

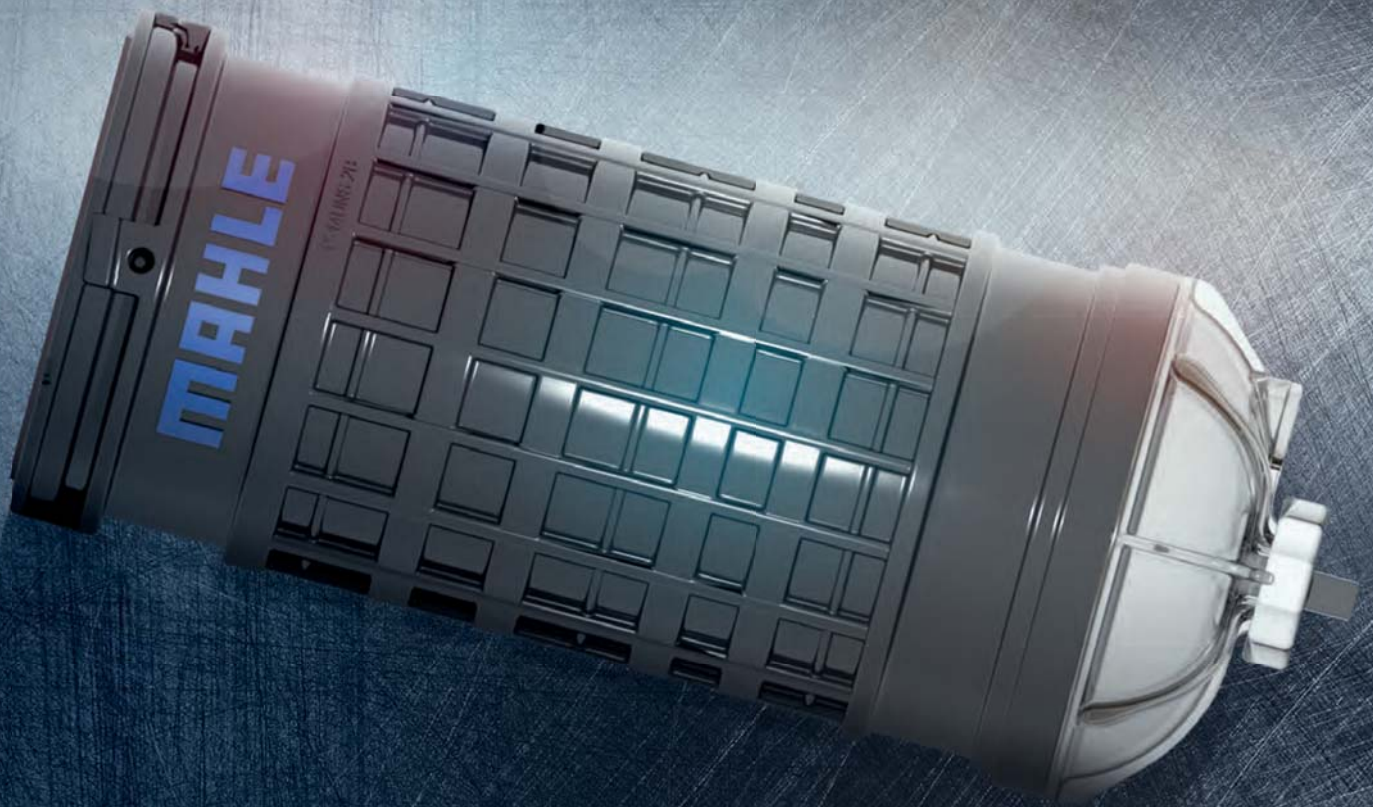
MAHLE

Driven by performance

BLINDAGUA FILTER: HIGHER WATER SEPARATION EFFICIENCY.

FILTER

AFTERMARKET



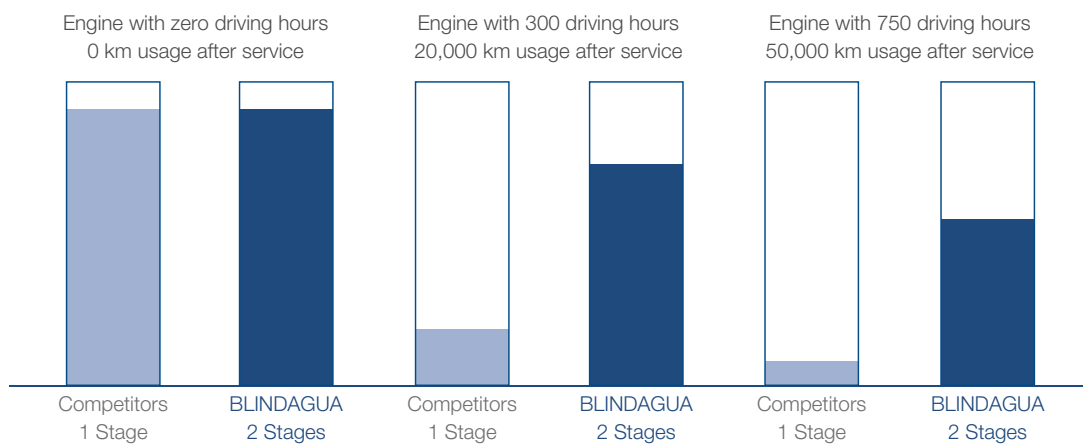
MAHLE[®]
ORIGINAL

Diesel water separation efficiency

Usage condition	Conventional Filter (1 stage)	BLINDAGUA Filter (2 stages)
New filter	Higher than 96%	Higher than 96%
After field test	Up to 15%	Higher than 70%

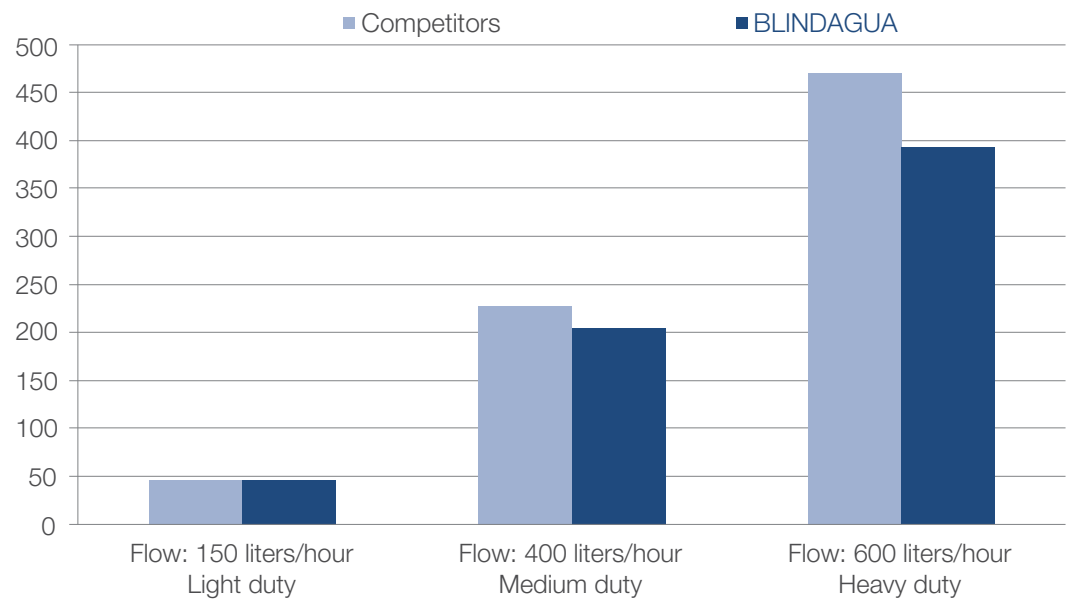
Percentage of removed water from diesel

The BLINDAGUA 2-stage improved performance over competitions filters is proportional to the usage time.



New filter obstruction/clogging

The BLINDAGUA 2-stage higher contaminant filtration efficiency reduces the obstruction level in any vehicle category.

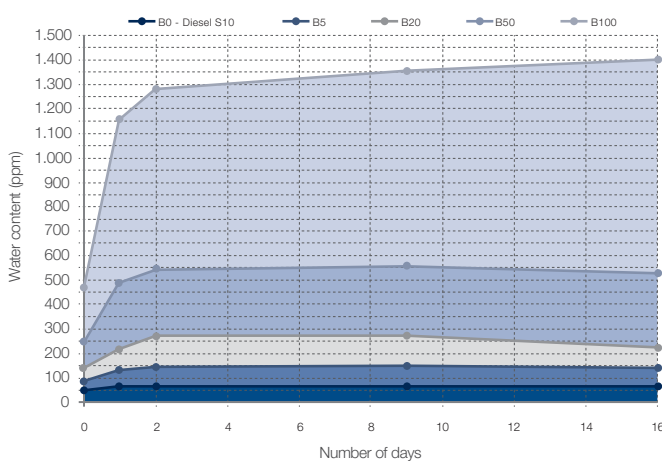


BLINDAGUA Filter: The solution to a constant threat.

Diesel has a natural tendency to absorb water – which in Brazil is further enhanced by biodiesel blending and its percentage increase at gas station diesel in the last years. Higher water absorption characteristic means higher water content and higher level of intrinsic water, increasing the water separation difficulty. Water in diesel needs to be removed, as its presence causes injection system components degradation. Fuel pumps, injection nozzles, valves and fuel line components are affected by water presence.

Intrinsic water quantity in diesel according to the biodiesel content and days in the laboratory.

Higher biodiesel percentage in the diesel means higher percentage of intrinsic water in the diesel.

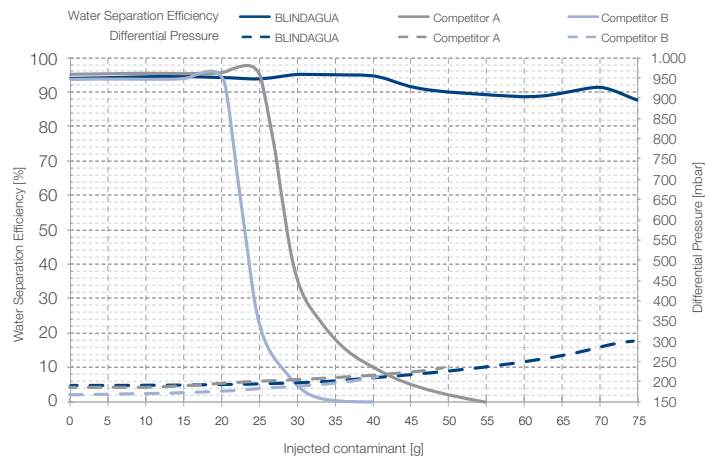


In addition, water in diesel contributes to the microbiological growth. When the water is not removed from diesel, microbiological agents have the ideal conditions for fast proliferation, clogging filtration system and causing problems to the final customer.

With its unique dual-stage filtering, the BLINDAGUA Filter provides the most efficient solution to this challenge.

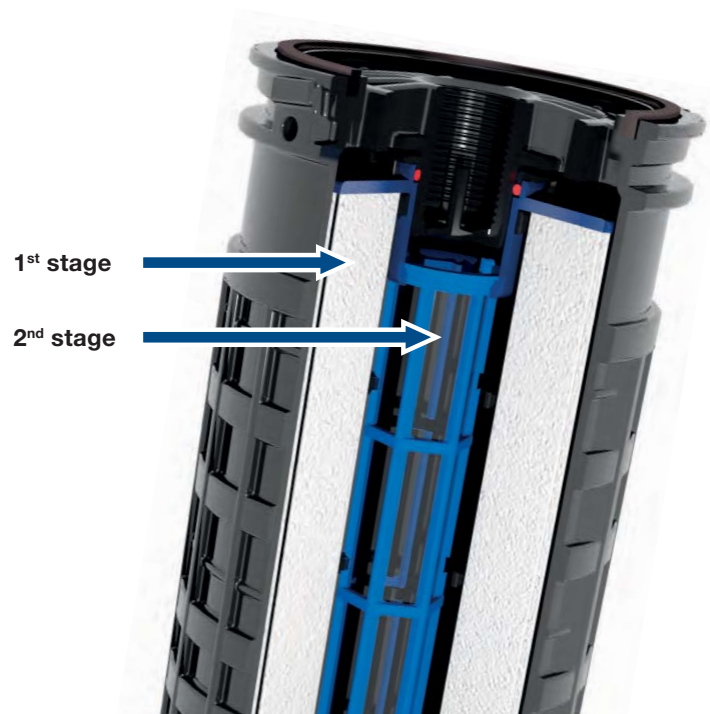
Water separation efficiency - laboratory contamination.

Comparison between three systems: MAHLE, Competitor A, and Competitor B. The BLINDAGUA 2-stage filtering system keeps water separation level in high levels even under high contamination condition.



Advantages of BLINDAGUA Filter

- Unique in the market with dual-stage water separation in diesel pre-filter.
- Higher water separation efficiency.
- Three times more water separation during its lifetime.
- Increased engine injection system protection due to its improved water separation performance.
- Lower maintenance costs with injectors and fuel pumps.
- High-strength polyamide body with integrated transparent water reservoir.
- Lower cost per kilometer.
- Multi-application – reduced number of references.



Characteristics and Correlations

MAHLE BLINDAGUA P/N	Height (mm)	Thread	BLINDAGUA filter characteristics	MAHLE P/N	PARKER P/N	M+H P/N	OEM P/N
KC573	160	1"14 UNS-2B	Armored with drain and cup WITH NO thread for sensor input.	KC437	RC347AQ	WK1124	VW: 2R0127177A MWM: 905411510023
				KC122	R6010M	WK1040	FORD: BF8X9155AA MBB: A3760927001 MWM: 905411510020 VW: 2RP127491
				KC121; KC121/1	R4510M	WK1030	FORD: BF8TB55AA MWM: 905411510019 VW: 2RD127491
				KC127	R6010HP	WK1156/1	MBB: A3760927301
KC574	220	1"12 UNF-2B	Armored with drain and cup WITH NO thread for sensor input.	KC125; KC125/1	R9030MB	WK1050/1	MBB: A4570920001
				KC126; KC126/1	R12030MB	WK1060	MBB: A3844777015
				-	R12010MBAQII	WK1050/2 WK1060/4	MBB: A9794770015 MBB: A9584770115
				KC497D	R9010MBAQII	-	IVECO: 503103529
KC607	270	1"14 UNS-2B	Armored with drain and cup WITH thread for sensor input.	-	R12010MBAQII	PF420	MBB: A9794770015 MBB: A9584770115 MBB: A9584700290 FORD: T22VA FORD: BHOX9N074AA FORD: 9C459C340AB
Armored with drain and cup WITH NO thread for sensor input.			KC123; KC123/1	R9010M	WK1060/2	VOLVO: 3989632 VOLVO: 20569040	
			-	R12010M	WK1060/2	SCANIA: 1518512	
			KC124; KC124/1	R9030M	WK1060/1	SCANIA: 1393640 VOLVO: 8159975	
KC597D		1"14 UNS-2B	Armored WITH NO glass, filter body only.	KC498D	R90HDPVOL	WK11001x	VOLVO: 20879812 VOLVO: 21380488
KC571*	270	1"12 UNF-2B	Armored with drain and cup WITH NO thread for sensor input.	KC501D	R120L10MBAQII	-	MBB: A9584770015
KC608			Armored with drain and cup WITH thread for sensor input and plug.	KC501D	R120L10MBAQII	-	MBB: A9584770015
KC539*		1"14 UNS-2B	Armored with drain and cup WITH NO thread for sensor input.	KC500D**	R120L10MAQII	-	IVECO: 5801403243 VW: 2R0127177C VOLVO: 20741196
				-	R120LJ10MAQII	-	-
	-			R120L30HP	-	SCANIA: 1860912	
	KC128			R9010HP	WK1156	MBB: A4760927201 MBB: A4760907402 VW: 2TB127491	
KC595	1" 16 UNS-2B	Armored with drain and cup WITH thread for sensor input and plug.	-	R120L30M	-	VOLVO: 11110189	
			-	R120LJ10MAQII	-	VW: 2R0127177J	
KC572		1" 16 UNS-2B	Armored with drain and cup WITH thread for sensor input.	-	R120L4MCJAQIII	-	MBB: A6884770015

* KC539 replaced by KC595 // KC571 replaced by KC608

** Available in Latin America (except Argentina)

2-stage: a new concept with proven results.

The MAHLE Group is launching an innovative filtration concept: the BLINDAGUA Filter. It was specially developed to respond to a challenge of the automotive sector: water presence in diesel fuel. The results are outstanding in comparison to another available filtration systems.

Higher water separation efficiency

Conventional filtration systems are usually designed based on a single stage concept.

Tests have shown that when filters are exposed to contaminants, the water separation efficiency decreases from its original condition, close to 96%, to levels below 15%. In order to improve this condition, the BLINDAGUA Filter concept performs filtration function in two stages:

1ST STAGE - Contaminant filtration and water droplets size increase.

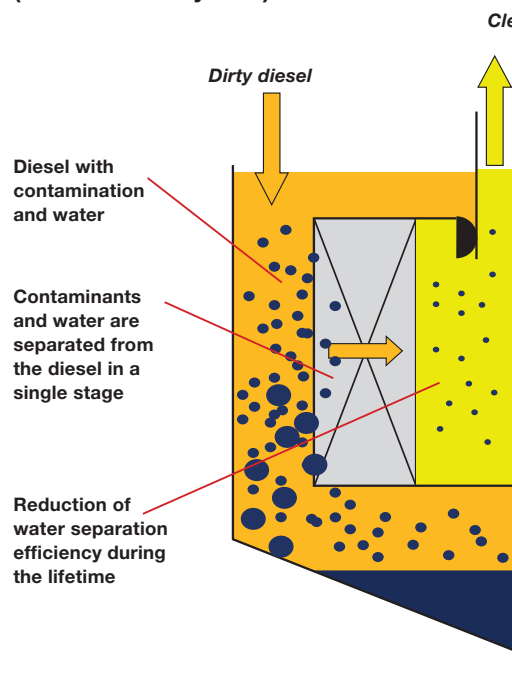
2ND STAGE - Separation of big water droplets without contamination.

In this way, even tiny water droplets present in diesel are separated by the two stages concept in individual steps. In addition, as contaminant is retained in the first stage, the final water separation function is done safe in the second stage, ensuring high performance throughout BLINDAGUA Filter lifetime.

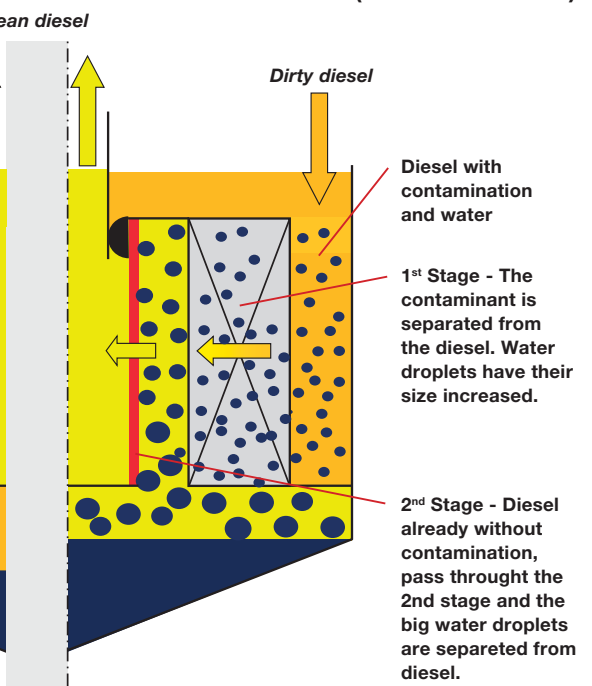
Field and laboratory tests were done in order to check and confirm 2-stage new concept advantages in the medium and long term: after initial filtration condition, the BLINDAGUA Filter water separation efficiency was confirmed to be superior in comparison to conventional systems.

Comparison between the conventional and MAHLE concepts for water separators

Single-stage water separation (Conventional System)



Two stage water separation (BLINDAGUA Filter)



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