資料30-4

Regulation on EU Inland Waterways – EU Stage V

CIMAC WG 5 on 25th April 2018

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Agenda:

- Introduction EU V
- Categories and Scope for IWT
- Limits and Schedule
- Transition
- Outlook / further steps

Introduction on EU Stage V

- EU V (Regulation 2016/1628) and resepective delegating and implementing acts apply to a broad range of applications

- Inland Waterway Vessels as well →significant changes due to more stringent limits and new engine categories arise

Categories and Scope for IWT

- **category IWP:**

(a) engines exclusively for use in inland waterway vessels, for their direct or indirect propulsion, or intended for their direct or indirect propulsion, having a reference power that is greater than or equal to 19 kW;

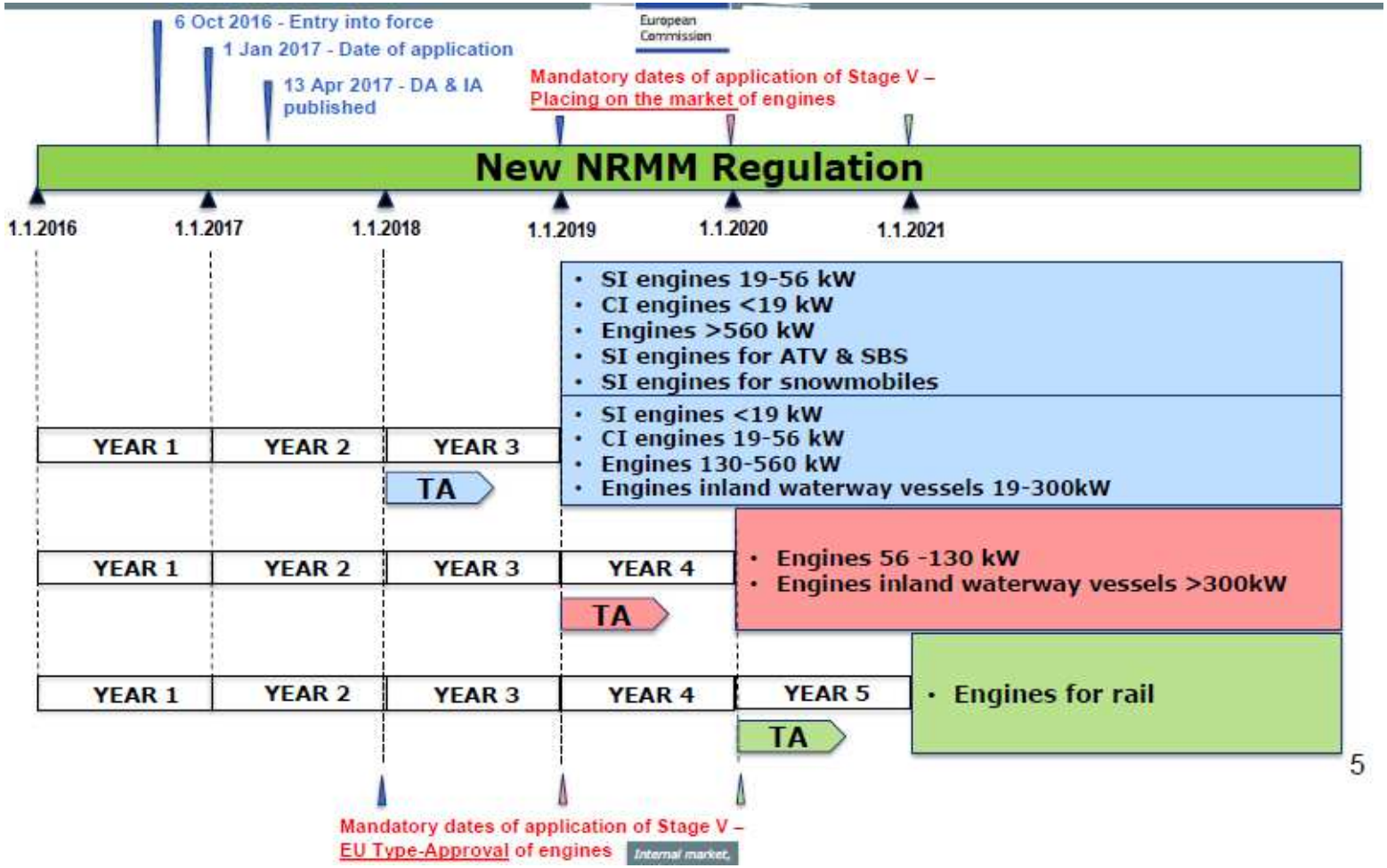
(b) (b) engines used in place of engines of category IWA provided that they comply with Article 24(8)

- **Category IWA:**

auxiliary engines exclusively for use in inland waterway vessels and having a reference power that is greater than or equal to 19 kW;

- As an alternative, EU V engines of category NRE (<560 kW) and on-road HD with an Euro 6 certificate can be used under specific provisions

Limits and Schedule



Limits and Schedule

Table II-5: Stage V emission limits for engine category IWP defined in point (5) of Article 4(1)

Emission stage	Engine sub-category	Power range	Ignition type	CO	HC	NO_x	PM mass	PN	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	#/kWh	
Stage V	IWP-v-1 IWP-c-1	19 ≤ P < 75	all	5,00	(HC + NO_x ≤ 4,70)		0,30	—	6,00
Stage V	IWP-v-2 IWP-c-2	75 ≤ P < 130	all	5,00	(HC + NO_x ≤ 5,40)		0,14	—	6,00
Stage V	IWP-v-3 IWP-c-3	130 ≤ P < 300	all	3,50	1,00	2,10	0,10	—	6,00
Stage V	IWP-v-4 IWP-c-4	P ≥ 300	all	3,50	0,19	1,80	0,015	1×10^{12}	6,00

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Table III-5: Dates of application of this Regulation for engine category IWP

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
IWP	all	19 ≤ P < 300	IWP-v-1 IWP-c-1 IWP-v-2 IWP-c-2 IWP-v-3 IWP-c-3	1 January 2018	1 January 2019
		P ≥ 300	IWP-v-4 IWP-c-4	1 January 2019	1 January 2020

Limits and Schedule

Table II-6: Stage V emission limits for engine category IWA defined in point (6) of Article 4(1)

Emission stage	Engine sub-category	Power range	Ignition type	CO	HC	NO_x	PM mass	PN	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	#/kWh	
Stage V	IWA-v-1 IWA-c-1	19 ≤ P < 75	all	5,00	(HC + NO_x ≤ 4,70)		0,30	—	6,00

Emission stage	Engine sub-category	Power range	Ignition type	CO	HC	NO_x	PM mass	PN	A
		kW		g/kWh	g/kWh	g/kWh	g/kWh	#/kWh	
Stage V	IWA-v-3 IWA-c-3	130 ≤ P < 300	all	3,50	1,00	2,10	0,10	—	6,00
Stage V	IWA-v-4 IWA-c-4	P ≥ 300	all	3,50	0,19	1,80	0,015	1×10^{12}	6,00

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on of this Regulation for engine category IWA

Category	Ignition type	Power range (kW)	Sub-category	Mandatory date of application of this Regulation for	
				EU type-approval of engines	Placing on the market of engines
IWA	all	19 ≤ P < 300	IWA-v-1 IWA-c-1 IWA-v-2 IWA-c-2 IWA-v-3 IWA-c-3	1 January 2018	1 January 2019
		P ≥ 300	IWA-v-4 IWA-c-4	1 January 2019	1 January 2020

Limits and Schedule

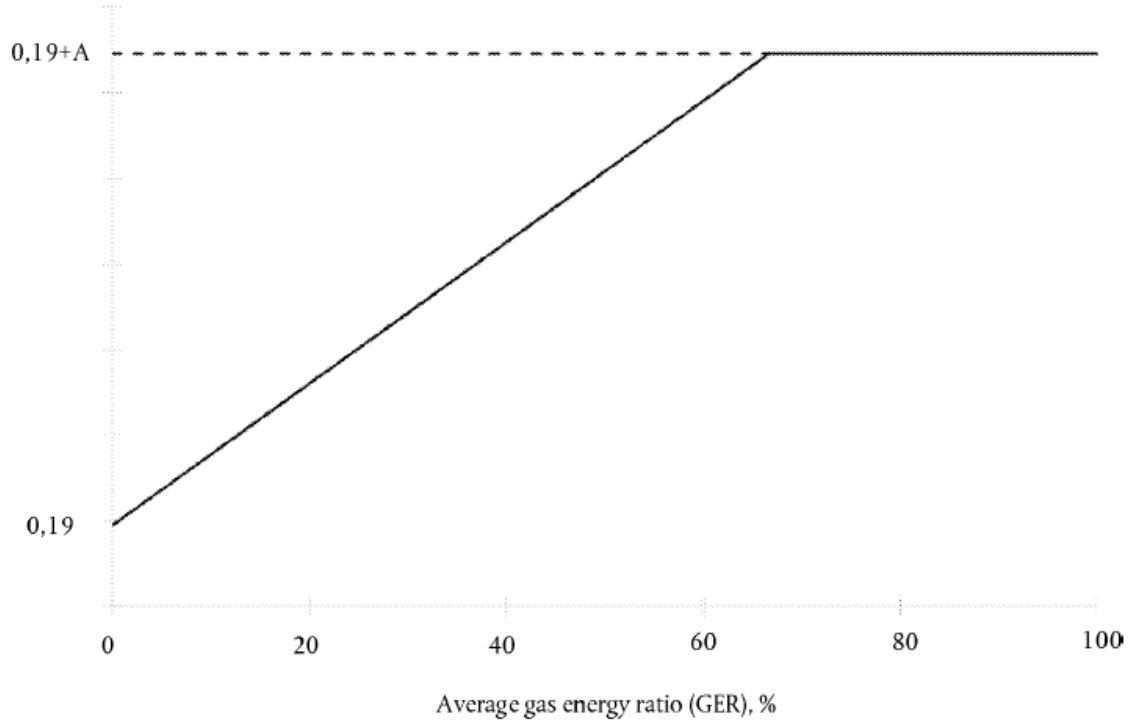
Specifc provision on HC for fully and partially gaseous-fuelled enines

For the sub-categories where an A-factor is defined, the HC limit for fully and partially gaseous-fuelled engines indicated in Tables II-1 to II-10 is replaced by a limit calculated using the following formula:

$$HC = 0{,}19 + (1{,}5 \times A \times GER)$$

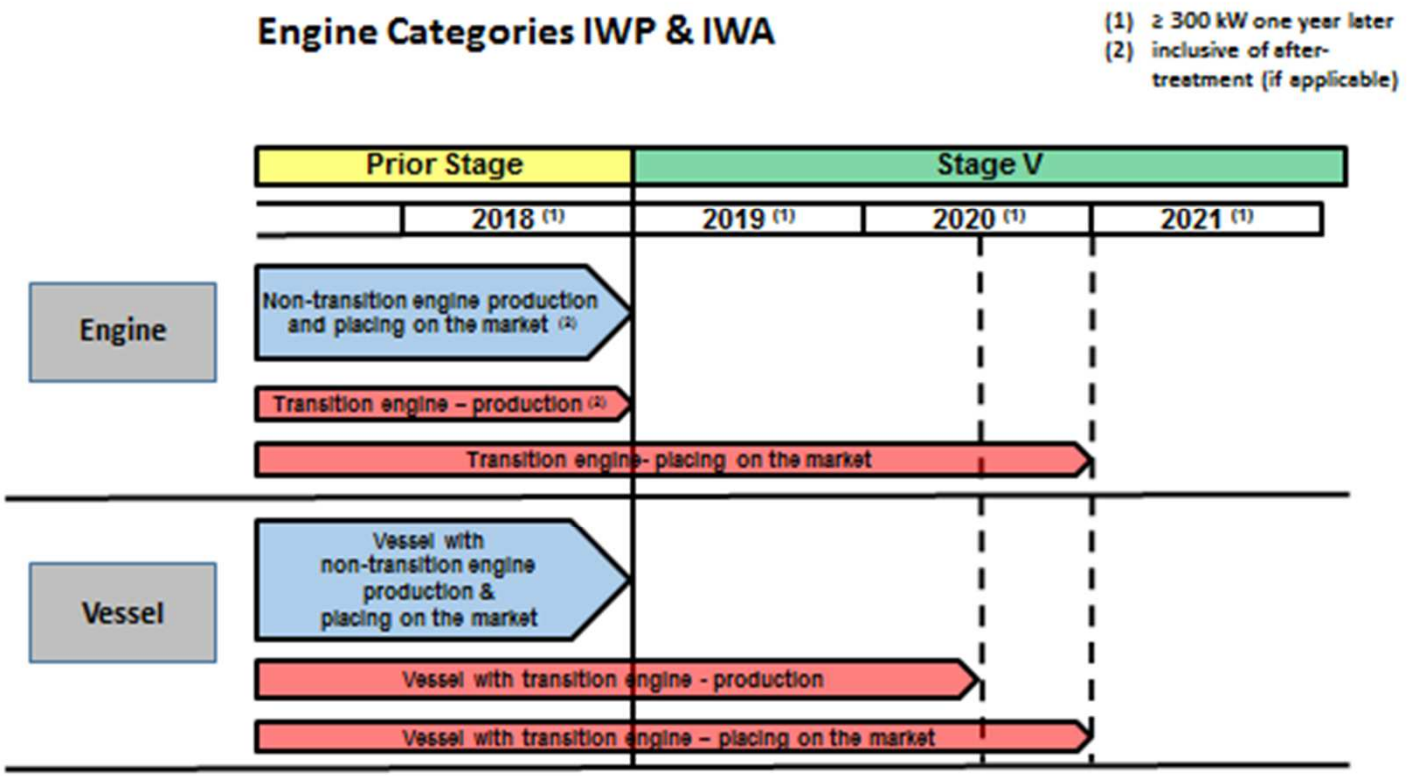
where GER is the average gas energy ratio over the appropriate test cycle. Where both a steady-state and transient test cycle apply, the GER shall be determined from the hot-start transient test cycle. Where more than one steady-state test cycle applies, the average GER shall be determined for each cycle individually.

If the calculated limit for HC exceeds the value of 0,19 + A, the limit for HC shall be set to 0,19 + A.



Transition

As per 1) schedule for engines > 300kW is one year later!!!



Outlook / further steps

- FAQ document under development with participation of stakeholders
- Directive 2016/1629 and the European Standard laying down Technical Requirements for Inland Navigation vessels (ES-TRIN) reflect the requirement for EU Stage V engines
- Further details and obligatory checks described in the standard go beyond scope of 2016/1628, sector-specific clarification of terms and milestones necessary
- Some stakeholders and EU member states support retrofit programs for the existing fleet (“Greening of the fleet”) and projects for alternative methods to prove compliance with set emission limits.

Thank you for your attention

Any questions?

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