

JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

"Installation of high-efficiency Heat Only Boilers in 118th School of Ulaanbaatar City" Project

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

The 118th school in Ulaanbaatar city is located in 8th Khoroo, Khan-Uul District. This school opened relatively new, in 2009. It is located near the Genghis Khan International Airport. The climate of Ulaanbaatar is dry, and very cold in the winter season. Khan-Uul District of Ulaanbaatar City is the outside of the service area of the heat supply from the thermal power plants. Therefore, HOB is a necessary heating service for schools and kindergartens. Since the population of the neighboring area has been increasing rapidly, the construction of a new school building and the establishment of a new kindergarten were planned.

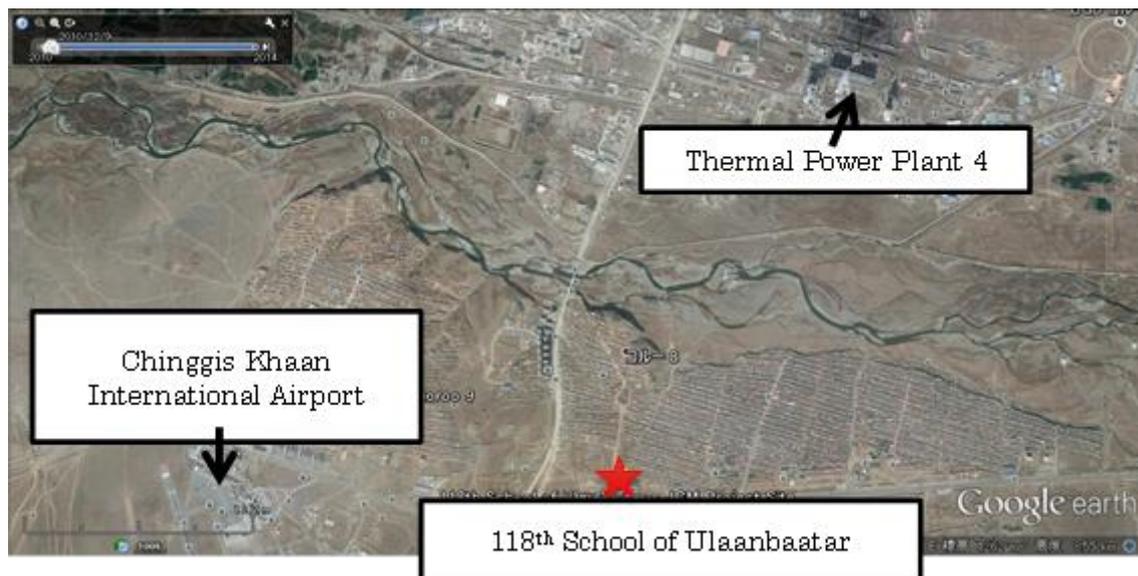


Figure 1 Location of 118th school of Ulaanbaatar

The proposed JCM project aims the introduction of high-efficiency HOBs which are necessary to fulfill the demand of new heat facilities for the new school building and the kindergarten.

The Reference HOB is the vertical type in line with MN_AM002.

The key technology is applied in the boiler, "CARBOROBOT C300", with a rotary grate. The fuel (coal) is automatically fed from the hopper to the rotary grate. The amount of fuel on the grate is optimized, burning only the minimum amount required to cover the heat demand of the building at the time. Therefore, the "CARBOROBOT C300" is more efficient than the

Reference HOB.

In addition, the "CARBOROBOT C300" boiler is designed with the multi-cyclone module (dust collector), which contributes to the reduction of the air pollutant in Ulaanbaatar City.

The new boiler building was constructed and introduced the new HOB facilities, such as a heat exchanger and makeup tank, and this project was implemented as a JCM project.

(refer to "Ref.01")

A.3. Location of project, including coordinates

Country	[Mongolia]
Region/State/Province etc.:	[Ulaanbaatar City]
City/Town/Community etc:	[8th Khoroo, Khan-Uul District]
Latitude, longitude	[Latitude: 47° 51' 42.3", Longitude: 106° 47' 43.3"]

A.4. Name of project participants

Mongolia	[ANU-SERVICE CO.,LTD.]
Japan	[SUURI-KEIKAKU CO.,LTD.]

A.5. Duration

Starting date of project operation	01/10/2014
Expected operational lifetime of project	[15 years.]

A.6. Contribution from developed countries

The proposed project was financially supported by the Ministry of the Environment, Japan through the financing programme for JCM model projects which seeks to acquire JCM credits. Japanese experts of "SUURI-KEIKAKU CO., LTD." will support the development of telemeter system such as the remote control and automatic record of the monitoring data, as the core of MRV activities of JCM.

The Capacity Development was applied to the boiler managers by the Japanese engineers using a technical guidance. The aim of the technical guidance is to optimize the boiler operation based on the results from the measurements of the Japanese engineers. In addition, the person in charge of "SUURI-KEIKAKU CO.,LTD." made some manuals from these activities for staffs of "ANU-SERVICE CO.,LTD." (refer to "Ref.02" and "Ref.03")

Since ANU-SERVICE CO., LTD. is the host country's (Mongolian) operation and monitoring entity, SUURI-KEIKAKU CO., LTD. implements the capacity development of the monitoring activity to the ANU-SERVICE CO., LTD. staffs.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	MN_AM002
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	Technology to be employed in this methodology is coal-fired heat only boiler(HOB) for hot water supply system.	The purpose of the boilers is to heat school and kindergarten. The boilers are hot water low pressure automatic boilers and designed for brown coal (5-25 mm) burning only. (refer to "Ref.01")
Criterion 2	Capacity of the project HOB ranges from 0.10 MW to 1.00MW.	Two high efficient coal fired boilers "CARBOROBOT C300" with capacity of 300 kW each, installed at project site. (refer to "Ref.01" and "Ref.05")
Criterion 3	The project activity involves the installation of new HOB and/or the replacement of the existing coal-fired HOB.	The two new high efficient HOBs "CARBOROBOT C300" of capacity 300 kW are installed. (refer to "Ref.01" and "Ref.05")
Criterion 4	The project HOB is equipped with an operation and maintenance manual.	The manual of boiler operation is prepared in Mongolian language. The maintenance manual of "CARBOROBOT C300" is prepared in Mongolian language. (refer to "Ref.02", "Ref.03", and "Ref.04")
Criterion 5	The catalog value of the boiler efficiency for the project HOB is 80% or higher.	The boiler efficiency of "CARBOROBOT C300" is "85% - 90%", according to the catalog value. (refer to "Ref.05")
Criterion 6	The project HOB has the function to feed coal on the stoker uniformly and is equipped with a dust	"CARBOROBOT C300" has a unique, rotating-grate technology. Since "CARBOROBOT C300" has the

	<p>collector.</p>	<p>structure that the hopper is upside of the rotary grate, the fuel (coal) is automatically and uniformly fed from the hopper to the rotary grate. The amount of fuel on the grate is optimized, burning only the minimum amount required to cover the heat demand of the building at the time.</p> <p>This feature is enhanced by the active agitator and vibrator system located in the fuel container.</p> <p>A special rotary grate performs to control the dosage of the fuel by using the accurately regulated burning process, and automatically removes the ash from the furnace chamber to the ash chamber.</p> <p>The CAROBOROBOT boilers are designed with the multi-cyclone module (dust collector). (refer to “Ref.01” and “Ref.05”)</p>
--	-------------------	--

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
Coal Consumption of reference HOB	CO2
Project emissions	
Emission sources	GHG type
Coal Consumption of project HOB	CO2
Electricity Consumption of project HOB	CO2

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

The emission sources are coal consumptions and electrical consumptions in HOB.

The monitoring equipment is the heatmeter which measures the quantity of net heat supply of HOB. “Monitoring point 1” is the “Heat Quantity” (“PH_p”) of the heatmeter. The “Heat Quantity” is calculated by the flow rate of outgoing heat water/ returning heat water (“V1”), the temperature of outgoing heating water (“T1”) and the temperature of returning heating water (“T2”).

The persons in charge of the monitoring activity are able to get the information of heatmeter by using the telemeter system. The telemeter system consists of the data logger of the heatmeter and the signal conductor. The monitoring data will be recorded hourly in the data logger, and the data are collected daily by using the telemeter system.

The “Monitoring point 2” is the HOB itself. This item of the “Monitoring Points 2” is the total hours of the project HOB operation. Total hours are the period from the starting to the ending time regarding the monitoring activity.

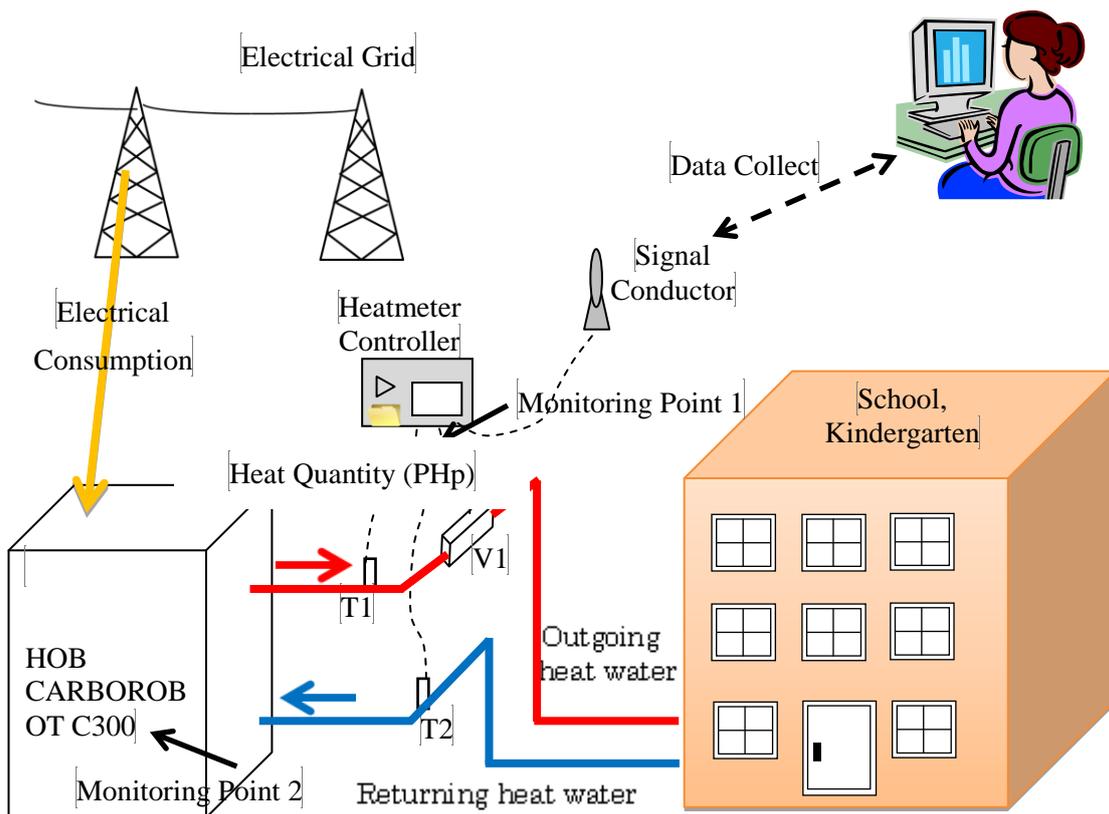


Figure 2 Monitoring Point of “CARBOROBOT C300”

C.3. Estimated emissions reductions in each year

Year	Estimated	Reference	Estimated	Project	Estimated	Emission
------	-----------	-----------	-----------	---------	-----------	----------

	emissions (tCO _{2e})	Emissions (tCO _{2e})	Reductions (tCO _{2e})
2013	0	0	0
2014	0	0	0
2015	805	713	92
2016	805	713	92
2017	805	713	92
2018	805	713	92
2019	805	713	92
2020	805	713	92
Total (tCO _{2e})	4830	4278	552

D. Environmental impact assessment

Legal requirement of environmental impact assessment for the proposed project	YES
---	-----

E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

Date: from 13:30 to 15:00, 28th June 2014

Place: a classroom of 118th school of Ulaanbaatar City

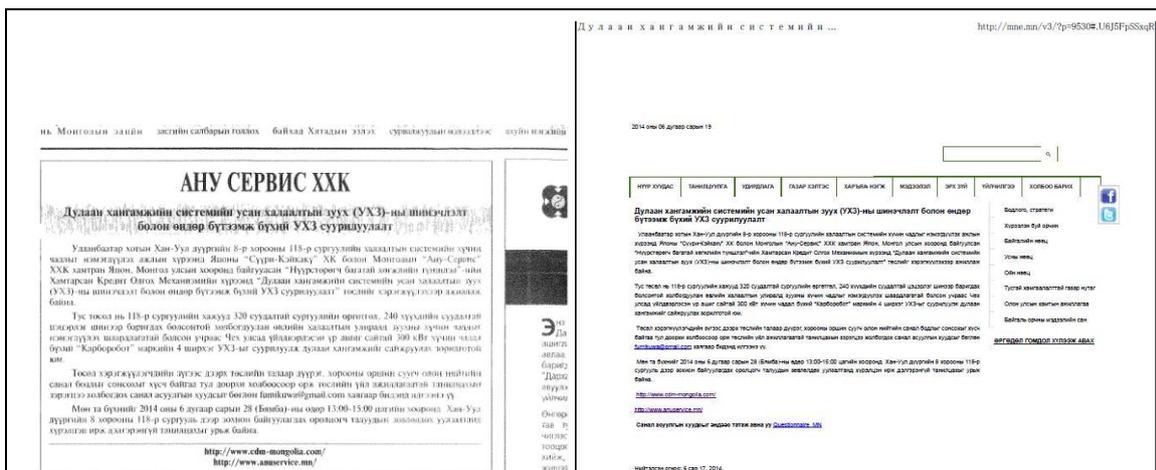
Participants: 44 people living and/or working near 118th school, 44 people responded the questionnaire, and there are some babies and children.

Handouts: Questionnaire (Mongolian language), Outline of JCM (Mongolian language)

Agenda:

- 1) Outline of JCM and JCM Project (Mr. Kuwahara)
- 2) Technical review of "Installation of high-efficiency Heat Only Boilers in 118th School of Ulaanbaatar City" Project (Mr. Injinaash)
- 3) Q&A
- 4) Closing remark

ANU-SERVICE CO.,LTD. announced the local stakeholder consultation in newspaper on 13th June 2014. In addition, the teachers of 118th school informed their schoolkids and students of the local stakeholder consultation. Therefore many parents participated in the local stakeholder consultation. The announcement of newspaper and web site are as follows;



The circumstances of stakeholder consultation were as follows;



Though this local stakeholder consultation, the local stakeholder understood the JCM project deeply and results of the questionnaire were positive. The local stakeholder showed the expectation about supplying the hot-water to their homes. As a result, since they had a favorable impression of the project promotion, the particularly additional correspondence was unnecessary.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
Khoroo head	<p>In 118 schools, what kind of fuel do you use?</p> <p>In 118 schools, how much fuel do you use?</p> <p>How much saving effect is there?</p> <p>What is the effect to use this boiler for?</p>	<p>For the new school building and new establishment of kindergarten, heat demand increases. As a result, the coal consumption increases from last year. However, coal consumption is reduced in comparison with the use of the conventional boilers because of using high efficiency boilers.</p>

		The stakeholder did not understand completely. Therefore, this stakeholder asked another question.
Khoroo head	Please explain it more clearly.	This boilers use coal refuses. As a result, the waste decrease and exhaust gas is little, too. In addition, the ability for heat supply of the boilers is high. The stakeholder understood the answer. The additional action was not necessary.
Male "A"	Can the heat supply be implemented to the apartment in the same way that the heat supply is implemented to the school and the kindergarten?	The heat supply can be implemented. The boilers are installed depending on the heat demand for house size. Our company is implementing heat supply to the apartment of three or four floors in local area. The stakeholder understood the answer. The additional action was not necessary.
Female "B"	Can the heat supply be implemented to the "GER" area?	The heat supply to the "GER" area can be implemented. If land problems are solved, the heat supply is possible. The stakeholder understood the answer. The additional action was not necessary.
Female "C"	Can the heat supply be implemented to one street of "GER" area?	It can be implemented. But, a problem is that one street is not enough area. So, the heat supply can be implemented to some streets of "GER" area. The stakeholder understood the answer. The additional action was not necessary.

F. References

Ref.01; Results of 118th School Environment Impact Assessment.pdf
 Ref.02; [confidential] Maintenance Manual_CARBOROBOT.pdf
 Ref.03; [confidential] Improvement Manual of HOB from SUR_MN.pdf
 Ref.04; [confidential] HOB Operation and Maintenance Manual.pdf
 Ref.05; Specifications of HOBs.pdf
 Ref.06; 2012FS_Monitoring Results of 79th school HOB.pdf

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

Annex

--

Revision history of PDD

Version	Date	Contents revised
Ver 1.0	18/05/2015	First Edition
Ver 2.0	19/06/2015	Second Edition PDD was revised because of the document review and follow-up actions of TPE. The Contents revised are “A.2.”, “A.5.”, “A.6.”, “B.2.”, “C.2.”, “E.1.”, “E.2.” and “F. Reference”.
Ver 3.0	27/06/2015	Third Edition