C.C.JENSEN

Replace Your Centrifugal Separator with CJC®

and get up to 2% CII improvement

Engine Lube Oil Filtration

CJC® Engine Lube Oil Filter solutions for 2- & 4- Stroke Engines
- be in compliance with IMO Decarbonization Targets.

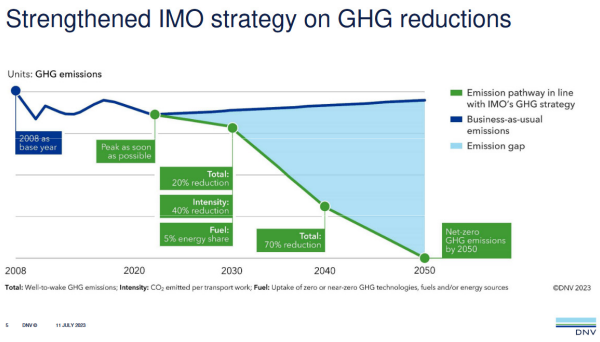
IMO Decarbonization Targets
EEXI, EEDI & CII

IMO Targets

The International Maritime Organization (IMO) has set ambitious decarbonisation targets for the shipping industry, with key compliance dates rapidly approaching.

By 2030, the IMO aims to reduce carbon emissions per transport work from vessels by at least 40% compared to 2008 levels.

This objective is to be pursued alongside a complete (100%) reduction in greenhouse gas (GHG) emissions on a well-to-wake basis by 2050, as established during the recent MEPC 80 session.



Revolutionary Technology
for 2- and 4-Stroke Engines

Replace your Centrifugal Separator with CJC®

C.C.JENSEN A/S, Headquartered in Svendborg, Denmark, the leader and the expert with over 70 years of experience in offline oil filtration, offers a revolutionary technology designed to replace traditional centrifugal separators.

This technology is developed for both 2-stroke and 4-stroke engines running on all fuel types, significantly reducing OPEX costs associated with maintaining engine lube oil in proper condition, with a return on investment (ROI) typically achieved in less than a year.

CJC® Engine Lube Oil Filters typically consume only 3% of the energy required by a centrifugal separator. This results in a substantial reduction in CO_2 emissions and extends the life of the oil in a more sustainable manner.

Benefits

- Up to 2% CII improvement
- 97% energy savings
- 97% CO_2 reduction
- Up to 60% less oil consumption
- 99% lube oil sludge reduction
- Increased oil & component lifetime
- Increased operational reliability & availability
- Reduced maintenance costs

CJC® Engine Lube Oil Filter

CJC® Filter Inserts

Customer Case

MR Tanker, MAN 6S 50MC-C with 11,640 kW

An example of a 46,921 DWT MR Tanker, with three different trading area scenarios:

- Between EU/EEA and non-EU/EEA Ports
- Within EU/EEA Ports
- Outside EU/EEA Ports

The vessel operates on HFO with Daily Fuel Oil Consumption of 23.6 MT at Sea at 13 knots & 5.25 MT at Port/Anchorage.

Savings by installing CJC® Lube Oil Filter:

- Power consumption ..... 639.91 MWh/year
- Fuel for energy ..... 81.94 MT/year
- % Total L.O. reduction
  - Main Engine ..... 27.16 %
  - Aux. Engine ..... 51.20 %
- Desludge of Centrifugal Separator
  - Lube Oil ..... 3,247 ltr/year
- Sludge production ..... 11,122 ltr/year

Annual CO_2 Savings =
255 tonnes CO_2 / year

IMAGINE

if you install CJC® on your ENTIRE FLEET of e.g. 40 vessels =

10,200 tonnes CO_2 / year

The table below provides a detailed breakdown of the initial investment, annual savings, EU ETS Allowance savings, FuelEU Maritime savings, and the payback period across three different operational scenarios:

- Between EU/EEA & non-EU/EEA Ports
- Within EU/EEA Ports
- Outside EU/EEA Ports

This analysis highlights how the CJC® Engine Lube Oil Filter delivers both cost savings and environmental benefits under varying operational conditions, offering a clear return on investment. By optimising fuel efficiency and reducing emissions, the CJC® Engine Lube Oil Filter not only lowers operating costs but also supports compliance with EU emission regulations.

	Annual savings with CJC®	ETS EU Allowance savings	FuelEU Maritime savings	Payback Period
Between EU/EEA & non-EU/EEA Ports	72,364 USD	8,549 USD	2,401 USD	**0.58 year**
Within EU/EEA Ports	83,314 USD	17,098 USD	4,802 USD	**0.51 year**
Outside EU/EEA Ports	61,414 USD	0.00 USD	0.00 USD	**0.69 year**

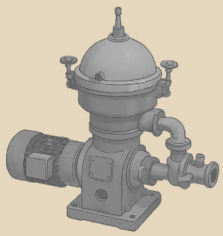
CII Rating - Centrifug

Based on 2024 data, the table below illustrates the annual savings in fuel oil consumption and the improvement in the Carbon Intensity Indicator (CII) achieved by replacing the traditional Lube Oil Centrifuge with the CJC® Engine Lube Oil Filter. These figures are expected to remain consistent in 2025, provided the vessel maintains the same trading patterns.

The blue column represents 150 sailing days, corresponding to actual annual Main Engine Running Hours of 3,600 RHS. Under typical sea-going conditions at 13 knots, the tanker consumes 23.6 metric tonnes of fuel oil per day, and 5.25 metric tonnes per day while in port.

The table presents savings across various trading scenarios, ranging from 100 to 200 sailing days, underscoring the significant impact of the CJC® Engine Lube Oil Filter on fuel consumption and overall operational efficiency.

Based on year 2025



CII Rating -

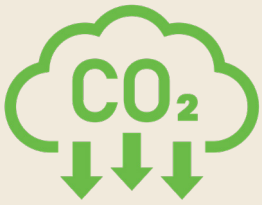
Sailing Days	100	115	130	140
Port Days	265	250	235	225
Distance	31,200	35,880	40,560	43,680
Total FOC, MT	3,751	4,027	4,302	4,485
CO_2 Emissions	11,682	12,540	13,397	13,968
Attained CII	7.98	7.45	7.04	6.82
CII Rating	**D**	**D**	**C**	**C**

CII Rating -

Sailing Days	100	115	130	140
Port Days	265	250	235	225
FOC Savings, MT	100.51	94.94	89.37	85.66
FOC, %	2.68%	2.36%	2.08%	1.91%
Total FOC, MT	3,651	3,932	4,212	4,400
CO_2 Emissions	11,369	12,244	13,119	13,702
Attained CII	7.77	7.27	6.89	6.69
CII Rating	**D**	**C**	**C**	**C**

al Separators vs CJC®

By switching from the traditional Lube Oil Centrifuge to the CJC® Engine Lube Oil Filter, you are not only enhancing your vessel's performance but also contributing to a more sustainable and environmentally friendly shipping industry.



WITH **Lube Oil Centrifuge**

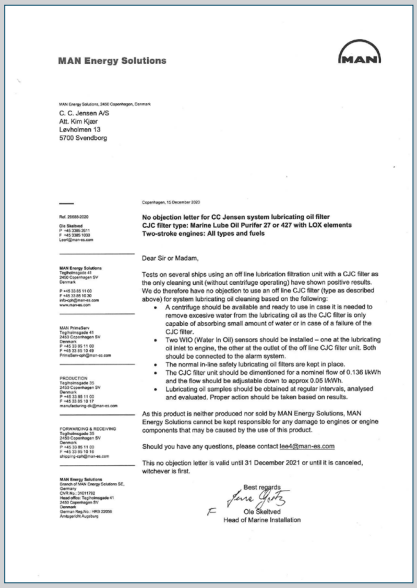
145	155	165	180	190	200	150
220	210	200	185	175	165	**215**
45,240	48,360	51,480	56,160	59,280	62,400	**46,800**
4,577	4,761	4,944	5,219	5,403	5,586	**4,669**
14,254	14,826	15,397	16,254	16,826	17,397	**14,540**
6.72	6.53	6.37	6.17	6.05	5.94	**6.62**
C	**C**	**C**	**B**	**B**	**B**	**C**

WITH **CJC® Engine Lube Oil Filter**

145	155	165	180	190	200	150
220	210	200	185	175	165	**215**
83.80	80.09	67.37	70.80	67.09	63.38	**81.94**
1.83%	1.68%	1.54%	1.36%	1.24%	1.13%	**1.76%**
4,493	4,680	4,868	5,148	5,336	5,523	**4,587**
13,993	14,576	15,159	16,034	16,617	17,200	**14,285**
6.59	6.42	6.28	6.08	5.97	5.87	**6.51**
C	**C**	**B**	**B**	**B**	**B**	**C**

OEM Approvals benefitting both OEM & End-user

No Objection Letter - signed by **MAN Energy Solutions**



MAN Energy Solutions

C. C. Jensen A/S
Att. Kim Kjær
Løvholmen 13
5700 Svendborg

Copenhagen, 13 December 2023

No objection letter for CC Jensen system lubricating oil filter
CJC filter type: Marine Lube Oil Purifier 27 or 427 with LOX elements
Two-stroke engines: All types and fuels

Dear Sir or Madam,

Tests on several ships using an off line lubrication filtration unit with a CJC filter as the only cleaning unit (without centrifuge operating) have shown positive results. We do therefore have no objection to use an off line CJC filter (type as described above) for system lubricating oil cleaning based on the following:

- A centrifuge should be available and ready to use in case it is needed to remove excesive water from the lubricating oil as the CJC filter is only capable of absorbing small amount of water or in case of a failure of the CJC filter.
- Two WID (Water In Oil) sensors should be installed – one at the lubricating oil inlet to engine, the other at the outlet of the off line CJC filter unit. Both should be connected to the alarm system.
- The normal in-line safety lubricating oil filters are kept in place.
- The CJC filter unit should be dimentioned for a nominel flow of 0.136 l/kWh and the flow should be adjustable down to approx 0.05 l/kWh.
- Lubricating oil samples should be obtained at regular intervals, analysed and evaluated. Proper action should be taken based on results.

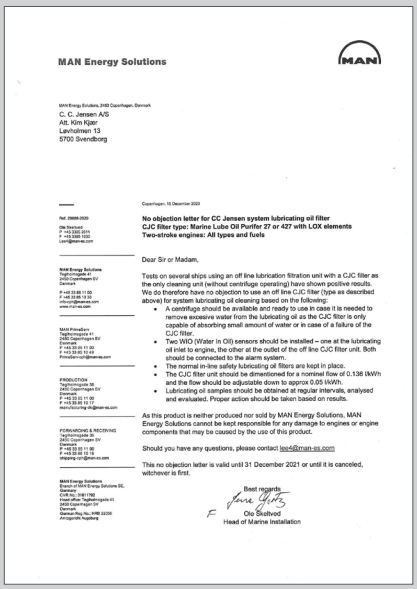
As this product is neither produced nor sold by MAN Energy Solutions, MAN Energy Solutions cannot be kept responsible for any damage to engines or engine components that may be caused by the use of this product.

Should you have any questions, please contact lee4@man-es.com

This no objection letter is valid until 31 December 2021 or until it is canceled, witchever is first.

Best regards

Ole Skelved
Head of Marine Installation



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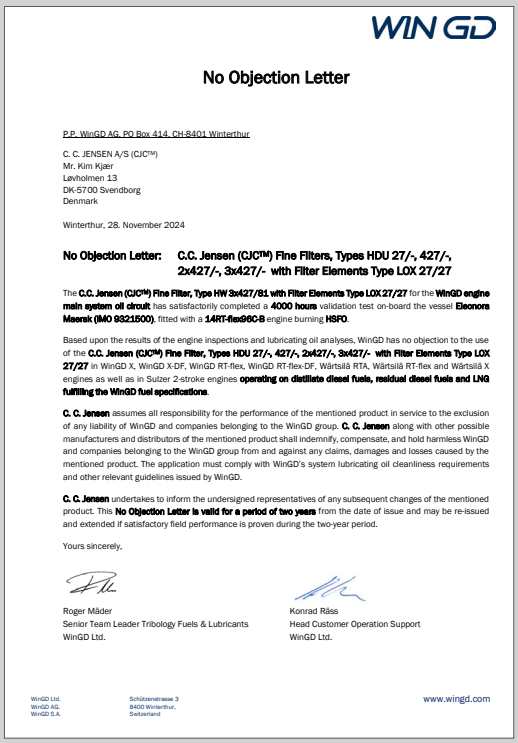
Ole Skelved
Head of Marine Installation

NOLs for 2- & 4-stroke engines.



WIN GD

No Objection Letter

P.P. WinGD AG, PO Box 414, CH-8401 Winterthur

C. C. JENSEN A/S (CJC™)
Mr. Kim Kjær
Løvholmen 13
DK-5700 Svendborg
Denmark

Winterthur, 28. November 2024

No Objection Letter: C.C. Jensen (CJC™) Fine Filters, Types HDU 27/-, 427/-, 2x427/-, 3x427/- with Filter Elements Type LOX 27/27

The **C.C. Jensen (CJC™) Fine Filter, Type HW 3x427/81 with Filter Elements Type LOX 27/27** for the **WinGD engine main system oil circuit** has satisfactorily completed a **4000 hours** validation test on-board the vessel **Eleonora Maersk (IMO 9321500)**, fitted with a **14RT-flex96C-B** engine burning **HSFO**.

Based upon the results of the engine inspections and lubricating oil analyses, WinGD has no objection to the use of the **C.C. Jensen (CJC™) Fine Filter, Types HDU 27/-, 427/-, 2x427/-, 3x427/- with Filter Elements Type LOX 27/27** in WinGD X, WinGD X-DF, WinGD RT-flex, WinGD RT-flex-DF, Wärtsilä RTA, Wärtsilä RT-flex and Wärtsilä X engines as well as in Sulzer 2-stroke engines **operating on distillate diesel fuels, residual diesel fuels and LNG fulfilling the WinGD fuel specifications**.

C. C. Jensen assumes all responsibility for the performance of the mentioned product in service to the exclusion of any liability of WinGD and companies belonging to the WinGD group. **C. C. Jensen** along with other possible manufacturers and distributors of the mentioned product shall indemnify, compensate, and hold harmless WinGD and companies belonging to the WinGD group from and against any claims, damages and losses caused by the mentioned product. The application must comply with WinGD's system lubricating oil cleanliness requirements and other relevant guidelines issued by WinGD.

C. C. Jensen undertakes to inform the undersigned representatives of any subsequent changes of the mentioned product. This **No Objection Letter is valid for a period of two years** from the date of issue and may be re-issued and extended if satisfactory field performance is proven during the two-year period.

Yours sincerely,

Roger Mäder
Senior Team Leader Tribology Fuels & Lubricants
WinGD Ltd.

Konrad Räss
Head Customer Operation Support
WinGD Ltd.

WinGD Ltd.
WinGD AG.
WinGD S.A.

Schützenstrasse 3
8400 Winterthur,
Switzerland

www.wingd.com

No Objection Letter - signed by **WinGD**

NOL for 2-stroke Engines based on a 4000 hour test onboard ELEONORA MAERSK. CJC® Engine Lube Oil Filter and CJC® Filter Insert Type LOX installed on the lube oil system of the WinGD Main Engine.

Global Marine Team
C.C.JENSEN

The Team is ready to calculate YOUR Savings - *just call us!*

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Watch the video about our
CJC® Engine Lube Oil Treatment Solutions

Made in Denmark

Supporting the Entire World with Clean Oil

Find your nearest
C.C.JENSEN Expert at
www.cjc.dk/contact

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