair and transparent manner based on realistic assumptions and appropriate methodology defined in the contract. At the end of the specific contract period the full benefits of savings revert to the facility owner.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

In an annex to the contract it is described how to determine the energy savings. In this annex the method was laid down to set the baseline and performance lines (like the IPMVP protocol) and the most important preconditions and parameters.

At the start of the project the baseline is set for the year before the beginning of the contract. At the end of the first year of the contract the performance line is set. In this manner, the energy savings are determined. Besides, Cofely report about the energy use and comfort level on a monthly basis.

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

Complexity of the energy appendix to the contract. Thereby, the involvement of an expert is very important. In the future, the ambition is to have a general accepted method.

4. EPC provider supports long-term use of energy management

The EPC provider actively involves the client in the implementation of an energy management programme during the contract period and eventually after the contract period by agreement. This supports the benefits from the project to sustain also after the contract period.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

Cofely was hired as ESCo for maintenance and management of the installation and assumes responsibility for the entire energy management of the building complex. Results are reported and discussed with the client on a monthly basis, given the pilot character of the project. At the end of the contract period the client will set up a new maintenance- and management contract or renew the contract

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

A high level of knowledge on energy management, energy monitoring and involvement of the of employees is necessary. Training, a well-developed

implementation plan and coaching by experts got extra attention in this pilot project. Besides general methods (Energy Appendix, Baseline and performance line calculation, installation performance monitoring and energy performance monitoring) and software tools are developed during the project

5. The relationship between the EPC provider and client is long-term, fair and transparent

The EPC provider and the client work together very closely and as partners with the common objective to achieve contractually agreed level of savings. They strive to keep their relationship long-term, fair and transparent. They both provide access to their information which is relevant to the project in a non-distortive manner. They do not hide such information to the other party. Both EPC provider and client fulfil their obligations according to the contract terms. For instance, the client is committed to inform the EPC provider about any changes in the operation of its facilities during the contract duration that could affect the energy demand. The establishment of such relationship between the EPC provider and the client supports achieving their common interest to achieve the contractually agreed level of energy savings and to preserve long-term co-operative relationship.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

This project was a pilot, for the ESCo as well as for the client. They have taken one year between selection and signing of the contract to co-develop the project together and define the agreements in the contract.

6. All steps in the process of EPC projects are transparent

The EPC provider and client comply with all laws and regulations that apply to the EPC project in the country in which the project is implemented. The EPC provider and the client avoid conflict of interests and apply a zero tolerance policy against corruption and self-dealing.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

Both parties strive to be transparent and want to work on a basis of trust. The involvement of an expert as consultant plays an important role. An example is that Cofely already invested in the project before the contract was signed

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

7. Support in financing of EPC projects

The EPC provider supports the EPC client in finding the most suitable solution providing for project financing taking into account the credit risk of both parties. The capital to finance the EPC project can either be supplied out of the client's own fund, by the EPC provider or by a third party. Provision of financing by the EPC provider is an option, not a necessary part of the EPC project.

A) Have you implemented the principle within the pilot project? /Scale Fully 1-5 Not at all

5 - Not at all

There are investments in knowledge and man hours, but not in hardware. The costs of this are included in the surplus of this sustainable management- and maintenance contract. The client WTC Schiphol Airport pays this surplus on a yearly basis and includes this in service costs to the tenants of the office building. These service costs don't rise, because a reduced energy bill are also part of these service costs.

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

In this pilot much effort has been put in measurement and verification. The use of validated and general accepted methods and processes focused on specific building functions to estimate the gap between expected and real energy consumption is necessary to be cost effective and reliable

8. EPC projects require qualified staff

The EPC provider maintains a qualified staff in order to provide the right technical, commercial, legal and financial abilities. EPC provider ensures that the experts working for them have the adequate qualifications and capacities related to the implementation of the EPC projects in order to ensure e.g. sound engineering evaluation, design, project

management, risk management and implementation of energy efficiency improvement measures. The client can use a specialized advisory company (EPC facilitator) that will steer the correct implementation and procurement of the EPC project on his side.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

Investing in expertise, skills and workmanship is a prerequisite for success. In practice this means a shift in the organizational structure from account / project management with lower quality service personnel to assisting professionals with specific knowledge supplemented by following strict maintenance prescriptions working staff. A shift in job descriptions, organizational structure and contract accordingly.

9. The EPC provider focuses on high quality and care in all steps of project implementation

The EPC provider uses certified procedures, high-quality and reliable equipment and products, and cooperates with reliable sub-suppliers. It adheres to the principles of ethical business conduct, meets its obligations towards sub-suppliers and conducts itself responsibly with respect to client and its representatives.

A) Have you implemented the principle within the pilot project /Scale Fully 1-5 Not at all

1 - Fully

B) What kind of problems/barriers have you encountered when implementing the pilot project and what is your recommendation to overcome them?

The willingness of, and collaboration with the client (and the consultant) to discuss the various encountered problems is essential to be successful in such a pilot project.

10. General Question about the Code of Conduct

A) Was the Code of Conduct formulated in a clear and understandable way?

1 - Fully

B) If not, please describe suggestions for improvement:

N/A