

JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Energy Saving by Introducing High Efficiency Autoclave to Infusion Manufacturing Factory 2
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A.2. General description of project and applied technologies and/or measures

The proposed JCM project aims to reduce emissions of greenhouse gas (GHG) by introducing a new type of high efficiency autoclave and a waste hot water recovery system in the Infusion Manufacturing Factory of PT. Otsuka Indonesia. The autoclave is used in the sterilization of infusion solutions. One end of the autoclave is connected to the steam source (the boiler) through the heat exchanger, where steam is supplied at more than 0.49MPa. The circulation water of the autoclave is fed into the heat exchanger to be heated from 30°C to 121°C to produce hot water, and then the hot water is circulated back to the autoclave to sterilize the infusion solutions.

For existing autoclaves, hot water is disposed of after circulation and not recovered for reuse, and for each sterilization cycle the water is heated from normal temperature (30°C), resulting in significant fuel (Compressed Natural Gas: CNG) consumption of the boiler. In contrast, in this project, the hot water drained from the autoclave is recovered by the waste hot water recovery system and stored in the hot water tank. It is then reheated by the steam source from 110°C to 121°C to be circulated in the next sterilization process. By reusing hot water in the next sterilization process, the temperature of the water to be raised is reduced.

Therefore, the installation of a waste hot water recovery system to an infusion manufacturing process (IMP) line reduces the amount of steam supplied by a boiler for heating water. It leads to a reduction of fuel (CNG) consumed by the boiler for generating steam, which consequently leads to GHG emission reductions.

The high efficiency autoclave and waste hot water recovery system are manufactured by Hisaka Works, Ltd.

A.3. Location of project, including coordinates

Country	Republic of Indonesia
Region/State/Province etc.:	East Java Province
City/Town/Community etc:	Jl. Sumber Waras No. 25, Lawang, Malang

Latitude, longitude	-7.845196, 112.703027
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A.4. Name of project participants

The Republic of Indonesia	PT. Otsuka Indonesia
Japan	Otsuka Pharmaceutical Factory, Inc.

A.5. Duration

Starting date of project operation	01/01/2024
Expected operational lifetime of project	8 years

A.6. Contribution from Japan

The proposed project was partially supported by the Ministry of the Environment, Japan (MOEJ) through the financing programme for JCM model projects, which provided financial support of less than half of the initial investment for the projects in order to acquire JCM credits. Furthermore, the implementation of the proposed project promotes transfer of low-carbon technologies in Indonesia. The proposed JCM project also provides local staff with technical training for maintenance skills

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	ID_AM028
Version number	Ver1.0

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

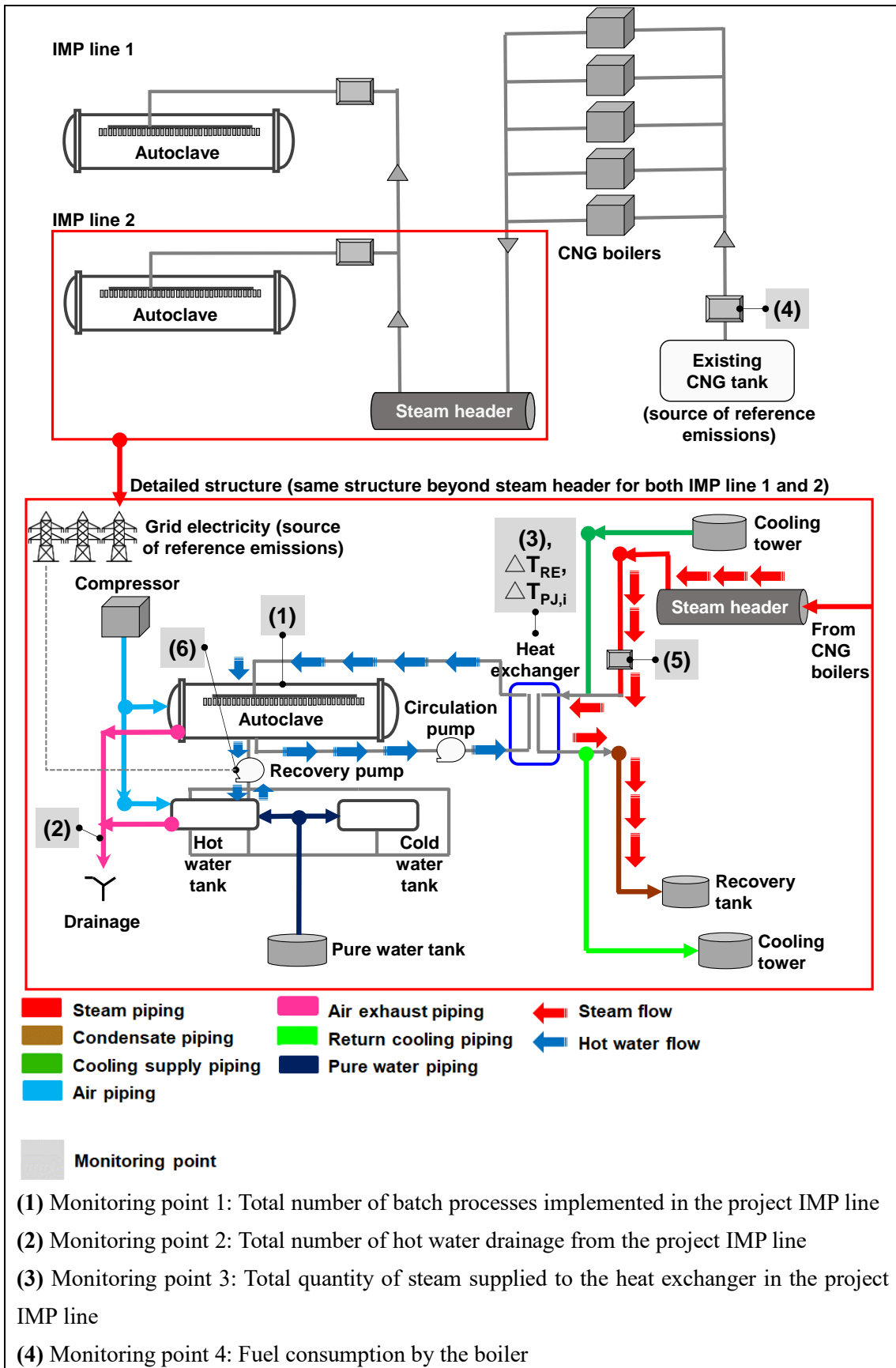
Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	Waste hot water recovery system is newly installed to an autoclave(s) in an infusion manufacturing process line (IMP line).	A waste hot water recovery system is newly installed to an IMP line on 9 February 2022. The high efficiency autoclave and a waste hot water recovery system are manufactured by Hisaka Works, Ltd.

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
Fuel consumption by reference boiler	CO ₂
Project emissions	
Emission sources	GHG type
Electricity consumption by recovery pump to recover waste hot water	CO ₂

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



(5) Monitoring point 5: Total quantity of steam generated by the boiler

(6) Monitoring point 6: Electricity consumption by the project recovery pump in the project IMP line

ΔT_{RE} : Monitoring point for temperature of pure water flowing into the heat exchanger in the first batch after drainage

$\Delta T_{P,j,i}$: Monitoring point for temperature of recovered hot water flowing into the heat exchanger in the project IMP line

C.3. Estimated emissions reductions in each year

Year	Estimated Reference emissions (tCO ₂ e)	Estimated Project Emissions (tCO ₂ e)	Estimated Emission Reductions (tCO ₂ e)
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	-	-	-
2018	-	-	-
2019	-	-	-
2020	-	-	-
2021	-	-	-
2022	-	-	-
2023	-	-	-
2024	6,844.4	2.1	6,842
2025	7,628.4	2.3	7,626
2026	9,332.8	2.7	9,330
2027	9,332.8	2.7	9,330
2028	9,332.8	2.7	9,330
2029	9,332.8	2.7	9,330
2030	9,332.8	2.7	9,330
Total (tCO ₂ e)			61,118

Note:

The estimated emission reductions in each year are rounded down after the decimal point.

D. Environmental impact assessment

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

E.1. Solicitation of comments from local stakeholders

Local stakeholder consultation has been conducted online, on 3rd February 2023.

The list of attendees to the meeting has been determined through the consultation with the Indonesia JCM secretariat.

The overview and participants of the meeting are as follows.

Date and Time: 3rd February 2023, 10:00-11:15 (Indonesian Western Standard Time)

Place: Web conference

Agenda

1. Opening remarks
2. Introduction of participants
3. Project overview and introduced technology and facility
4. Concepts of JCM and MRV methodology for the project
5. Q&A and comments from the LSC participants

Participants:

[Local stakeholders]

1. Indonesia JCM Secretariat / Coordinating Ministry for Economic Affairs of Indonesia
2. Ministry of Industry
3. Ministry of Energy and Mineral Resources
4. PT Jaya Obayashi
5. PT Taikisha Indonesia Engineering
6. PT Widatra Bhakti
7. PT Amerta Indah Otsuka

[Project participants]

1. PT Otsuka Indonesia (PTOI)
2. Otsuka Pharmaceutical Factory, Inc. (OPF)
3. (Project collaborator) Commodum, Inc.
4. (Consultant) Ernst & Young ShinNihon LLC

A satisfactory response to the comment received during the consultation meeting was provided at the time of the meeting. There is no further action required for the consideration of the comment received. A summary of the comments received, and consideration of those comments are listed in Section E.2. below.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
PT Jaya Obayashi	The high efficiency autoclave and hot water recovery system is an interesting technology. Is the system originally developed by PTOI or OPF?	The system is developed by OPF. It is adopted to contribute to the environment in Indonesia.
	Is the system the first of its kind in Indonesia?	Yes, the system is a new concept in Indonesia.

F. References

N/A

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

Annex

N/A

Revision history of PDD

Version	Date	Contents revised
1.0	19/12/2023	First Edition
2.0	7/3/2024 18/12/2024	Second Edition <u>Initial registration at JC10</u>