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ClassNK

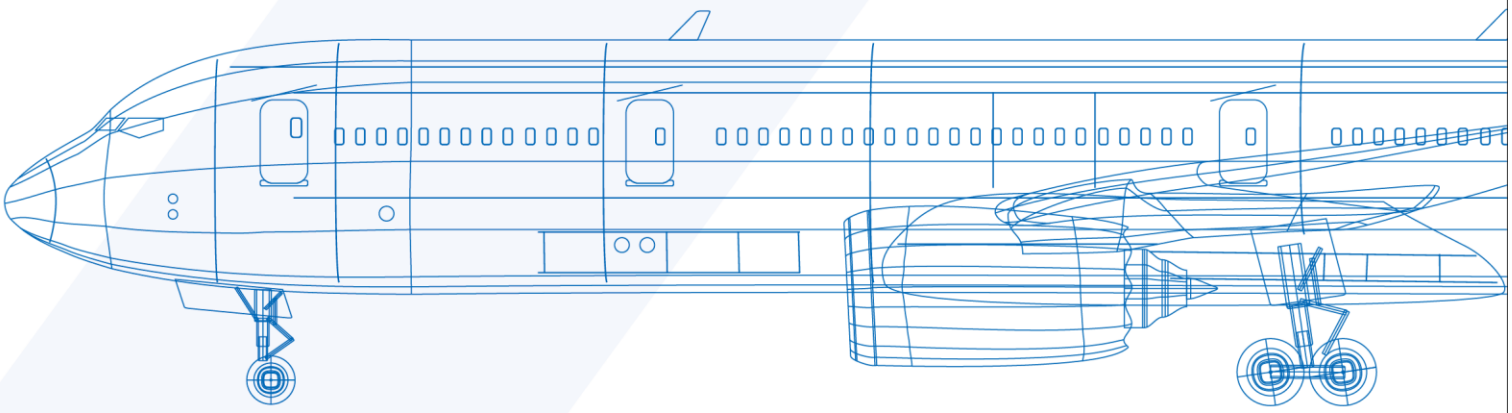
一般財団法人　日本海事協会
NIPPON KAIJI KYOKAI

ClassNK SCS

APPENDIX 3

Certification for CORSIA Eligible Fuels

April 2024



Revision History

No.	Issue date	Details of revision
0	2024.04.01	Newly issued

In case the requirements in ICAO-CORSIA documents are updated, and the ClassNK SCS manual has not been revised to reflect such updates yet, the updated requirements shall be applied during verification irrespective of the state of revision of the ClassNK SCS manual.

APPENDIX 3. Mass balance system

Contents

1. Introduction

There is various chain of custody (COC) models that delineate the mechanisms for monitoring the flow of sustainable materials and their sustainability claims throughout a supply chain. These models differ in the granularity of tracing the sustainable materials' origin and its sustainability attributes, as well as in the complexity required for implementation. SCS may opt to adopt one or multiple chain of custody (COC) models as a method to ensure compliance with its standards, influencing the allowable claims. The ISEAL definitions and guidelines for managing the mass balance chain of custody (COC) model have been adopted by SCS. It's possible for a sustainable material to start its journey under one chain of custody (COC) model and then switch to a different one as it progresses through the supply chain. The economic operators should indicate a diminishing link between the sustainable materials and their sustainability claims, particularly in the case of mass balance. Once this connection is severed, it's irreversible; hence, changes to the permitted chain of custody (COC) models can only be downgraded, never upgraded.

2. Scope

This document is established to provide a clear and consistent framework for the implementation, documentation, and verification of the mass balance system in sustainable aviation fuel (SAF) as per ICAO CORSIA requirements aiming to ensure the integrity and transparency of claims related to the sustainability of materials within the supply chain. The stipulations presented in this document are applicable worldwide.

3. Normative References

All references should be made to ICAO CORSIA requirements.

4. Interpretations and General Requirements

The mass balance system, a chain of custody (COC) option, allows for the assignment of sustainability attributes (can also be known as sustainability criteria) namely type of feedstock, greenhouse gas (GHG), volume, etc. to specific material batches on a notional level, while permitting the physical mixing of materials with varying sustainability properties, including the mixing of sustainable and unsustainable materials (or fossil materials). However, all mass balance operations and calculations must pertain exclusively to sustainable materials. The attribution of sustainability criteria to outgoing batches is constrained by taking into considerations of conversion factor.

Due to the inevitable physical blending, individual sustainable materials' criteria are lost, necessitating the determination of sustainability criteria through a bookkeeping approach. This involves carrying-out mass balance calculations and verifying these calculations for the chosen mass balancing period. The mass balance must document all sustainability criteria and the quantities of mixed batches. The total sustainability materials (i.e., sustainability credits) of withdrawn batches must reflect those of the added batches in equal measure. Economic operators are required to have clear traceability system in terms of monitoring and recording.

Mass balances are required to be maintained on a site-specific basis, meaning they should be conducted at a defined geographical location where sustainable material mixing occurs. This requirement extends to logistic centres within a logistics network. Mass balance should be kept at site level and the sustainability credits should not be transferred between sites without the physical materials. Fossil materials (e.g., jet kerosene and aviation gasoline) cannot be counted as physical stock.

Inclusion of sustainable material in a mass balance mandates its physical receipt at the site of the certified economic operator, establishing a tangible connection between the physical materials, sustainability criteria of the materials and the mass balance. Adding sustainable material to a mass balance without its physical arrival at the site is prohibited.

Mass balances should be detailed material-specifically, reflecting the particular feedstock involved. If an economic operator holds multiple certifications for different value chains (or scopes), the mass balance should be specific to each certification scope. Economic operators should be able to demonstrate transactions for each scope, detailing the separate inputs and outputs independently for each scope. The volumes processed at different stages should be recorded distinctly unless all the input is converted into the same output. Certified processing units must demonstrate the actual amount of material processed. If a processing unit trades sustainable material without physically processing it, this should be covered under the "trader" scope. Economic operator to include, as part of its documentation management should established, a system for documenting the mass balance to assign a unique reference or identification number to each batch of certified sustainable materials sold.

If an economic operator been certified under multiple sustainability schemes, the economic operator mandatorily ensure that no multiple accounting been made. Transparent mass balance should be demonstrated to the external auditors. External auditors may conduct verifications such as cross-checks on the volume reported under different voluntary schemes if deemed appropriate.

5. Mass Balance Timeframe and Calculation and Credits' Accounting

The calculation of the mass balance necessitates establishing a timeframe during which the outgoing batches with specified sustainability criteria are reconciled with the incoming batches possessing corresponding sustainability criteria. The maximum mass balance timeframe for a mass balance calculation period is three (3) months. The economic operator may opt for a shorter timeframe, such as one (1) month, but not more than three (3) months. Mass balance periods must be consecutive and continuous; there should be no breaks between them, meaning mass balances must be maintained even during periods with no sustainable material movement. Economic operators must clearly document these periods for their certification and present them for verification during audits. Should there be a need to modify the mass balance period within the certification timeframe, the economic operator is required to notify the certification body prior to making any changes.

For every mass balance period, a detailed calculation, including the transfer of any credit to the subsequent period, must be documented and made available during the audit. Should the received sustainable material (inclusive of existing inventory) exceed the dispatched amount within a period, the bookkeeping surplus is referred to as 'positive credit.' Transferring these positive credits to the next following mass balance period is permissible only if the physical stock (both sustainable and unsustainable) matches or exceeds the bookkeeping sustainability credits. Transferring more positive credits than the physical stock at the period's end is not allowed.

Conversely, 'negative credits' arise if the dispatched sustainable material surpasses the received amount by the end of a period, indicating a negative mass balance which is not permissible under SCS. If such a scenario occurs, the certified economic operators is obligated to promptly inform the Certification Body (CB) for further verification.

To ascertain whether the sustainable inputs and outputs are balanced or if a positive credit has emerged at a period's end, the following calculation is used:

$$TSM = (ISM + x) \times CF_a + y$$

$TSM - OSM > 0$ will lead to positive credits

$TSM - OSM < 0$ will lead to negative credits (not allowed)

TSM ; Total sustainable materials in the entire mass balance period

ISM ; Incoming sustainable materials in the entire mass balance period

OSM ; Outgoing sustainable material in the entire mass balance period

x ; Total inventory of sustainable materials (feedstock) at the beginning of the inventory period

y ; Total inventory of sustainable materials (product) at the beginning of the period

CF_a ; Conversion factor (averaged in the period)

Credit transfers must correspond to the sustainable products or sustainable product groups along with their respective sustainability criteria. Transferring credits between materials certified under different processes within SCS (i.e., having different production pathway) or with varying conversion factors, especially when additional processing is required, is not permissible.

If there's a gap of up to three (3) months between two (2) certification periods, positive credits can be carried over from the last mass balance period of the preceding certification to the first period of the subsequent certification. This is contingent on no sustainable materials being received or dispatched as sustainable materials during the uncertified period and the physical stock never drops below the sustainability credits amount to be transferred. The Certification Body (CB) should verify this.

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