

JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Introduction of Energy-Efficient Air Conditioners in RICOH IMAGING PRODUCTS (Vietnam) CO., LTD

A.2. General description of project and applied technologies and/or measures

This project aims to reduce energy consumption of the existing factory of RICOH IMAGING PRODUCTS (Vietnam) located in the east of Hanoi city by replacing the existing air conditioners to more energy-efficient ones with inverter technologies produced by Daikin Industries, Ltd.

Number and type of the project air conditioners to be installed are as follows:

Outdoor units		Indoor units connected to the outdoor unit	
RXQ20THY1:	1 unit	FXVQ500NY1:	1 unit
RXQ50THY1:	1 unit	FXVQ500NY1:	2 units
		FXMQ250MVE9:	1 unit
RXQ12TAHYM:	1 unit	FXMQ250MVE9:	1 unit
RXQ50TAHYM:	1 unit	FXVQ500NY1:	2 units
		FXMQ250MVE9:	1 unit
RXQ16TAHYM:	1 unit	FXVQ200NY1:	2 units
RXQ16TAHYM:	1 unit	FXVQ200NY1:	2 units
RXYQ12TAHY1:	1 unit	FXMQ200MVE9:	1 unit
RXQ32TAHYM:	1 unit	FXVQ400NY1:	2 units

A.3. Location of project, including coordinates

Country	Socialist Republic of Vietnam
Region/State/Province etc.:	Hanoi
City/Town/Community etc:	Plot A7, Sai Dong B Industrial Zone, Long Bien District
Latitude, longitude	21°01'41.2"N 105°54'23.2"E

A.4. Name of project participants

The Socialist Republic of Viet Nam	RICOH IMAGING PRODUCTS (Vietnam) CO., LTD.
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Japan	RICOH COMPANY, LTD.
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A.5. Duration

Starting date of project operation	06/12/2017
Expected operational lifetime of project	9 years

A.6. Contribution from Japan

The proposed project receives financial support from the government of Japan. The project has been selected as one of the JCM model projects by the Ministry of the Environment, Japan (MOE). As a result of the financial support provided by MOE program, the initial investment cost of the proposed project has been partially financed by Japanese government (up to 50% of the initial investment cost). Through the MOE program, Energy-Efficient Air Conditioners will be installed in place of conventional Air Conditioners.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	JCM_VN_AM006
Version number	Ver 1.0

B.2. Explanation of how the project meets eligibility criteria of the approved methodology

Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	Air-conditioning system with inverter is newly installed or installed to replace existing non-inverter air conditioning system.	Air-conditioning system with inverter is installed to replace existing non-inverter air conditioning system. All air-conditioning systems are products of Daikin Industries, Ltd. and their code of outdoor units are: RXQ20THY1 RXQ50THY1 RXQ12TAHYM RXQ50TAHYM RXQ16TAHYM RXYQ12TAHY1 RXQ32TAHYM
Criterion 2	Cooling capacity of project air conditioning system is more than or equal to 14kW.	The cooling capacity of all project air conditioning systems installed are more than or equal to 14kW, as shown in the table below:

		<table border="1"> <thead> <tr> <th>Unit code</th> <th>Cooling Capacity(kW)</th> </tr> </thead> <tbody> <tr> <td>RXQ20THY1</td> <td>54.4</td> </tr> <tr> <td>RXQ50THY1</td> <td>140</td> </tr> <tr> <td>RXQ12TAHYM</td> <td>32</td> </tr> <tr> <td>RXQ50TAHYM</td> <td>140</td> </tr> <tr> <td>RXQ16TAHYM</td> <td>44.8</td> </tr> <tr> <td>RXYQ12TAHY1</td> <td>32</td> </tr> <tr> <td>RXQ32TAHYM</td> <td>89.4</td> </tr> </tbody> </table>	Unit code	Cooling Capacity(kW)	RXQ20THY1	54.4	RXQ50THY1	140	RXQ12TAHYM	32	RXQ50TAHYM	140	RXQ16TAHYM	44.8	RXYQ12TAHY1	32	RXQ32TAHYM	89.4																		
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Criterion 3	<p>COP of project air-conditioning system has a COP value higher than that of the value indicated in the table below.</p> <p style="text-align: center;">COP for Reference Air Conditioning System ($COP_{RE,i}$)</p> <table border="1"> <thead> <tr> <th>Cooling Capacity [kW]</th> <th>Reference COP</th> </tr> </thead> <tbody> <tr> <td>$14 \leq x < 28$</td> <td>2.97</td> </tr> <tr> <td>$28 \leq x < 42$</td> <td>2.94</td> </tr> <tr> <td>$42 \leq x < 56$</td> <td>2.91</td> </tr> <tr> <td>$56 \leq x$</td> <td>2.56</td> </tr> </tbody> </table>	Cooling Capacity [kW]	Reference COP	$14 \leq x < 28$	2.97	$28 \leq x < 42$	2.94	$42 \leq x < 56$	2.91	$56 \leq x$	2.56	<p>The COP of all project air-conditioning systems are higher than the threshold values stated in this criteria as shown in the table below:</p> <table border="1"> <thead> <tr> <th>Unit code</th> <th>Cooling Capacity (kW)</th> <th>COP</th> </tr> </thead> <tbody> <tr> <td>RXQ20THY1</td> <td>54.4</td> <td>4.35</td> </tr> <tr> <td>RXQ50THY1</td> <td>140</td> <td>3.38</td> </tr> <tr> <td>RXQ12TAHYM</td> <td>32</td> <td>4.40</td> </tr> <tr> <td>RXQ50TAHYM</td> <td>140</td> <td>3.38</td> </tr> <tr> <td>RXQ16TAHYM</td> <td>44.8</td> <td>4.30</td> </tr> <tr> <td>RXYQ12TAHY1</td> <td>32</td> <td>4.40</td> </tr> <tr> <td>RXQ32TAHYM</td> <td>89.4</td> <td>3.92</td> </tr> </tbody> </table>	Unit code	Cooling Capacity (kW)	COP	RXQ20THY1	54.4	4.35	RXQ50THY1	140	3.38	RXQ12TAHYM	32	4.40	RXQ50TAHYM	140	3.38	RXQ16TAHYM	44.8	4.30	RXYQ12TAHY1	32	4.40	RXQ32TAHYM	89.4	3.92
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Criterion 4	Ozone Depletion Potential (ODP) of the refrigerant used for project air conditioning system is zero.	Refrigerant of R-410A, whose ODP is zero, is used for all project air conditioning systems installed.																																		
Criterion 5	Plans to prevent release of refrigerants into the atmosphere at the time of air conditioning system removal are prepared for both project air conditioning system and the existing air conditioning system replaced by the project. In the case of replacing existing air conditioning system by project air conditioning system, execution of the prevention plan is checked at the time of verification, e.g. re-use of the refrigerant, in order to confirm that refrigerant used for the	Installation of project air conditioning system in the factory is conducted by Northstar construction - Trading JSC (Northstar), local associated company of Daikin Industries who has ability to recover and handle refrigerants properly. The refrigerants used in the existing air conditioning systems replaced by the project have been recovered by Northstar and are stored in refrigerant tanks. When the project air conditioning systems will be replaced in the future, the refrigerants in the project air conditioning systems will be recovered and stored into																																		

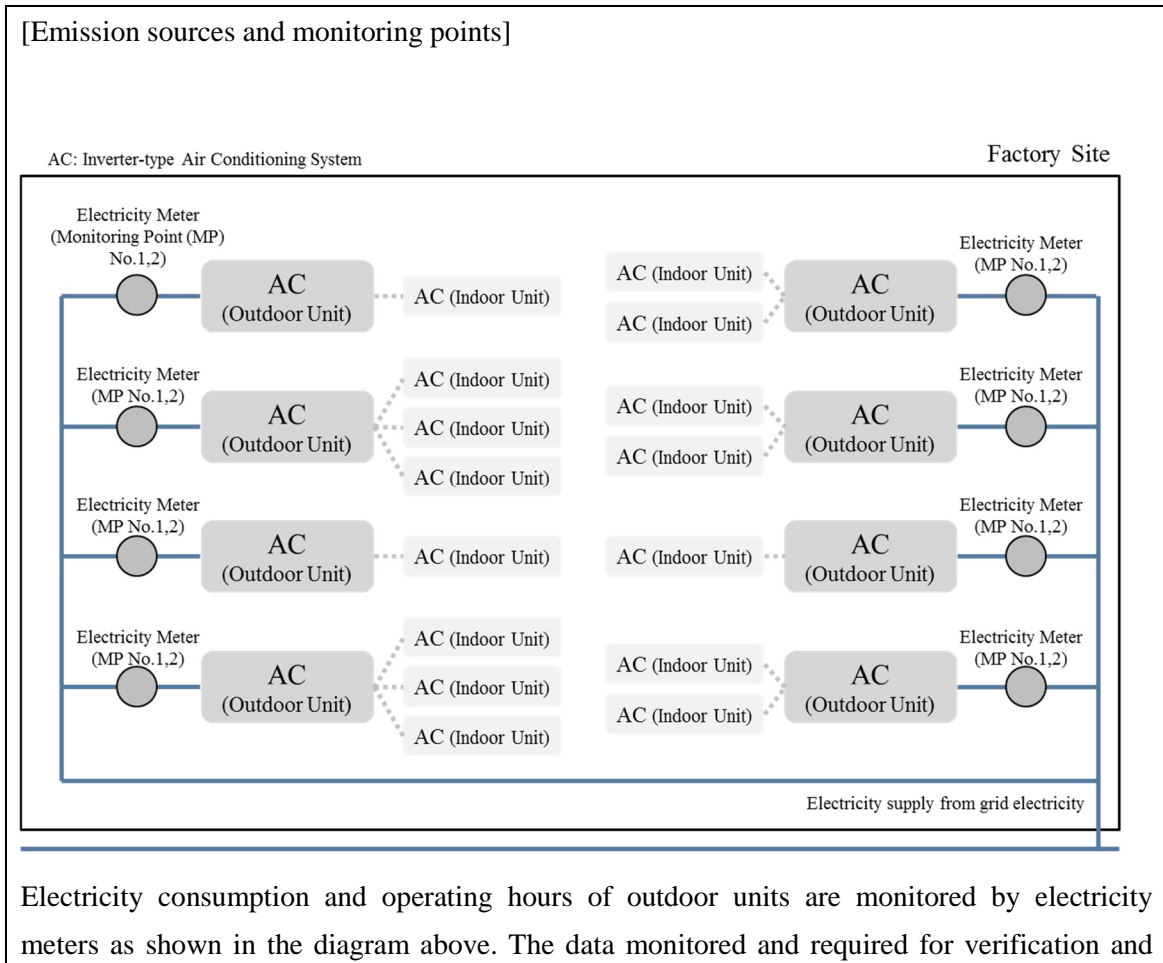
	existing air conditioning system removed by the project is not released to the air.	refrigerant tanks by Northstar. Hence, no refrigerant from project air conditioning system is being released during the installation and storage process.
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C. Calculation of emission reductions

C.1. All emission sources and their associated greenhouse gases relevant to the JCM project

Reference emissions	
Emission sources	GHG type
Electricity consumption by reference air conditioning systems	CO ₂
Project emissions	
Emission sources	GHG type
Electricity consumption by project air conditioning systems (include an indoor unit and an outdoor unit)	CO ₂

C.2. Figure of all emission sources and monitoring points relevant to the JCM project



issuance are kept and archived for two years after the final issuance of credits.

C.3. Estimated emissions reductions in each year

Year	Estimated Reference emissions (tCO _{2e})	Estimated Project Emissions (tCO _{2e})	Estimated Emission Reductions (tCO _{2e})
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	92.9	82.4	10
2018	1,304.6	1,156.8	147
2019	1,304.6	1,156.8	147
2020	1,304.6	1,156.8	147
Total (tCO _{2e})	4,006.7	3,552.8	451

D. Environmental impact assessment

Legal requirement of environmental impact assessment for the proposed project	No
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E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

In order to collect comments from stakeholders, a local stakeholder consultation has been conducted on 21 September 2017 at the plant where the project was implemented in Hanoi, Vietnam. The schedule and participants of the meetings are provided below.

Date: 21 September 2017

Venue: Factory of RICOH IMAGING PRODUCTS (Vietnam), Plot A7, Sai Dong B Industrial Zone, Long Bien District, Hanoi

Agenda:

1. Outline of the project
2. Introduction of the product and technology
3. Benefits of the project

4. Q&A

Participants:

[Local stakeholders]

No.	Organization	Position
1	RICOH IMAGING PRODUCTS (Vietnam) CO., LTD.	General Manager, Administration dept.
2	RICOH IMAGING PRODUCTS (Vietnam) CO., LTD.	Junior Specialist, Corporate Planning Sec

[Project participants and their consultant]

Project participants: [Vietnam] RICOH IMAGING PRODUCTS (Vietnam) CO., LTD.

After explanation about the proposed JCM project, questions and comments were solicited from the stakeholders. A summary of the comments received and consideration of those comments are provided in Section E.2. below.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
RICOH IMAGING PRODUCTS (Vietnam) CO., LTD. General Manager, Administration dept.	We are getting a positive response from on-site employees. The old air conditioner had a decline in ability, so it took time to cool down to the set temperature. On the other hand, after the installation of the new air conditioner, it quickly cooled and the temperature can be kept to comfort temperature, which greatly improves the working environment. Old air conditioning machines frequently failed (once averaging once a month), and there was some cases that it took for 1 to 2 weeks to conduct inspection and repair when a failure occurred. There is no trouble with the new air conditioner, and the cost of maintenance and repair is also	Positive opinion was received. No further action is needed.

	reduced.	
RICOH IMAGING PRODUCTS (Vietnam) CO., LTD. Junior Specialist Corporate Planning Sec	Regarding the refrigerant (R22) used in the existing air conditioner, we have plan to reuse it with the old type air conditioner that is continuously used in the factory.	No negative opinion was received. No further action is needed.

F. References

Reference lists to support descriptions in the PDD, if any.

Annex

Revision history of PDD

Version	Date	Contents revised
1.0	16/12/2017	First edition, for public inputs
2.0	15/01/2018	Revisions based on the findings from onsite validation; <ul style="list-style-type: none"> ● Section A.2 ● Section A.3 ● Section A.5 ● Section B.2 ● Section C.2
3.0	20/02/2018 <u>15/08/2018</u>	Revisions based on the findings from review inside TPE; <ul style="list-style-type: none"> ● Section C.3 <u>Initial registration by the Joint Committee at JC7</u>
4.0	08/01/2019	Revisions based on the findings from onsite verification;

	<u>11/10/2019</u>	<ul style="list-style-type: none">● Section A.2● Section B.2● Section C.2 <p><u>Post-registration changes by the project participants at the first issuance request</u></p>
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