

Stage V for EU inland waterways (Regulation (EU) 2016/1628)

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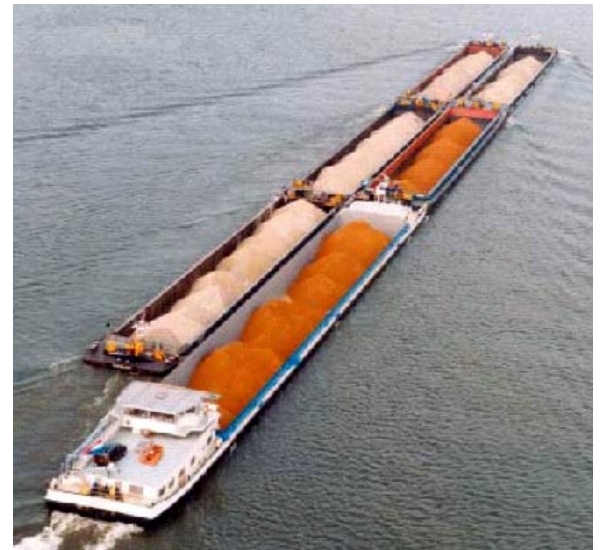


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Key Points

- Propulsion and 'installed' auxiliary engines regulated in the same way
- NRE (non-road equipment) engines <560 kW may be used if they can be marinised without affecting emission control parts
- Euro VI truck engines may be used as equivalent to NRE (with some changes to the OBD system)
- Auxiliary engines that are not 'installed' are NRE or other relevant non-road category.



Stage V limit values & placing on market dates

Inland Waterways (Propulsion and at stage V including all auxiliary)

Liters per Cylinder	NOx / THC / CO / PM (g/kWh) / [PN count/kWh]					(NOx+THC) / CO / PM (g/kWh) / [PN count/kWh]							A
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
≤0.9 (>37kW)	(7.5) / 5.0 / 0.40		>>		19-75kW	(4.7) / 5.0 / 0.3					IWP-v-1,IWP-c-1		6
0.9 - 1.2	(7.2) / 5.0 / 0.30		>>								IWA-v-1,IWA-c-1		
1.3 - 2.5	(7.2) / 5.0 / 0.20		>>		75-130kW	(5.4) / 5.0 / 0.14					IWP-v-2,IWP-c-2		6
2.6 - 5.0	(7.2) / 5.0 / 0.20		>>								IWA-v-2,IWA-c-2		
5.0 - 15	(7.8) / 5.0 / 0.27		>>		130-300kW	2.1 / 1.00 / 3.5 / 0.10					IWP-v-3,IWP-c-3		6
15 - 20, P ≤ 3300 kW	(8.7) / 5.0 / 0.50		>>								IWA-v-3,IWA-c-3		
15 - 20, P > 3300 kW	(9.8) / 5.0 / 0.50		>>		>300kW	1.8 / 0.19 / 3.5 / 0.015 / [10 ¹²]					IWP-v-4,IWP-c-4		6
20 ≤ 25	(9.8) / 5.0 / 0.50		>>								IWA-v-1,IWA-c-1		
Stage IIIA						Stage V							

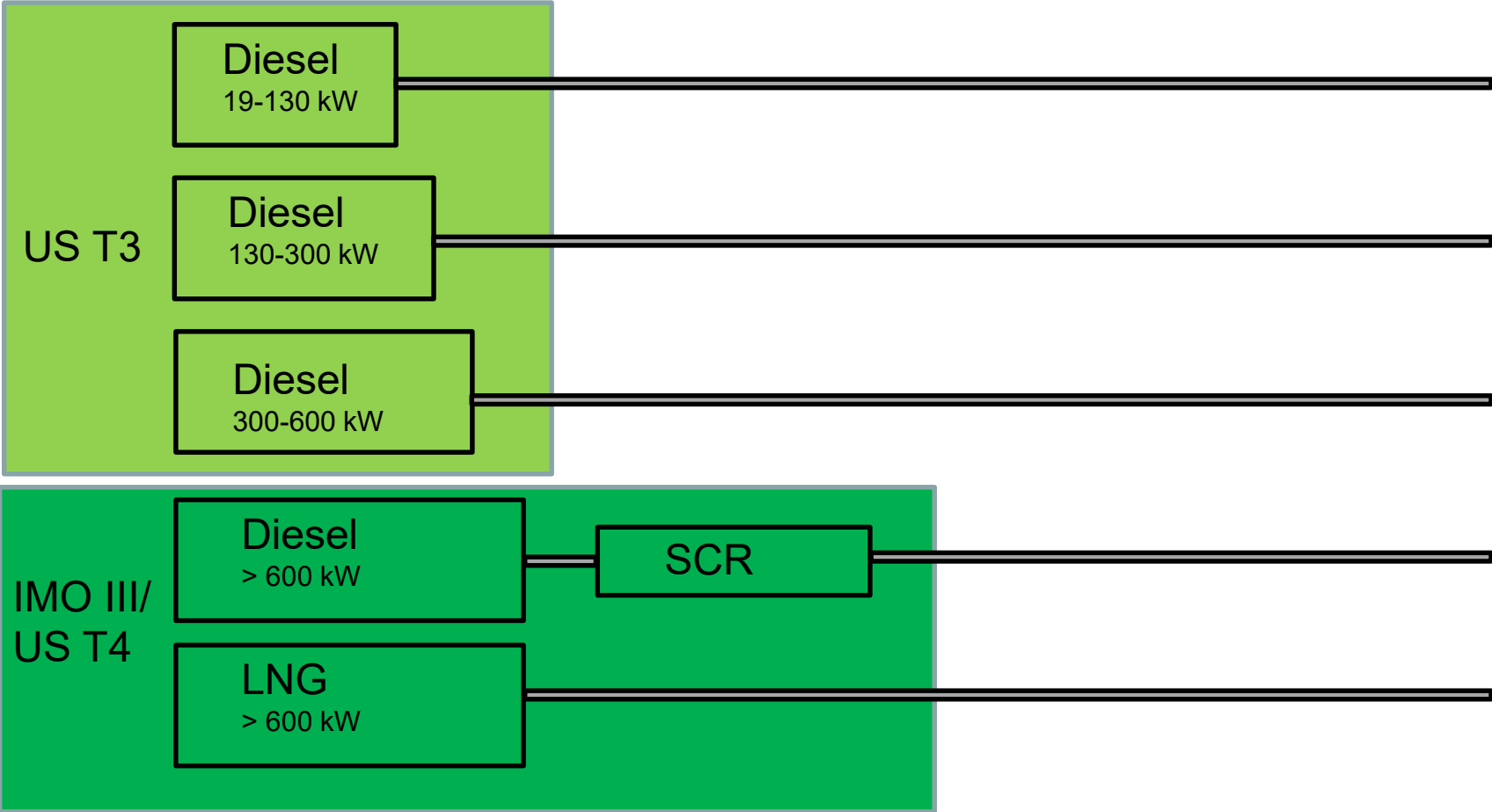
From stage V a stage V non-road engine <560 kW may alternatively be used in this application

There is an NH₃ limit of 10ppm where a reagent is used

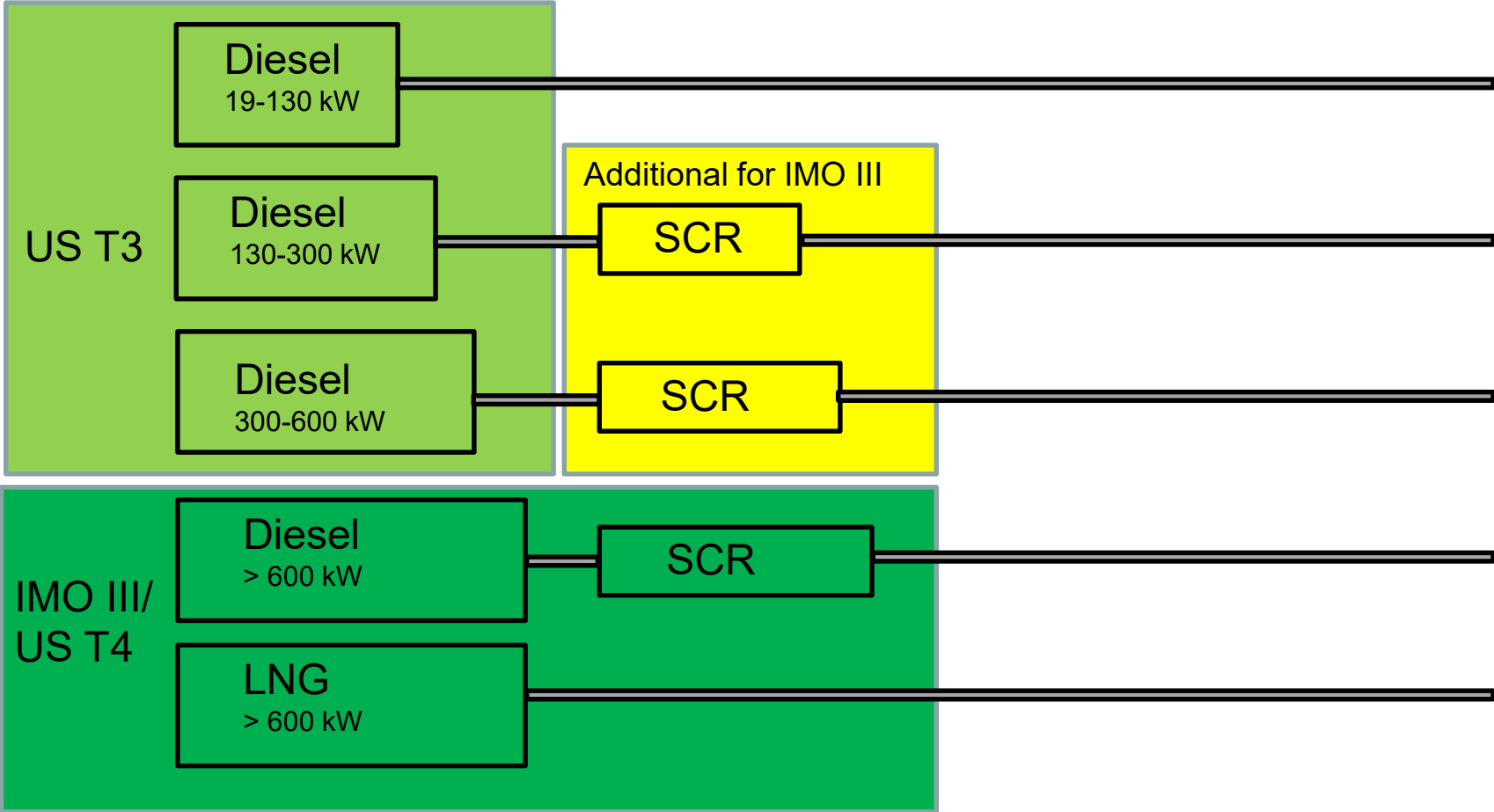
A is gaseous fuelled engine hydrocarbon factor.

- Limit values and introduction dates identical for propulsion & auxiliary engines
- Propulsion engine test cycle E2 or E3 as appropriate
- Auxiliary engine test cycle D2 or C1 as appropriate

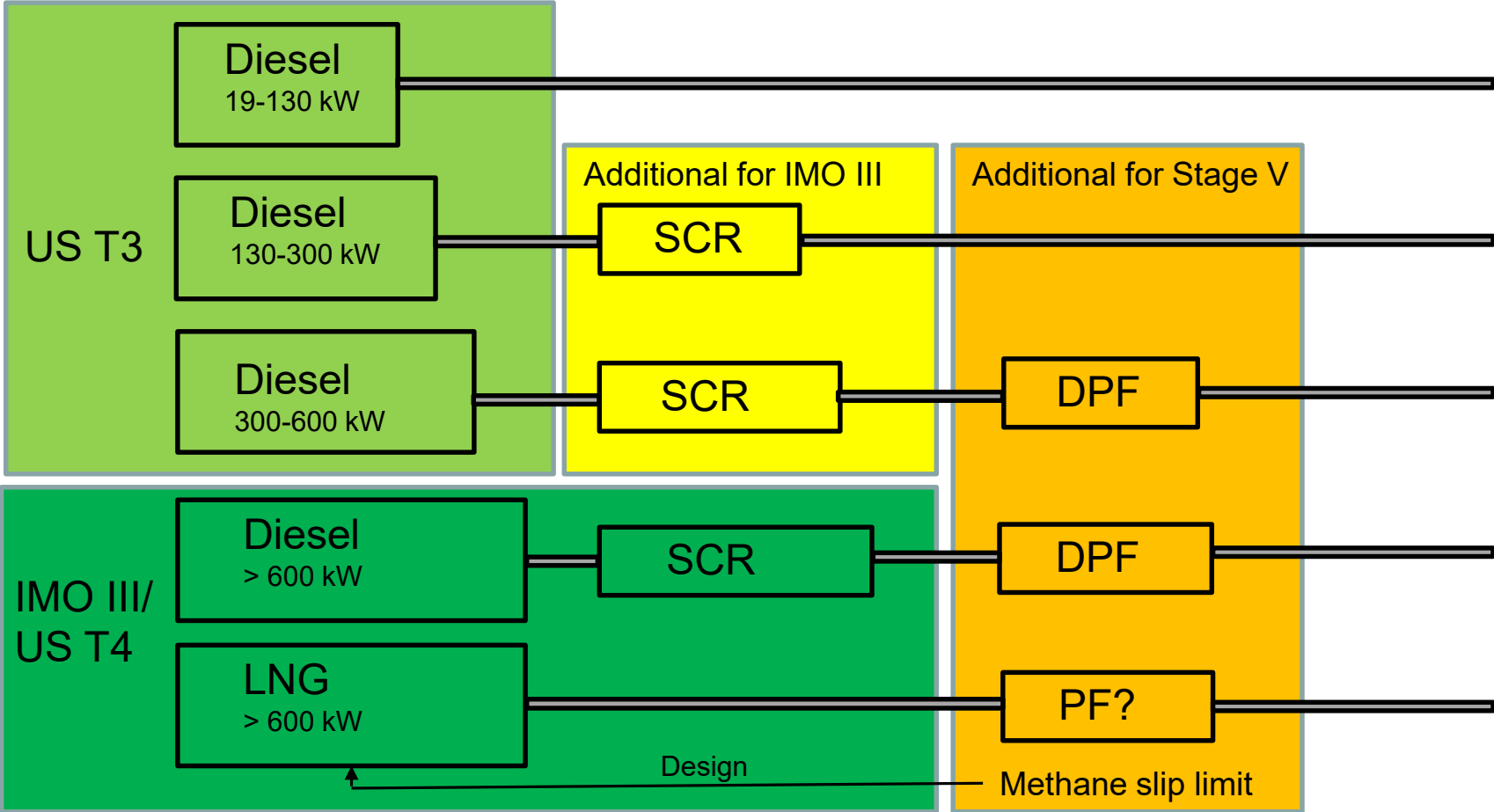
Comparison with other regulations



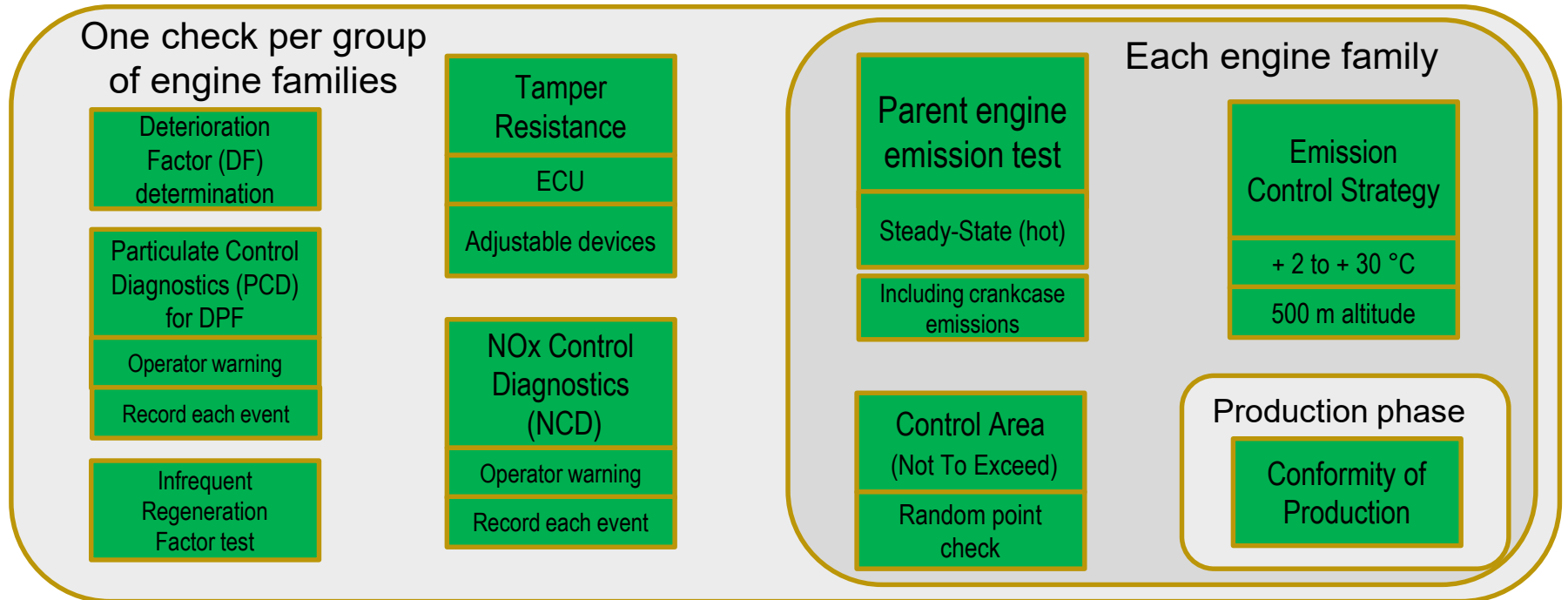
Comparison with other regulations



Comparison with other regulations



Stage V type-approval requirements



Example for electronic engine ≥ 300 kW

Guidance published by EUROMOT & CESNI

- Available in English, French, German & Dutch language
- March 2019 version contains 22 questions and answers on the practical application of Stage V to the inland waterways transport sector
- Download free of charge from EUROMOT & CESNI web-sites
- <https://www.euromot.eu/publication-and-events/publications/>
- <https://www.cesni.eu/en/technical-requirements/>



FAQ 8: ENGINE/VESSEL TYPES NEWLY IN SCOPE

- Propulsion & auxiliary engines 19 – 37 kW
 - *there is no regulation for engines < 19 kW*
- Service craft belonging to supervisory authorities, fire-service vessels and fishing vessels on the fishing vessels register of the Community
 - *these had exclusions in the preceding Directive 97/68/EC but not in the new Regulation (EU) 2016/1628*
- Engines placed on the market for all passenger vessels that carry 12 or more passengers, with the exception of ferries, are now included regardless of the size of the vessel
- The scope of the regulation has been expanded from only regulating diesel engines to include gaseous-fuelled or any other alternative fuelled engine regardless of whether it uses spark ignition or compression ignition

FAQ 9: VESSELS SUBJECT TO DEROGATION FROM DIRECTIVE (EU) 2016/1629

Do the engine emission requirements apply to vessels that are exempted from the requirements of Directive (EU) 2016/1629 such as those craft operating on non-linked inland waterways (Article 24) or operating under national regulations in zone 4 waters?

Yes they do. Definition (34) of Article 3 of Regulation (EU) 2016/1628 only refers to the scope of Directive (EU) 2016/1629 and does not take account of any derogations.

References:

- *Regulation (EU) 2016/1628, Article 2 (2)(f) and Article 3(34)*
- *Directive (EU) 2016/1629, Article 2*



FAQ 4: REPLACEMENT ENGINES

‘Replacement engine’ means an engine that is exclusively used to replace an engine already placed on the market and installed in non-road mobile machinery and complies with an emission stage which is lower than that applicable on the date of the engine's replacement.

Does the possibility of replacement engines mentioned in Regulation (EU) 2016/1628, Article 58(11) also then apply for engines used in inland navigation that belongs to engine category NRE?

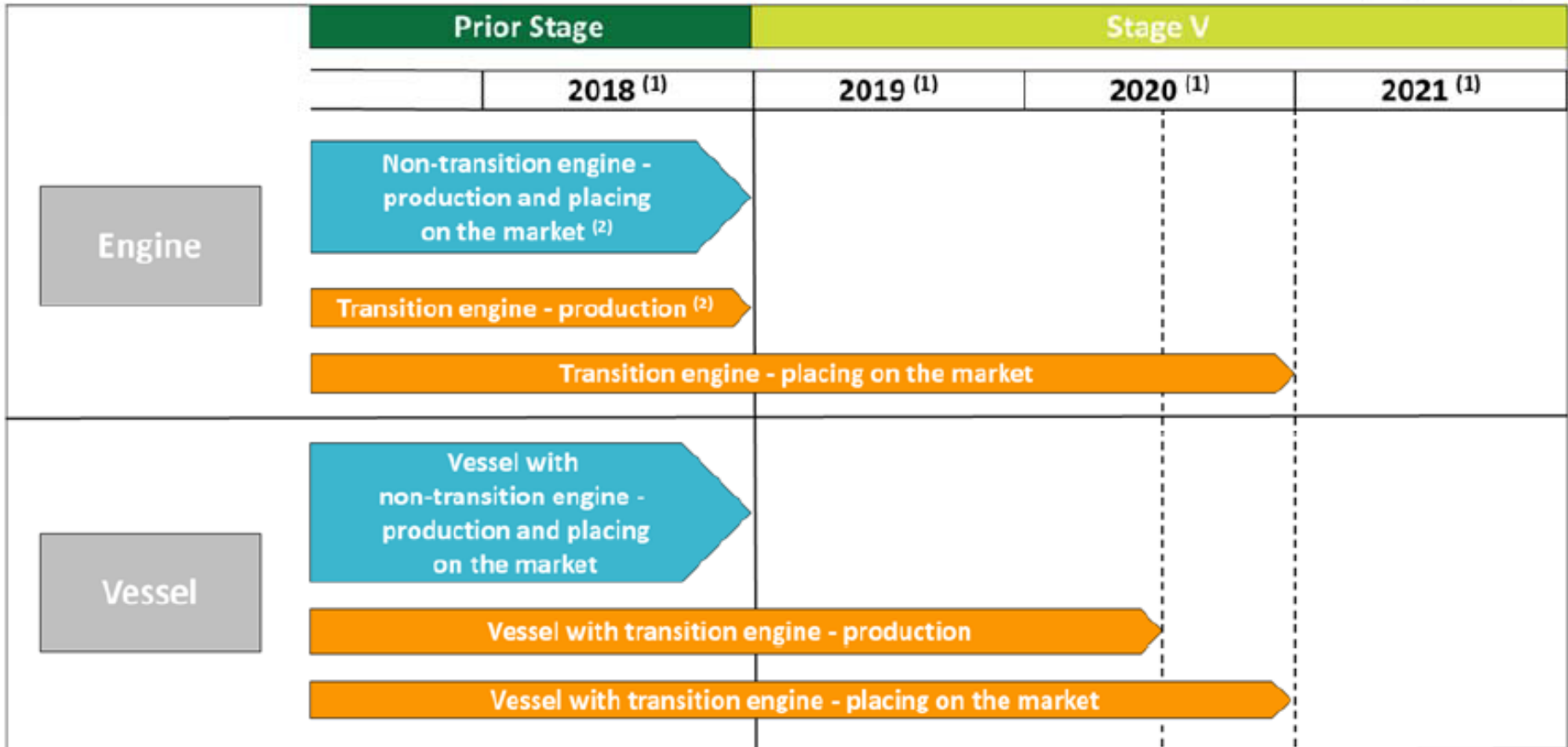


No. ES-TRIN 2017 fundamentally prohibits the installation of replacement engines. Indeed, this ban is consistent with the interpretation of the NRMM Regulation handed down by the European Commission.

References:

- *ES-TRIN, Article 9.01(4)*
- *Regulation (EU) 2016/1628, Article 3(11), Article 58(11)*

FAQ 6: TRANSITION ENGINES - SCHEME



(1) One year later for engines ≥ 300 kW

(2) Inclusive of after-treatment where applicable

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