

Energy and Water Performance Requirements and Label Requirements For Electric Dishwasher Products (SASO 3029:2023) & Enforcement Plan

29 March 2023



الهيئة السعودية للمواصفات والمقاييس والجودة
Saudi Standards, Metrology and Quality Org.



وزارة التجارة
Ministry of Commerce

وزارة الصناعة
والثروة المعدنية
Ministry of Industry and Mineral Resources



كفاءة

المركز السعودي لكفاءة الطاقة
Saudi Energy Efficiency Center

هيئة الزكاة والضريبة والجمارك
Zakat, Tax and Customs Authority



المركز الوطني لكفاءة وترشيد المياه
NATIONAL WATER EFFICIENCY AND CONSERVATION CENTER
MAEE



Disclaimer

This presentation is intended to ensure that all relevant bodies are aware of the elements of the Dishwashers draft standard. This document and all presented information shall not be considered as an official reference.

Overview of the Saudi Energy Efficiency Centre (SEEC)

Energy and Water Performance Requirements and Label Requirements for Electric Dishwasher Products

Enforcement Plan

Laboratories Acceptance Procedures

Registration Procedures for Obtaining a License and Label for Energy Efficiency

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Procedures for Registering Conformity Certificates & Issuing Shipment Certificates in Saber Platform

Panel Discussion

The Saudi Energy Efficiency Center (SEEC) Was Established in 2010 as the Custodian of Energy Efficiency in Saudi Arabia

Description

Inter-agency effort to launch the Saudi Energy Efficiency Program (SEEP) in 2012

Vision & Mission

SEEC seeks to be an international reference in the field of energy efficiency, by working with local and international stakeholders.

Objectives

Rationalize and increase the energy efficiency in production and consumption in order to preserve the KSA natural resources and enhance the economic and social welfare of KSA population.

Developed ~100 initiatives at different stages (feasibility, design, execution) (2012-Now)

Industry

Scope:

Steel, cement, petrochemicals, and other industrial sectors



Buildings

Scope:

Building envelope, ACs, white goods, lighting products



Transport

Scope:

Light Duty Vehicles (LDVs), and Heavy Duty Vehicles (HDVs)



Next slide



* Thousands barrels of oil equivalent per day (MBDOE) ** Million barrels of oil equivalent per day (MMBDOE)

The Buildings' Team Has Developed 27 Energy Efficiency Standards and Regulations

Energy efficiency standards – Buildings sector

Product Standards Developed



Air Conditioners

- SASO 2663:2021 (SEER)
- SASO 2874:2016 (Large capacity AC's)



Lighting

- SASO 2870:2018
- SASO 2902:2018
- SASO 2927:2019 (Street lighting)



Thermal-insulating Materials

Updated and adopted 16 thermal insulation material



Refrigerators and freezers
SASO 2892:2018



Water heaters
SASO 2884:2017

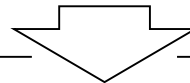


Washing machines
SASO 2885:2018



Cloths dryers
SASO 2883:2017

Today's Focus



Dishwashers
SASO 3029:2023

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The Standard Covers The below Elements Including The Scope, Normative References and Technical Requirements.

Scope

- Include all types of Dishwashers with capacity less than or equal to 20 Place settings (Ps)
- Include the electrical national requirements of 230V/60Hz

Normative References

- EN 60436:2020 - Electric dishwashers for household use – Methods for measuring the performance
- SASO GSO 1899 - GCC Standard Voltages and Frequencies for Alternating Current Distribution

Technical Requirements

- Energy Efficiency
- Water consumption
- Cleaning and Drying performance
- Acceptance criteria

Next slides

Energy Efficiency Index (EEI) Used to Determine The Energy Efficiency Classes and The Minimum Energy Performance Standard (MEPS) Requirements

Energy Efficiency Classes

EEI Range	Class
$EEI < 32.0$	A
$32.0 \leq EEI < 38.0$	B
$38.0 \leq EEI < 44.0$	C
$44.0 \leq EEI < 50.0$	D
$50.0 \leq EEI < 56.0$	E
$56.0 \leq EEI < 63.0$	F
$EEI \geq 63.0$	G

MEPS

	Capacity (Ps)	EEI
Stage 1	For all capacities	$EEI < 63.0$
Stage 2	For capacities < 10	$EEI < 63.0$
	For capacities ≥ 10	$EEI < 56.0$

Energy Efficiency Calculation

Energy Efficiency Index (EEI)

The EEI is calculated as follows and rounded to one decimal place:

$$EEI = 100 \times \frac{EPEC}{SPEC}$$

- **EPEC** is the eco-program energy consumption, measured in kWh/cycle and rounded to three decimal places.
- **SPEC** is the standard program energy consumption, calculated in kWh/cycle and rounded to three decimal places, as follows:

(1) For household dishwashers with rated capacity place setting (ps) ≥ 10 and width > 50 cm:

$$SPEC = 0.025 \times ps + 1.350$$

(2) For household dishwashers with rated capacity place setting (ps) < 10 or width ≤ 50 cm:

$$SPEC = 0.090 \times ps + 0.450$$

Annual Energy Consumption (AEC)

The AEC is calculated in liters and rounded to the nearest integer, as:

$$AEC = EPEC \times 150$$

150: number of cycles per year

Water Consumption Index (WCI) Used to Determine The Water Consumption Classes

Water Consumption Classes

Range	Class
$WCI \geq 7$	A
$7 > WCI \geq 6$	B
$6 > WCI \geq 5$	C
$5 > WCI \geq 4$	D
$4 > WCI \geq 3$	E
$3 > WCI \geq 2$	F
$2 > WCI$	G

Water Consumption Limit

Item	Capacity (Ps)	Limit (liter)
Eco Program Water Consumption (EPWC)	For all capacities	< 12

Water Consumption Index and Annual Consumption Calculation

Water Consumption Index

$$WCI = 1 + \frac{\log_e\left(\frac{EPWC}{BWC}\right)}{\log_e(1-WRF)}$$

- **EPWC** is the eco program water consumption, expressed in liters per cycle rounded to one decimal place.
- **WRF** water reduction factor (17.5 %) = 0.175
- **BWC** base water consumption = $2.5 + ps \times 1.6$

Annual Water Consumption (AWC)

The AWC is calculated, in liters and rounded to the nearest integer, as follows:

$$AWC = EPWC \times 150$$

150: number of cycles per year

Cleaning Performance Index

Cleaning Performance Limit

Cleaning performance index (I_c) is the ratio of the cleaning performance of a household dishwasher to the cleaning performance of a reference household dishwasher.

Item	Capacity (Ps)	Limit
Cleaning Index (I_c)	For all capacities	> 1.12

Calculations:

$$I_c = \exp(\ln I_c)$$

And:

$$\ln I_c = (1/n) \times \sum_{i=1}^n \ln(C_{T,i}/C_{R,i})$$

Where:

$C_{T,i}$: Is the cleaning performance of the eco-program of the household dishwasher under test for one test run (i), rounded to two decimal places.

$C_{R,i}$: Is the cleaning performance of the reference dishwasher for one test run (i), rounded to two decimal places.
n: is the number of test runs.

Cleaning Performance Calculation

Drying Performance Index

Drying Performance Limit

Drying performance index (I_D) is the ratio of the Drying performance of a household dishwasher to the Drying performance of a reference household dishwasher.

Item	Capacity (Ps)	Limit
Drying Index (I_D)	rated capacity > 7 place settings	> 1.06
	rated capacity ≤ 7 place settings	> 0.86

Calculations:

$$I_D = \exp(\ln I_D)$$

And:

$$\ln I_D = (1/n) \times \sum_{i=1}^n \ln(I_{D,i})$$

Where:

$I_{D,i}$: Is the drying performance index of the eco-program of the household dishwasher under test for one test run (i).

n : Is the number of the combined cleaning and drying test runs.

$I_{D,i}$: Is calculated as follows and rounded to two decimal places:

$$\ln I_{D,i} = \ln \times (D_{T,i} / D_{R,t})$$

Drying Performance Calculation

- The standard includes specific acceptance criteria and tolerance between the tested and rated values for registration and market surveillance purposes.

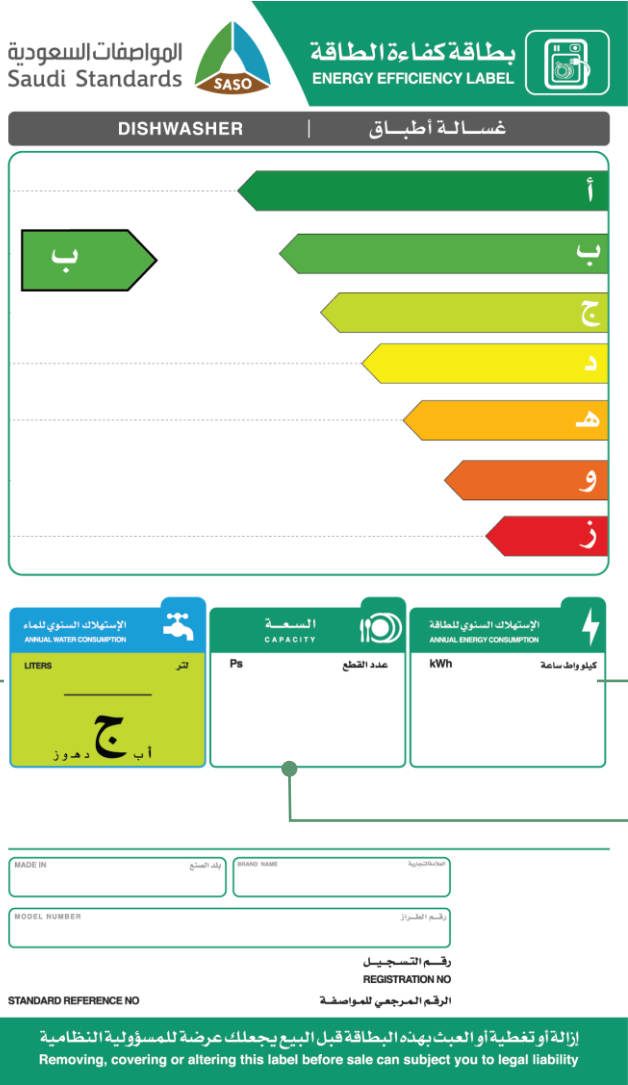
4.6 Acceptance criteria for Labelling and market surveillance

The energy label shall be accepted as valid when a single sample of an appliance or unit model, tested for an initial screening test, meets the following criteria as applicable:

- a) Measured Eco program energy consumption (EPEC) $\leq 1.05 \times$ rated value
- b) Measured Eco program water consumption (EPWC)..... $\leq 1.05 \times$ rated value
- c) Measured Cleaning performance index (I_C)..... $\geq 0.86 \times$ rated value
- d) Measured Drying performance index (I_D)..... $\geq 0.88 \times$ rated value
- e) Measured Program duration (T_t) $\leq 1.05 \times$ rated value
or 10 minutes, whichever is the longer.
- f) Measured Power consumption in off mode (P_o) $\leq 0.10 \text{ W} +$ rated (P_o)
- g) Measured value of power consumption P_{sm} and P_{ds} shall not exceed the rated value by more than 10 % if the declared value is higher than 1.00 W, or by more than 0.10 W if the declared value is lower than or equal to 1.00 W.

Tolerance

Energy Efficiency Label information



Annual Consumption (liter)
Water Consumption Class

Annual Energy Consumption (kWh)

Capacity (Ps)

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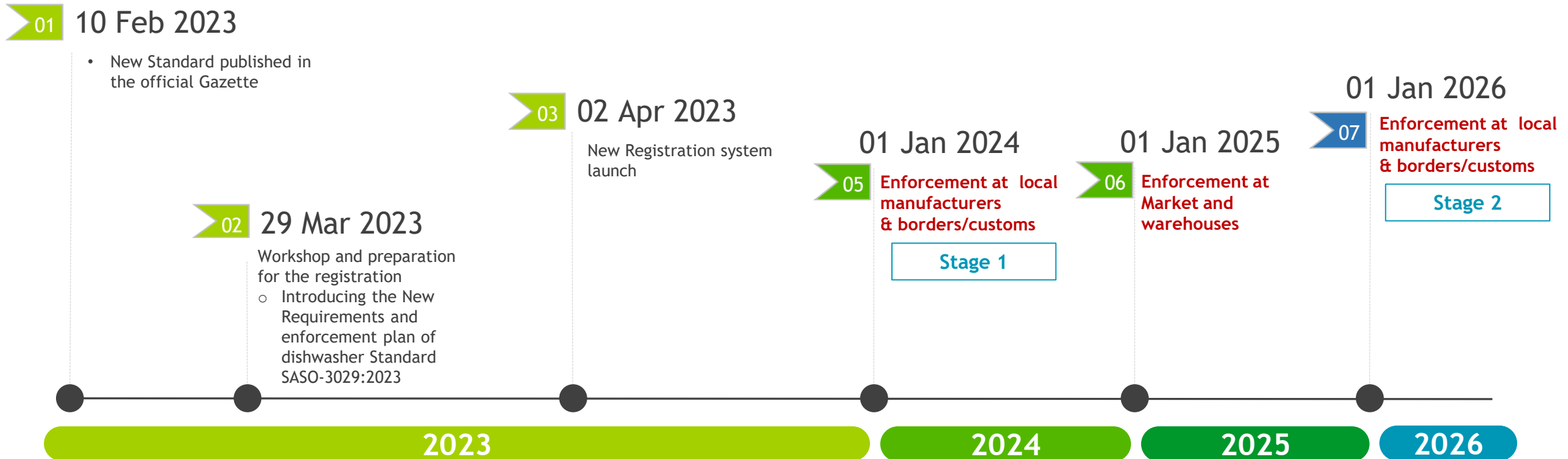
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Enforcement Plan for Dishwashers Standard



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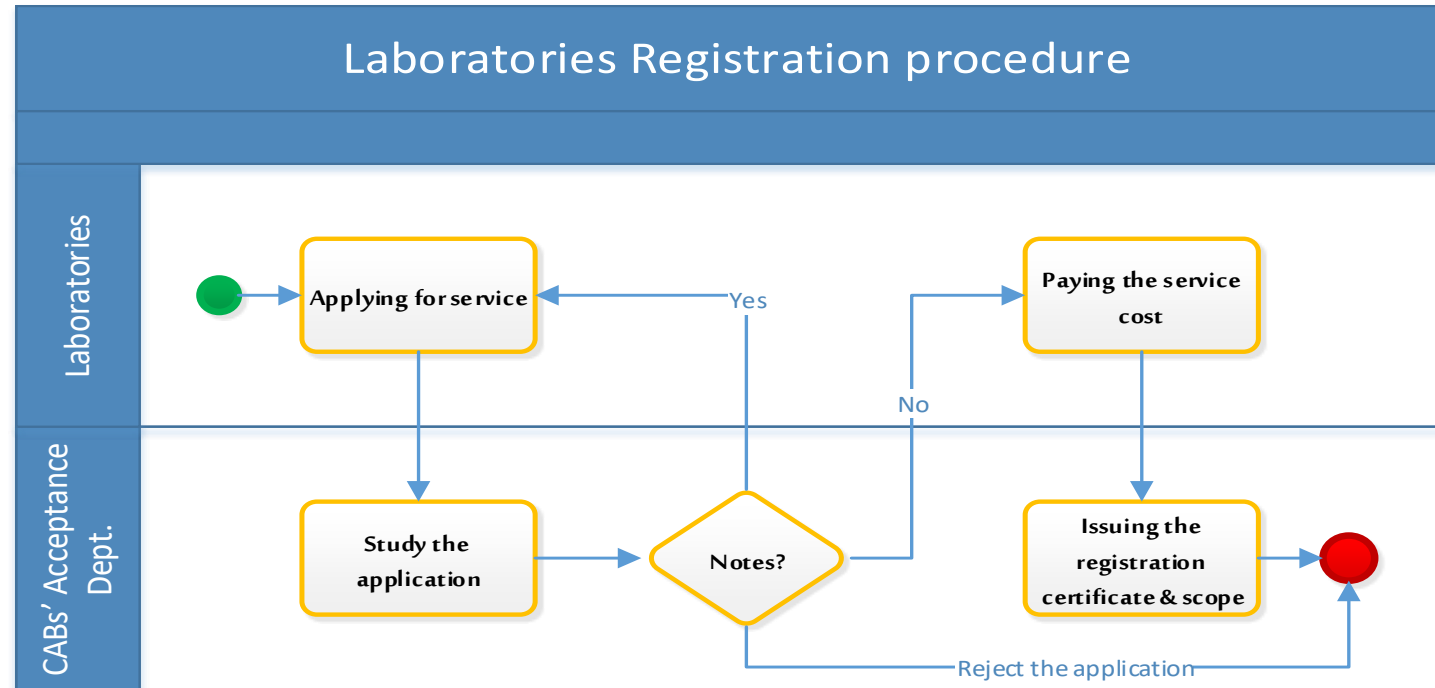
Requirements for Extending the Scope of Registration

Requirements for extending the scope of registration

The main requirements for extending your registration scope are:

- 1) Filling the registration form of Energy Efficiency Laboratory activity and attach all required documents in this form.
- 2) Having the necessary accreditations for the Energy Efficiency Laboratory activity from the Saudi Accreditation Center (SAC) for national LABs, or any accreditation center that has membership in ILAC international organization.
- 3) Provide a Professional insurance policy which covers all LABs activities.
- 4) Finish the payment of extending your scope.
- 5) Provide a list of personnel involved in conformity assessment activities and their qualifications.

LABs Registration Procedure



Process Duration

- The process will take **3 working days** from completing the requirements.



Standard Cost

- 10,000 SR for Extension the scope of registration.



CABs' Acceptance Dept. E-mail

- q.cab_reg@saso.gov.sa

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Energy Efficiency Registration

SLS website

- ▶ <https://www.saso.gov.sa/en/eservices/pages/maineservicesdetails.aspx?serviceid=417>

Test Report & other document

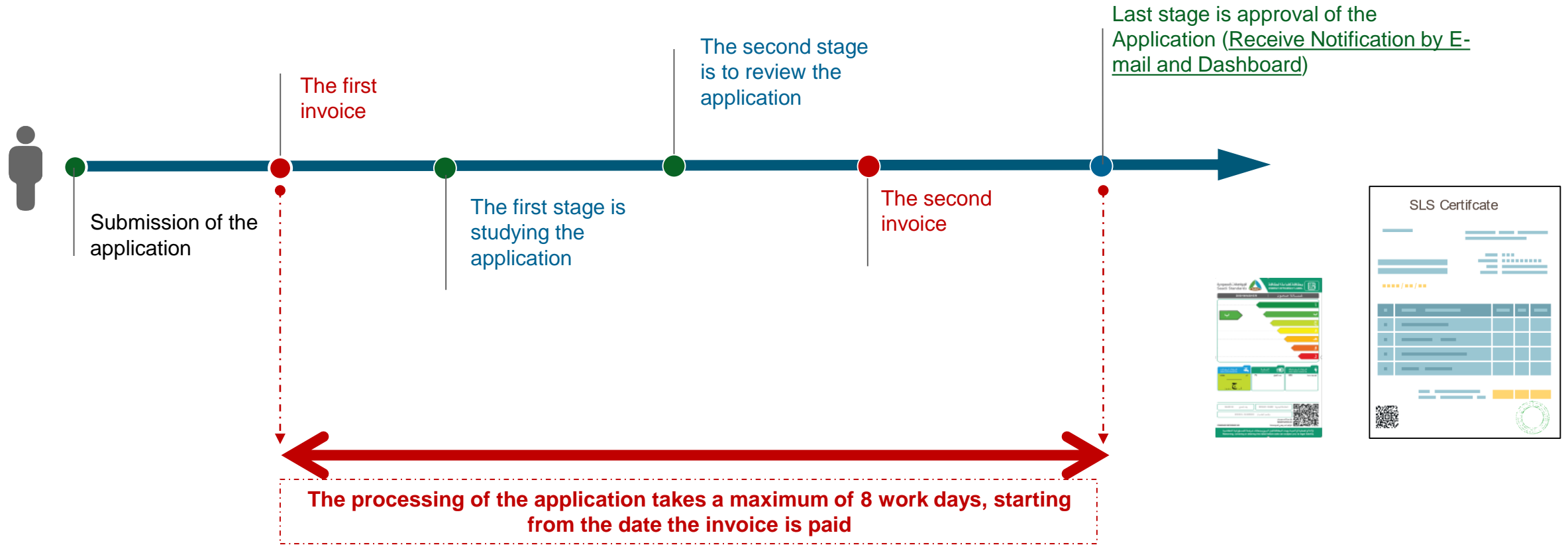
- ▶ Test Report from SASO accredited laboratory (2 years Validity from issue date)
- ▶ Declaration of Conformity from manufacture
- ▶ Declaration of Conformity from importer
- ▶ Instruction sheet

Other

- ▶ Marking information on name plate
- ▶ Model image



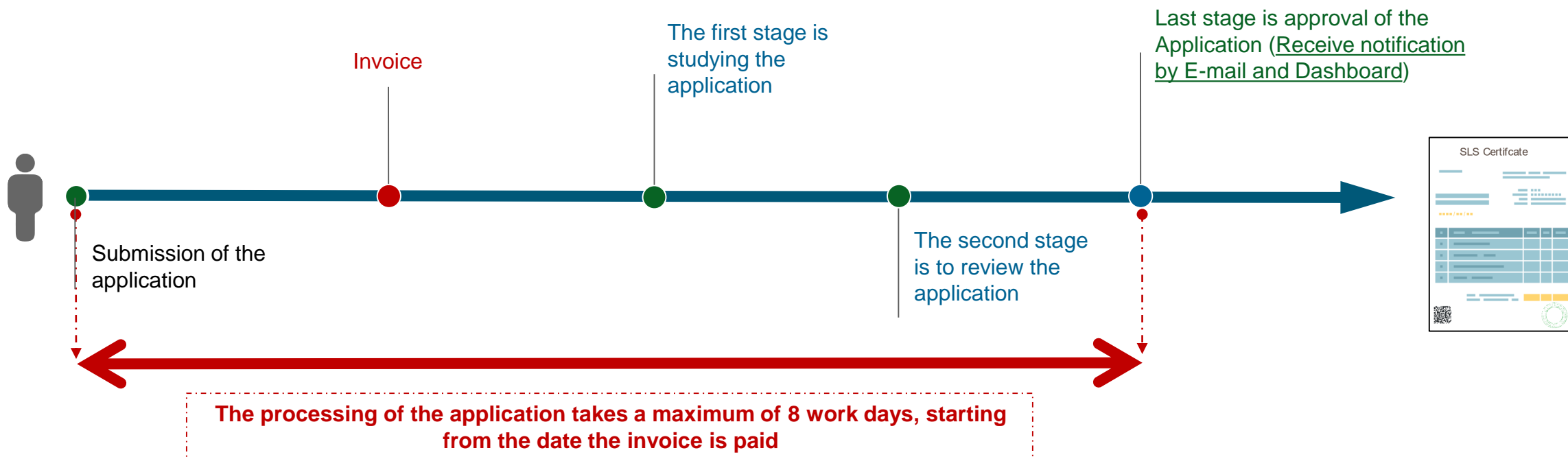
Stages to Obtaining The Label and Certificate



Stages for Out of Scope Product



- ▶ Identification of the product
- ▶ Justification document



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IEC:

International Electrotechnical Commission.

IECEE:

The IEC Conformity Assessment Scheme for Electrotechnical Equipment and Components.

Saudi Standards, Metrology and Quality Organization (SASO) is a member body in IECEE Scheme.

List of Products Which Require IECEE Recognition Certificates

No.	Products
1	Electrical pumps from 5hp or less for all use
2	Mobile phones and accessories
3	Power banks
4	Smart watch
5	Lighting and its parts
6	Televisions and monitors
7	Dishwashers
8	E-cigarettes
9	PV products

No.	Products
10	Portable computers (Laptops and Tablets)
11	Boilers
12	Coffee makers
13	Video game consoles and accessories (controllers, wireless headphones, chargers and accessories)
14	Electric oil fryers
15	Electrical cables
16	Charger cables for mobile phones
17	Shaving devices
18	Electrical circuit breakers
19	Desktop personal computer (PC)

Note: Mandatory Application Date for Dishwashers starts from 01 August 2018.

Requirements



- Industrial license (if the applicant is a manufacturer).
- Saudi commercial license (the commercial activity must be compatible with the product).
- Declaration of conformity forms filled by importer and manufacturer (Both forms are on SASO Certification System).
- Product photos, product measurements, marking label and pictures of the plug (if not given in the test report).
- Explanatory documents (User Manual) must be in **Arabic**.
- Product test report (CBTR) issued by approved (CBTL) according to IECEE conformity assessment system, **and the product plug must be comply with (SASO 2203)**.
- Product test certificate (CBTC) issued by approved (NCB) according to IECEE conformity assessment system.
- National differences test report (if not mentioned in the product test report).

**IECEE national
recognition
certificate fees:**

For One Year	For Three Years
500 SR Cost of Request Submission	500 SR Cost of Request Submission
2500 SR for Reviewing and Studying	4500 SR for Reviewing and Studying
500 SR for Issuing Certificate	1000 SR for Issuing Certificate

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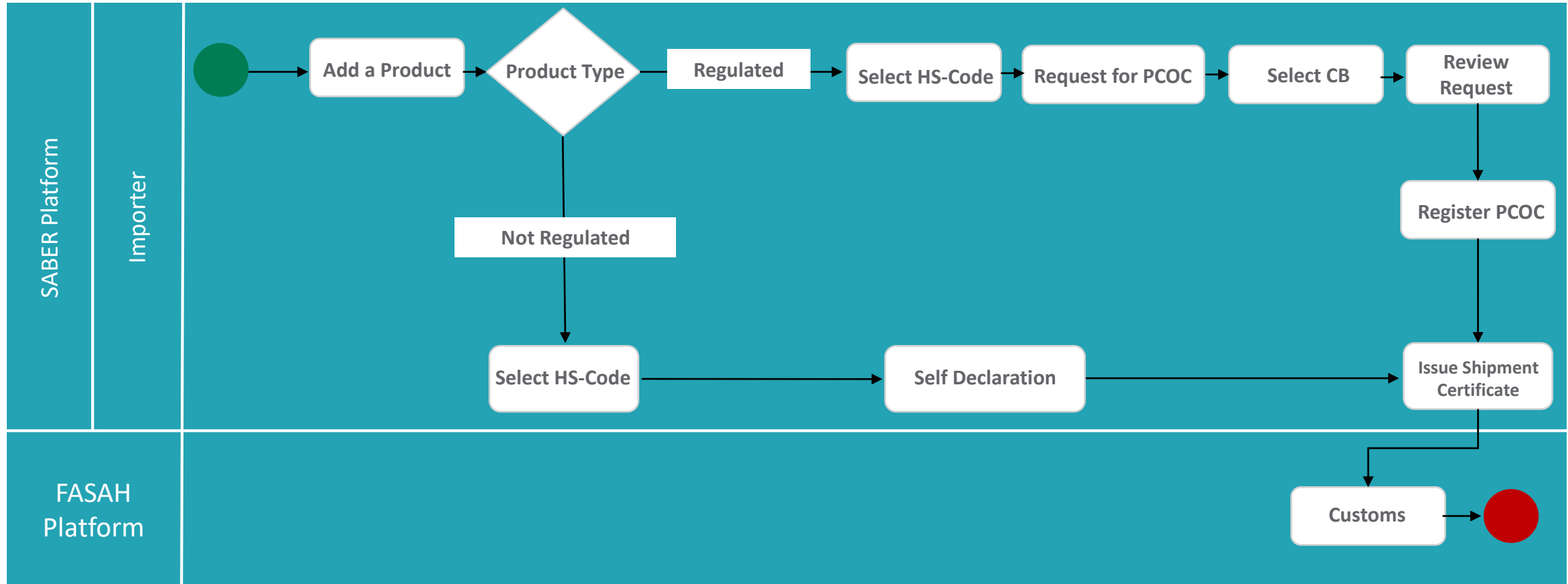
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SABER Order Stages



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THANK YOU شكراً لكم

