



FEM position paper on the ongoing revision of the Outdoor Noise Directive

Brussels, 2 May 2019

FEM is the European federation representing manufacturers of materials handling, lifting and storage equipment. Several types of FEM equipment are impacted by the Outdoor Noise Directive (2000/14/EC), notably industrial trucks, mobile elevating work platforms, cranes and lifting equipment, hoists and conveyor belts.

Material handling equipment manufacturers welcome in general the conclusions and recommendations of the final reports of the VVA evaluation and impact assessment study. On that basis, FEM would like to put forward its views on the revision of the Outdoor Noise Directive, focusing on the different policy options under investigation, and the key elements of the OND to be analysed during the impact assessment process: scope, noise limits, test codes, noise database and the label.

FEM recognises the need for a revision of the OND to bring it in line with technological developments in the noise sector and requirements in other pieces of EU legislation. This paper depicts FEM's views on the key aspects of the OND (scope, noise limits, test codes, the database and the noise label), and puts forward some recommendations relating to these aspects for the future Outdoor Noise Regulation. The specific inputs from the FEM Product Groups are set out in the Annexes.

1. New Legislative Framework alignment and conformity assessment procedure

FEM's preferred policy option is option 3 proposed by VVA in the evaluation and impact assessment study, regarding the alignment of the Directive with the New Legislative Framework (NLF). This alignment would also allow the use of different NLF conformity assessment procedures, including Module A (internal product control or self-certification).

FEM is strongly in favour of allowing self-certification to be used as the preferred conformity assessment method by manufacturers for both equipment subject to Article 12 and to Article 13. Over time, manufacturers have acquired the technical expertise to measure noise emissions and declare guaranteed sound power levels, so the use of mandatory third-party certification is no longer required. It should be allowed on a voluntary basis for those manufacturers who do not have the in-house expertise or prefer certification by a Notified Body (NB). We therefore call for allowing flexibility in the manufacturers' choice of the conformity assessment procedure.



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2. Scope and noise limits

FEM agrees to maintain the classification of Article 12 and 13 of the current OND; however, we recommend that the definition of the different equipment types should be further clarified and made more specific

Material handling manufacturers also support the inclusion of noise limits in the main legislation, as it is the case in the current OND. We can agree with the need to re-assess the noise limits to reflect technological and market developments, yet these changes have to be proportionate, realistic and achievable. Moreover, a noise limit does require revision when it is affected by the modification of a test code, in order to maintain the level of stringency.

In terms of the noise limits put forward by ODELIA in their study (and subsequently taken up by VVA), and other proposals to extend the list of products subject to mandatory noise limits, we believe that these recommendations should not be taken for granted, but analysed against solid evidence and technical justifications. FEM has already expressed in previous consultations its concerns about the reliability of the ODELIA findings. The FEM views on the limits, accompanied by an analysis of the impacts are illustrated in Annexes of this paper.

3. Test codes and measurement methods

FEM agrees with the conclusion of the evaluation and impact assessment study reports that test codes and measurement methods are obsolete and therefore have to be revised to be aligned with technological progress. Standardised test codes shall reflect the typical work cycle of the machines during intended conditions of use and the state of the art.

Although the test codes will probably be laid down in the future legal act/regulation, we strongly recommend that the Commission is empowered to adopt supplementing legislation (e.g. Delegated Acts) to include updated references of the standards. This would prevent having to reopen the main legislation every time standard revisions are needed.

Where standards covering noise emissions exist, their test codes should be used. FEM also calls for the alignment of the test code used by equipment types which are covered by both the OND and the Machinery Directive (MD), when existing. An alignment of the test codes would help avoid the current confusion on the market, generated by different values according to the OND and the MD.

4. Noise database and noise label

FEM would prefer that the current noise database is removed given its poor performance and the great amount of inaccurate or incomplete information that it contains. According to previous studies on the OND, approximately 80% of the data is wrong or incorrectly assigned.



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FEM proposes that the noise values should be available, for instance through the manufacturer's instructions for use or website.

However, if the existing database is to remain, it should be completely overhauled as a tool for providing documentation in a more efficient manner. With regards to the noise label, material handling equipment manufacturers are in favour of the status quo, since FEM equipment is only intended for professional use. In the case of FEM equipment, the demand for lower noise emissions is entirely market driven. It would be advisable that the legislator distinguishes between equipment for consumer use and those for professional use, when proposing noise label solutions.

5. Market Surveillance

FEM agrees with the conclusions of the evaluation and impact assessment study that market surveillance should be strengthened to address the presence of non-compliant equipment on the market. We are confident that this horizontal matter will be tackled once the Regulation on market surveillance and compliance enters into force and is implemented in the Member States. FEM would like to put forward a proposal that would enable Notified Bodies (NBs) to maintain their activity by supporting market surveillance authorities. In other words, NBs can provide them with the facilities and equipment for tests where technical expertise is lacking in Member States. A similar approach already exists during periodic inspections of machinery in different countries.

Concluding remarks

FEM believes that further improvements to the Outdoor Noise Directive are needed for the legislation to reach its full potential. In particular, we advocate the alignment of the Directive with the New Legislative Framework and the extension of the conformity assessment procedures to self-certification, for both Articles 12 and 13.

Although FEM can agree that noise limits and test codes should be re-assessed to ensure they are aligned with technological progress any proposed changes should be technically feasible, and not disproportionately harm manufacturers. We also strongly recommend that whenever revisions of the standards occur which describe the test codes, the updated references of those standards are laid down in a Delegated Act, instead of the main legal act.

FEM does not consider the current noise database as useful and reliable and would therefore like it to be replaced by more flexible means of providing documentation on noise values (for instance, instructions of use or manufacturer's website). In addition, the noise label should remain the same, but a clear distinction between professional equipment and equipment for consumer use is recommended.

Last but not least, FEM fully supports the objective of reinforcing market surveillance and tackling non-compliance, and having this in mind, would like to propose that Notified Bodies



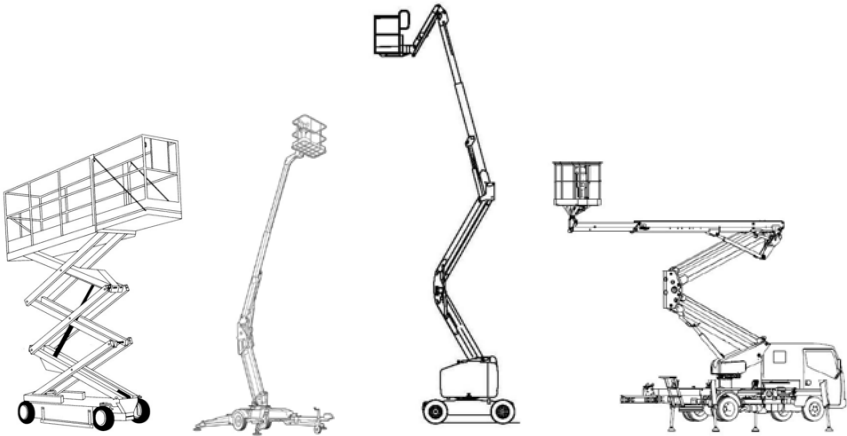
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support market surveillance in terms of facilities and equipment for tests where there is a lack of technical expertise in the Member States.

The following part of the position paper consists of product sheets laid down in annexes, which describe the different FEM equipment types affected by the OND. These annexes also includes the analysis of the environmental impact and the economic impact of possible changes in the noise limits, as well as our proposals of the noise limits and test codes (in addition to the existing ones proposed in OND or previous studies), that are applicable to the FEM product type in question. The consolidation of the product sheets can be visualised in the overview table in the document accompanying this position paper.



Annex I – Product sheet Mobile Elevating Work Platform (MEWP)

1. Mobile Elevating Work Platform with Combustion Engine	
Equipment description	<p>Mobile machine that is intended to move persons and their tools to working positions at height and which consists as a minimum of a work platform with controls, an extending structure and a chassis. It's an equipment for professional use only, destined to rental companies.</p> 
Current OND definition	<p>The equipment is currently in Art. 13 with the following definition:</p> <p>Aerial access platforms with combustion engines: Equipment consisting of a minimum of a work platform, an extending structure and a chassis. The work platform is a fenced platform or a cage which can be moved under load to the required working position. The extending structure is connected to the chassis and supports the work platform; it allows movement of the work platform to its required position.</p>
Proposed new definition	<p>FEM propose to rename the equipment as follow in order to align the definition with EN 280:</p> <p>Mobile Elevating Work Platform with combustion engine Mobile machine that is intended to move persons and their tools to working positions at height where they are carrying out work from the work platform with the intention that persons are getting on and off the work platform only at access positions at ground level or on the chassis and which consists as a minimum of a work platform with controls, an extending structure and a chassis.</p>
Applicable Standard	<p>There isn't any specific MEWPs standard for noise measurement (test code) and evaluation. EN 280 as type C safety standard for Machinery Directive compliance.</p>



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Environmental Impact (EI) analysis

Data on the actual usage of the MEWPs in the average work cycle has been taken from the telematics devices installed on a representative number of MEWPs in the market. These devices allow the rental companies to keep track of their fleets location and usage and provide an actual picture of how they are used:

	Scissors	Articulated Booms	Stick booms
Power ON	64,60%	41,05%	36,40%
Engine ON	12,25%	20,63%	9,51%

	Drive	Lift	Tele	Swing	Low Idle
Small booms	11%	8.7%	4.1%	6.2%	70%
Medium booms	6.8%	8.4%	4.4%	6.1%	75%
Big booms	6.3%	10.2%	7.9%	5.8%	70%
Average	8%	9%	5.5%	6%	71.5%

This means that **MEWPs are typically switched off most of the time** and when the engine is ON, it is running at low idle for about the 70% of the time. The total engine hours used to calculate the figures above are:

	Total engines hours
Small booms	31,088.656
Medium booms	435,042.504
Big booms	543,789.275

Moreover, the current technology applied to the majority of MEWPs allows the control system to set the engine in low idle when the movements are activated. This results in having high idle for ~ 30% of the time when the engine is running or less, which is the 9% of the total working time.

MEWPs are switched off for most of the time during a typical work cycle because MEWPs do not perform any task themselves (unlike other work equipment in the scope of OND). Their purpose is to bring persons in a position at height where they can carry out some work and this support the conclusion that the Environmental Impact is Low.

Additional details on EI evaluation can be found in the FEM MEWPs PG documents, available on CIRCAB, developed in the framework of the ODELIA study and currently still relevant:

- MPG-OND-2014-01 rev.01
- MPG-OND-2015-03
- MPG-OND-2015-04
- MPG-OND-2015-05



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	Population¹					
	Booms		Scissors		Trend	
	2017	2014	2017	2014		
	Internal Combustion	58%	59%	18%	23%	↓
	Electric	37%	35%	81%	73%	↑
	Others (e.g. hybrid, bi-energy)	5%	6%	1%	3%	↕
<p>The EU MEWP rental market trend is towards greener machines (low or zero emissions); in the near to medium term, rental companies' intention is to switch to using only electric or hybrid machines.</p>						
<p>The typical European MEWP fleet mix comprises 50% scissors, 34% booms, 7% vehicle mounted equipment and 9% other equipment. One trend common to almost all countries is a move towards smaller (3-12m) electric scissors lifts.</p>						
Applications	<p>All MEWPs (IC, electric, hybrid, etc.)</p> <ul style="list-style-type: none"> 57% Construction (includes new-build and renovation, work, across commercial, residential and infrastructure projects) 25% Non-construction (includes property and infrastructure maintenance, cleaning, utilities, events) <p>IC machines used only in outdoor applications</p>					
Usage Time	See Environmental impact analysis					
Impact of changes (costs/benefits)	<p>Rental companies are now investing in renewing fleets, moving towards "greener" machines, such as electric and hybrid, to respond to their customers' rising demand for cleaner machines and to comply with new and upcoming ultra-low emissions regulations.</p> <p>Electric and hybrid models are typically more expensive than equivalent IC models (up to +30%), therefore imposing more stringent noise requirements on IC MEWPs will cause manufacturers to invest more money and resources in the development of products that are not required by the market, decreasing research investments to develop innovative technological solutions in line with market trends (namely electric/hybrid solutions, telematics and digital applications). Noise is also not subject to regulation outside the EU.</p> <p>Moreover, new stage V engines with after-treatment components are intrinsically noisier than the engines compliant to previous stages and require for their installation ~50% more space on the machine compared to stage IIIB; this results in a big impact on visibility and operability, especially in smaller MEWPs, and in a general increase in the complexity of the machines. The after-treatment systems (DPF) increase the heat generated, this means that bigger fans will be required and therefore it will be even more difficult to find technical solution to limit noise emissions being the fan one of the main noise source on every equipment.</p>					

¹ Source: Ducker Worldwide for IPAF - global report 2018; 10 EU countries under study



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	Moving MEWPs from article 13 to article 12 can result in a non-recurrent investment of around 2M € (R&D, labour cost, materials, etc.). Recurrent costs will increase as well (+5% per unit - estimated).		
Impacting /overlapping legislation	<ul style="list-style-type: none"> • Machinery Directive 2006/42/EC • Exhaust Emissions Regulation (EU) 2016/1628 • Directive 2007/46 on EU type approval framework for motor vehicles and Regulation 2018/858 		
Technical developments for low noise equipment	<p>The development of electric and hybrid machines responds to the requirement of low/zero emissions and allows machines to be used where local stricter requirements exists (e.g. use at night, near to hospitals and the like).</p> <p>Although manufacturers invest to develop quieter machines, results are rarely perceived since they are compromised by other design changes imposed by other legal requirements (such as exhaust emissions, energy efficiency and visibility for users).</p>		
Limit Proposal	FEM	Current OND:	ODELIA
	Art. 13	Art 13	Art 12 P ≤ 60 kW: 104 P > 60 kW: 87+9.3*Ig P
Test code	FEM	Current OND:	ODELIA
	The current test code should be amended to suit to the actual usage of machine (most of the time with engine switched off). See proposal for a new noise test code developed by FEM MEWPs PG in annex II.	EN ISO 3744:1995 Stationary position, engine in high idle	EN ISO 3744:2010 Stationary position, engine in high idle



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Annex II – Proposal for MEWPs Noise Test Code

Mobile Elevating Work Platforms with Combustion Engine

Mobile machinery that is intended to move persons and their tools to working positions at height where they are carrying out work from the work platform. The intention that persons are getting on and off the work platform only at access positions at ground level or on the chassis and which consists as a minimum of a work platform with controls, an extending structure and a chassis.

Equipment tested free of load

Basic noise emission standard EN ISO 3744:2010 *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

Test area Reflecting surface of concrete or non-porous asphalt

Environmental correction K_{2A} : $K_{2A} = 0$

Measurement surface and measuring distance (ref. EN ISO 3744:2010 clause 7.2.)

If the largest dimension of the reference parallelepiped does not exceed 8 m: hemisphere/six microphone positions according to EN ISO 3744:2010 clauses 7.2.1 a), 7.2.3, annex B.

If the largest dimension of the reference parallelepiped exceeds 8 m: parallelepiped according to ISO 3744:2010 clause 7.2.1. b) with measurement distance $d = 1$ m, clause 7.2.4.

Microphone positions on the measurement surface

According to EN ISO 3744:2010 clauses 8.1 and annex B.

Operating conditions during test

Test of powered equipment free of load.

For these measurements, the engine and hydraulic system of the equipment must be warmed up in accordance with the instructions, and safety requirements must be observed.

For the purpose of the test, the speed used and the corresponding net power are stated by the manufacturer of the equipment and must appear in the test report.

The engine will idle at no less than the rated speed corresponding to the net power.

If the equipment is fitted with several engines, they must work simultaneously during the tests. If this is not possible, each possible combination of engine(s) is to be tested.

Machine's audible alarms and warnings shall be switched off during the measurements.



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Sound Pressure Level Calculation (L_pA) [dB]

Test At High Idle (L_pA_H)

The test is carried out with the equipment in a stationary position without operating the working equipment or travelling mechanism, with the engine at high idle speed.

The period of observation shall at least be 15 seconds.

Test At Low Idle (L_pA_L) [dB]

The test is carried out with the equipment in a stationary position without operating the working equipment or travelling mechanism, with the engine at low idle speed.

The period of observation shall at least be 15 seconds.

Sound Power Level Calculation (L_wA) [dB]

$L_wA_H = L_pA_H + 10 \log(S/S_0)$ where S = measurement surface area [m^2] and $S_0 = 1 m^2$

$L_wA_L = L_pA_L + 10 \log(S/S_0)$


$L_wA = 10 \log (0,7 * 10^{0,1 L_wA_L} + 0,3 * 10^{0,1 L_wA_H})$



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Annex III – Product sheets for Industrial Trucks


Counterbalanced Lift Truck Equipment no. 36 (> 10 t Capacity)			
Equipment description	A stacking internal combustion-engine driven lift truck fitted with fork arms (or with the fork arms replaced by another device) on which the load is balanced by the mass of the truck		
Current OND definition	A wheeled, internal combustion-engine driven lift truck with counterweight and lifting equipment (mast, telescopic or articulated arm)		
Proposed definition	No change		
Applicable Standard	EN-ISO 3691 series in conjunction with EN 16307 series (safety) EN 12053 (noise)		
Environmental impact analysis	These machines are typically used in industrial areas with low impact on the population.		
Areas used	Professional use in outdoor areas, primarily in industrial areas (steel mills, wood industry, harbours)		
Usage time	Typically, 8 – 12 hours per day		
Impact of changes (costs/benefits)	As mentioned in ODELIA and final IA report, major R&D investments for research and product optimization would be required if lower limit values are applied. As of the expected application date of the revised OND, integration of NRMM Stage V (2016/1628) engines will be in place, resulting in a second re-design/optimization of NRMM with respect to noise.		
Impacting /overlapping legislation	<ul style="list-style-type: none">• Machinery Directive 2006/42/EC• Exhaust Emissions Regulation (EU) 2016/1628		
Technical developments for low noise equipment	Development and/or optimisation of main noise sources in IT as combustion engines, including air intake, cooling fan and exhaust system and hydraulic pumps, motors		
Limit Proposal	FEM Art.12 P ≤ 55 kW: 102 dB P > 55 kW; 83+11*lg P dB	Current OND Art.12 P ≤ 55 kW: 104 dB P > 55 kW: 85+11*lg P dB	ODELIA P ≤ 55 kW: 102 dB P > 55 kW: 83+11*lg P





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Test code	FEM EN 12053:2001+A1:2008 <u>Note:</u> The current test code in OND is not representative for a typical work cycle of lift trucks in practice	Current OND condition of driving (70%) + lifting (30%) - driving without load, at full acceleration of the truck - lifting with at least 70 % actual capacity and max. lifting speed	ODELIA No change to current OND
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Counterbalanced Lift Truck, Equipment no. 36 (≤ 10t Capacity)		
Equipment description	A stacking internal combustion-engine driven lift truck fitted with fork arms (or with the fork arms replaced by another device) on which the load is balanced by the mass of the truck	
Current OND definition	A wheeled, internal combustion-engine driven lift truck with counterweight and lifting equipment (mast, telescopic or articulated arm).	
Proposed definition	No change	
Applicable Standard	EN-ISO 3691 series in conjunction with EN 16307 series (safety) EN 12053 (noise)	
Environmental impact analysis	These machines are typically used in industrial areas with low impact on the population. The ODELIA environmental impact analysis is mixing up different truck types (industrial trucks and rough terrain trucks) which is misleading in terms of usage and environmental impact.	
Areas used	Professional use in outdoor areas, primarily in industrial areas (logistics, production, food, paper)	
Usage time	Typically, 4 to 8 hours per day	




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Impact of changes (costs/benefits)	As mentioned in ODELIA and final IA report, major R&D investments for research and product optimisation would be required if lower limit values are applied. As of the expected application date of the revised OND, integration of NRMM Stage V (2016/1628) engines will be in place, resulting in a second re-design/optimisation of NRMM with respect to noise.		
Impacting/overlapping legislation	<ul style="list-style-type: none"> • Machinery Directive 2006/42/EC • Exhaust Emissions Regulation (EU) 2016/1628 		
Technical developments for low noise equipment	Development and/or optimisation of main noise sources in IT as combustion engines, including air intake, cooling fan and exhaust system and hydraulic pumps, motors		
Limit Proposal	FEM maintain Art.13	Current OND Art.13	ODELIA $P \leq 55 \text{ kW: } 102 \text{ dB}$ $P > 55 \text{ kW: } 83+11 \cdot \lg P$
Test code	FEM EN 12053:2001+A1:2008 <u>Note:</u> The current test code in OND is not representative for a typical work cycle of lift trucks in practice	Current OND condition of driving (70%) + lifting (30%) - driving without load, at full acceleration of the truck - lifting with at least 70 % actual capacity and max. lifting speed	ODELIA no change to current OND




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Variable-reach container handler (Reachstacker, according to ISO 5053-1 (3.23))			
Equipment description	internal combustion-engine driven lift truck fitted with one or more articulated arms, telescopic or not, non-slewing used for stacking containers (empty / laden)		
Current OND definition	Trucks for container handling out of scope		
Applicable Standard	EN-ISO 3691 series in conjunction with EN 16307 series (safety) EN 12053 (noise)		
Environmental impact analysis	These machines are typically used in restricted freight container handling areas with low impact on the population		
Areas used	Ports and cargo terminals		
Usage time	Typically, 8 – 16 hours per day		
Impact of changes (costs/benefits)	As mentioned in ODELIA and final IA report, major R&D investments for research and product optimisation would be required if lower limit values are applied. As of the expected application date of the revised OND, integration of NRMM Stage V (2016/1628) engines will be in place, resulting in a second re-design/optimisation of NRMM with respect to noise.		
Impacting/overlapping legislation	<ul style="list-style-type: none">• Machinery Directive 2006/42/EC• Exhaust Emissions Regulation (EU) 2016/1628		
Technical developments for low noise equipment	Development and/or optimisation of main noise sources in IT as combustion engines, including air intake, cooling fan and exhaust system and hydraulic pumps, motors		
Limit Proposal	FEM	Current OND:	ODELIA
	Out of scope	Out of scope	$P \leq 55 \text{ kW} = 102 \text{ dB}$ $P > 55 \text{ kW} = 83+11*\lg P$
Test code	FEM	Current OND	ODELIA
	Out of scope	Out of scope	Integrate in equipment no. 36 (lift trucks) and use respective test code of current OND



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Straddle carrier (according to ISO 5053-1 (3.18 & 3.19))			
Equipment description	lift truck where the frame and lift unit straddle the load to raise, move and stack it		
Current OND definition	Straddle carrier out of scope		
Applicable Standard	None		
Environmental impact analysis	These machines are typically used in restricted freight container handling areas with low impact on the population		
Areas used	Ports and cargo terminals		
Usage time	Typically, 8 – 18 hours per day		
Impact of changes (costs/benefits)	As mentioned in ODELIA and final IA report, major R&D investments for research and product optimisation would be required if lower limit values are applied. As of the expected application date of the revised OND, integration of NRMM Stage V (2016/1628) engines will be in place, resulting in a second re-design/optimisation of NRMM with respect to noise.		
Impacting/overlapping legislation	<ul style="list-style-type: none">• Machinery Directive 2006/42/EC• Exhaust Emissions Regulation (EU) 2016/1628		
Technical developments for low noise equipment	Development and/or optimisation of main noise sources in IT as combustion engines, including air intake, cooling fan and exhaust system and hydraulic pumps, motors		
Limit Proposal	FEM	Current OND	ODELIA
	Out of scope	Out of scope	P ≤ 55 kW: 102 dB P > 55 kW: 83+11*lgP
Test code	FEM	Current OND	ODELIA
	Out of scope	Out of scope	Integrate in equipment no. 36 (lift trucks) and use respective test code of current OND



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Rough terrain truck (counterbalanced lift truck or telescopic) Equipment no. 36		
Equipment description	<p>A stacking internal combustion-engine driven lift truck fitted with fork arms (or with the fork arms replaced by another attachment). On counterbalanced models, the load is balanced by the mass of the truck. Rough-terrain trucks are intended primarily for operation on unimproved natural terrain and on the disturbed terrain of, for example, construction site.</p>	
Current OND definition	<p>A wheeled, internal combustion-engine driven lift truck with counterweight and lifting equipment (mast, telescopic or articulated arm).</p>	
Proposed definition	<p>No change</p>	
Applicable Standard	<p><u>Safety:</u> -Variable-reach truck: EN 1459-1 -Slewing variable-reach truck: EN 1459-2 -Masted truck: EN ISO 3691-1 in conjunction with EN 16307-1 <u>Noise:</u> EN 12053</p>	
Environmental impact analysis	<p>These machines are typically used in industrial areas with low impact on the population.</p>	
Areas used	<p>Professional use in outdoor areas, primarily in industrial areas, construction sites and farms. For big trucks additionally heavy industry (steel mills, wood industry, harbour and mining)</p>	
Usage time	<p>Typically, 4 to 12 hours per day</p>	
Impact of changes (costs/benefits)	<p>As mentioned in ODELIA and final IA report, major R&D investments for research and product optimization would be required if lower limit values are applied. As of the expected application date of the revised OND, integration of NRMM Stage V (2016/1628) engines will be in place, resulting in a second re-design/optimization of NRMM with respect to noise.</p>	
Impacting/overlapping legislation	<ul style="list-style-type: none"> • Machinery Directive 2006/42/EC • Exhaust Emissions Regulation (EU) 2016/1628 <p>Additionally, only for small trucks:</p> <ul style="list-style-type: none"> • Tractor Mother Regulation for agricultural vehicles (EU) 167/2013 • Road circulation of mobile machinery Directive 2007/46/EU type approval framework for motor vehicles and Regulation (EU) 2018/858 	




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Technical developments for low noise equipment	Development and/or optimization of main noise sources: mainly cooling fans but also combustion engines, including air intake and exhaust system, and hydraulic pumps, motors		
Limit Proposal	FEM Art.12 $P \leq 55 \text{ kW}$: 102 dB $P > 55 \text{ kW}$; $83+11 \cdot \lg P$ dB	Current OND $P \leq 55 \text{ kW}$: 104 dB $P > 55 \text{ kW}$: $85+11 \cdot \lg P$ dB	ODELIA $P \leq 55 \text{ kW}$: 102 dB $P > 55 \text{ kW}$: $83+11 \cdot \lg P$ dB
Test code	FEM EN 12053:2001+A1:2008 <u>Note:</u> The current test code in OND is not representative for a typical work cycle of lift trucks in practice	Current OND condition of driving (70%) + lifting (30%) - driving without load, at full acceleration of the truck - lifting with at least 70 % actual capacity and max. lifting speed	ODELIA no change to current OND



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Annex IV – Product sheets for Cranes and Lifting Equipment


38. Mobile Cranes		
Equipment description	Loading and lifting equipment. Combustion engine power unit	
Current OND definition	A self-powered jib crane capable of travelling, loaded or unloaded, without the need for fixed runways and relying on gravity for stability. It operates on tyres, crawlers or with other mobile arrangements. In fixed positions it may be supported by outriggers or other accessories increasing its stability. The superstructure of a mobile crane may be of the type of full-circle slewing, of limited slewing or non-slewing. It is normally equipped with one or more hoists and/or hydraulic cylinders for lifting and lowering the jib and the load. Mobile cranes are equipped either with telescopic jibs, with articulated jibs, with lattice jibs, or a combination of these, of such a design that may readily be lowered. The loads suspended from the jib may be handled by hook block assemblies or other load-lifting attachments for special services.	
Applicable Standard	EN 13000:2010+A1:2014	
Environmental impact analysis	Mobile Cranes already comply with low Stage II noise limit values and are typically used for short periods of time during the day. The ODELIA Report significantly overstates the European population with 105000. FEM statistics show that the population of mobile cranes is at most 25000.	
Areas used	Urban / Suburban / Rural e.g. construction sites, wind farms	
Usage time	10 months/year 20 days/month 60 minutes/day Evening/night adj (0 to 5) = 0	
Impact of changes (costs/benefits)	<p>A significant number of cranes cannot fulfil the proposed lower limit values and will have to be redesigned and very high costs may be incurred. A substantial redesign may be necessary to adhere to other legislation e.g. concerning available space for insulation.</p> <p>A further reduction as proposed in the ODELIA report offers a limited additional benefit over the already strict Stage II limits while incurring significant engineering costs to the manufacturers.</p>	



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Impacting/overlapping legislation	<ul style="list-style-type: none"> • Machinery Directive 2006/42/EC • Exhaust emissions Regulation (EU) 2016/1628 • Directive 2007/46 and EU Type Approval Framework for Motor Vehicles and Regulation (EU) 2018/858 		
Technical developments for low noise equipment	In order to reduce environmental impacts, manufacturers seek to downsize engines by including hybrid storage. Downsizing of engines reduces general emissions, however, it does not necessarily reduce the noise emissions.		
Limit Proposal	FEM 101 (P≤55 kW); 82+11*Ig P (P>55 kW)	Current OND: Art.12/13 101 (P≤55 kW); 82+11*Ig P (P>55 kW)	ODELIA 100 (P≤55 kW); 81.5+11*Ig P (P>55 kW) 4
Test code	FEM EN 13000:2010+A1:2014	Current OND 2000/14/EC	ODELIA EN 13000:2014 (wrong citation)

53. Tower cranes

Equipment description	 <p><i>Source: ODELIA (final study report)</i></p>		
Current OND definition	<p>A slewing jib crane with the jib located at the top of a tower which stays approximately vertical in the working position. This power-driven appliance is equipped with means for raising and lowering suspended loads and for the movement of such loads by changing the load-lifting radius, slewing, travelling of the complete appliance. Certain appliances perform several but not necessarily all of these movements. The appliance can be installed in a fixed position or equipped with means for displacing or climbing.</p> <p><i>[Source: EN 14439]</i></p>		
Proposed new definition	No change.		
Applicable Standard	EN 14439 (harmonised C-type standard listed under Machinery Directive) could be used as the relevant applicable standard for the noise test code.		
Environmental Impact (EI) analysis	Considering the environment in which tower cranes are used, their operating time and the level of noise emitted during operation, tower cranes have a very low environmental noise impact.		




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Applications	Tower cranes are intended to be used for construction of buildings (new buildings and renovation) but also for construction of some infrastructures like bridges or industrial application such steel/shipping yard. Tower cranes are used in outdoor applications, mainly in urban, suburban and industrial areas		
Usage Time	Operating conditions of tower cranes are usually very variable. Taking into account the classification of tower cranes in accordance with EN 14439 (crane A3, hoist mechanism M4) and a typical use in a 1-shift operation, an average emission duration of 120 minutes per day (rarely during the night), 20 days/month and 10 months/year can be expected.		
Impact of changes (costs/benefits)	No economic impact as limits stay the same.		
Impacting /overlapping legislation	<ul style="list-style-type: none"> Machinery Directive 2006/42/EC 		
Technical developments for low noise equipment	Although manufacturers invest to develop quieter machines, results are rarely perceived since they are compromised by other sources of noise emission on jobsites, like the noisy backup alarm on some non-road mobile machinery or the noise emitted by comings and goings of construction trucks.		
Limit Proposal	FEM	Current OND:	ODELIA
	Art 12 Limits: 96+lg P	Art 12 Limits: 96+lg P	Art 12 Limits: 96+lg P
Test code	FEM	Current OND:	ODELIA
	EN 14439:2009	2000/14/EC	EN 14339:2009




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107. Portal cranes for harbours and terminals			
Equipment description	 <p>Source: ODELIA (final study report)</p>		
Current OND definition	(Not included in OND today.)		
Applicable Standard	EN 15011 (harmonised C-type standard listed under Machinery Directive) could be used as the relevant applicable standard for the noise test code.		
Environmental Impact (EI) analysis	Portal cranes for harbours and terminals should not be included in the scope. These machines are typically used in restricted harbour areas with low impact on the population. The ODELIA study significantly overstates the existing population of portal cranes in harbours.		
Applications	Professional use in harbour areas.		
Impact of changes (costs/benefits)	Additional regulatory and administrative burden and cost of testing machines.		
Impacting /overlapping legislation	<ul style="list-style-type: none"> Machinery Directive 2006/42/EC 		
Limit Proposal	FEM	Current OND:	ODELIA
	none	none	
Test code	FEM	Current OND:	ODELIA
	EN 15011:2011+A1:2014	none	DIN 45635 T 61 (standard withdrawn)



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Annex V – Product sheet for Construction Winches with electric motor

12. Construction Winches with electric motor		 <i>Source: ODELIA (final study report)</i>	
Equipment description	A power-operated, temporarily installed lifting appliance which is equipped with means for raising and lowering a suspended load.		
Current OND definition	See above.		
Applicable Standard	EN 14492-2 [Annex NGL Building Hoist] is recommended.		
Environmental impact analysis	This equipment should be removed from the Directive's scope due to the very low number of pieces of this equipment on the market and very limited environmental impact. The estimated population is highly questionable: ODELIA estimates it to 26000 units, while only some hundreds equipment are present on the market.		
Areas used	Urban / Suburban / Rural Limited use on construction sites		
Usage time	Limited use during daytime.		
Impact of changes (costs/benefits)	No benefit to regulate this product in the OND.		
Impacting/overlapping legislation	<ul style="list-style-type: none">Machinery Directive 2006/42/EC		
Technical developments for low noise equipment	N/A		
Test code	EN 14492-2 [Annex NGL Building Hoist]	Current OND ISO 3744:1995	ODELIA ISO 3744:2011

General remark: the current OND refers to EN ISO 3744:1995 as the basic noise emission standard for the determination of the sound power level of equipment for use outdoors. FEM is in favor to replace this reference with the updated one EN ISO 3744:2010.

Name of Product Category	Current OND 2000/14/EC Limits		Current OND 2000/14/EC Test Code	ODELIA proposals (taken in VVA IA final report)		FEM analysis on Environmental Impact		Impact of changes		FEM proposal	
				Limits	Test code			Change in test code	Change in limits		
1. IC engine MEWPs (Mobile Elevating Work Platforms)	Article 13		Annex III, part B, item 0: equipment tested free of load (basic emission standard EN ISO 3744:1995). Stationary position, engine in high idle. Min period of observation: 15 s	P ≤ 60 kW	104	no change	Population IC machines (10 EU countries - 2017): 58% booms, 18% scissors -decreasing trend Typical usage: switched off after being brought into working position. Areas of use (IC machines): Construction, general maintenance <u>Market trends: electrics and hybrid increasing</u>	See proposed new test code in annex II	2 M € and + 5% per unit, see detailed analysis in the specific annex	Based on the considerations given in the MEWPs specific annex FEM considers negligible the contribution of MEWPs to outdoor noise. Based on the actual usage, MEWPs shall be kept under article 13, with a revised test code that considers the idle mode condition.	
				P > 60 kW	87+9.3*Ig P						
14. Conveyor belts	Article 13		Annex III, part B, item 14: equipment tested free of load (basic emission standard EN ISO 3744:1995)	no change		no change				FEM proposal is: no change compared to current OND	
						N/A		N/A			
36a. Counterbalanced Lift trucks, CE driven ≤10t	Article 13		acc. Annex III, part B calculated by condition of driving (70 %) and lifting (30 %) - driving without load, at full acceleration of the truck - lifting with at least 70 % actual capacity and max. lifting speed	P ≤ 55 kW	102	no change	These machines are typically used in industrial areas with low impact on the population. The ODELIA environmental impact analysis is mixing up different truck types (industrial trucks and rough terrain trucks) which is misleading in terms of usage and environmental impact.	EN 12053	Introduction of new limits and/or reduction of limits by 2 dB caused a second amount of major R&D investments for re-design of lift trucks in respect to noise due to the expected application date of the revised OND. At that date the integration of NRMM Stage V (2016/1628) engines will be in place.	The test code should refer to EN 12053	
				P > 55 kW	83+11*Ig P						
36b. Rough-terrain counterbalanced trucks and non-rough-terrain counterbalanced truck >10t	P ≤ 55 kW	104		P ≤ 55 kW	102	no change	These machines are typically used in industrial areas with low impact on the population	EN 12053			The test code should refer to EN 12053
	P > 55 kW	85+11*Ig P		P > 55 kW	83+11*Ig P						
	P ≤ 55 kW	101		P ≤ 55 kW	100						
38. Mobile cranes	P > 55 kW	82+11*Ig P	Annex III, part B, item 38 Testing under three or four working conditions (hoisting, slewing, dericking and - if applicable - telescoping) For all working conditions: — engine speed at ¾ of maximum speed specified for crane operation mode with a tolerance of ± 2 % — acceleration and deceleration at the maximum value without dangerous movements of the load or the hook block — motions at maximum possible speed as given in the instruction manual under the conditions given	P > 55 kW	81,5+11*Ig P	EN 13000:2010+A1:2014	EI is low because mobile cranes already comply with strict stage II limit values, the population is comparatively small (max. 25000 in Europe) and the running time is low.	EN 13000	A significant number of cranes cannot fulfil the proposed lower limit values and will have to be redesigned and very high costs may be incurred. A substantial redesign may be necessary to adhere to other legislation e.g. concerning available space for insulation. A further reduction as proposed in the ODELIA report offers a limited additional benefit over the already strict Stage II limits while incurring significant engineering costs to the manufacturers.	FEM proposal is to keep current OND stage II limit value. The test code should refer to EN 13000	
53. Tower cranes		96+Ig P	Annex III, Part B, item 53: basic emission standard EN ISO 3744:1995		96+Ig P	EN 14439:2010	Considering the environment in which tower cranes are used, their operating time and the level of noise emitted during operation, tower cranes have a very low environmental noise impact.			The test code should refer to EN 14439. As a general statement, FEM believes that the Internal Market objective of the OND can be achieved at a lower cost for OEM, notably by enabling self-certification for both Article 12 and Article 13 equipment	
								EN 14339:2009	No economic impact as limits stay the same.		
107. Portal cranes for harbor & terminals	out of scope		out of scope	move to article 13		EN German standard DIN 45635 T 61	Portal cranes for harbours and terminals should not be included in the scope. These machines are typically used in restricted harbor areas with low impact on the population. The ODELIA study significantly overstates the existing population of portal cranes in harbours.	EN German standard DIN 45635 T 61 may be used to define microphone positions and test cycle. Test code and practical execution of the test are an issue.15011	Additional regulatory and administrative burden and cost of testing machines	Do not include in the scope. Test Code EN 15011	
12. Construction winches (with electric motor)	Article 13		Annex III, Part B, item 12: basic emission standard ISO 3744:1995	no change		no change	This equipment should be removed from the OND scope due to the very low number of pieces of this equipment on the market and very limited environmental impact. The estimated population is highly questionable: ODELIA estimates it to 26000 units, while only some hundreds equipment are present on the market.			Do not include in the scope. For construction winches EN 14492-2 [Annex NGL Building Hoist] is recommended.	
								N/A	No benefit to regulate this product in the OND.		
117. Straddle carriers	trucks for container handling out of scope		out of scope	P ≤ 55 kW	102	ODELIA proposed to integrate in equipment no. 36 (lift trucks) and used respective test code of current OND	These machines are typically used in restricted freight container handling areas with low impact on the population	PEMA std	Introduction of new limits and caused a second amount of major R&D investments for re-design of straddle carriers and reach stackers in respect to noise due to the expected application date of the revised OND. At that date the integration of NRMM Stage V (2016/1628) engines will be in place.	Do not include in the scope	
			P > 55 kW	83+11*Ig P	a (lift) 0,2 b (idle) 0,3 c (drive) 0,5						
118. Reach stackers	trucks for container handling out of scope		out of scope	P ≤ 55 kW	102	ODELIA proposed to integrate in equipment no. 36 (lift trucks) and used respective test code of current OND	These machines are typically used in restricted freight container handling areas with low impact on the population		EN 12053	Do not include in the scope	
			P > 55 kW	83+11*Ig P							