# SCRT<sup>®</sup> Technology for NO<sub>x</sub> reduction



## Public Transport Buses



#### HJS at a Glance



HJS Emission Technology GmbH & Co. KG, medium-sized and privately-owned. Founded in 1976. Headquarters: 58706 Menden, Germany. Employees: 500. Business fields: Exhaust-gas after treatment. Design, development, production and marketing of modular systems for reducing pollutant emissions.

The innovative environmental protection technologies are used either as original equipment or for retrofitting in passenger cars, commercial vehicles as well as in a wide range of non-road applications. In addition to systems for spark-ignition engines, HJS specializes in systems for diesel engines, predominantly for reducing the emissions of soot particles (PM) and (NO<sub>X</sub>) nitrogen oxides.

All systems meet the statutory requirements and are certified in accordance with the valid licensing regulations. URL: www.his.com

#### An eventful history

1975	1982	1992	1995	1996 •	1998	1999 •	2000	2001
Established by Hermann Josef Schulte Installation materials Exhaust systems	Three-way catalytic converters for petrol engines	Emission reduction technology for diesel engines	Market launch in cooperation with Johnson Matthey of the UK of CRT filter systems (Continuous Regeneration Technology) for reducing diesel emissions	Retrofit catalytic converter KAT-2000 "Automechanika Preis" award for innovative automotive technology developments	Acquisition of silencer manufacturer Schmid / Donzdorf Presentation of SCRT® system (SCRT® = particulate reduction + NO <sub>X</sub> reduction for diesel engines) "BDI-Preis" for SCRT® system (Selective Catalytic	Market launch of closed-loop catalytic converters for retrofit applications in Beijing, China	Founding of joint venture with PUREM for development of diesel exhaust reduction systems for commercial vehicle applications (DaimlerChrysler / HJS)	SCRT® patent co-owned with (HJS/ Johnson Matthey)
	$\mathbb{N}_{2}$		120		Reduction Technology)			

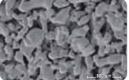
### Core Competence SMF® – Sintered Metal Filter



Step 1: For further processing the high alloy metal powder is mixed with a binder



Step 2: The pourable powder mix is applied to reinforcing expanded metal



Step 3: After the sintering process the powder particles are bonded with each other and the expanded metal



Step 4: Sheets are punched out of the porose metal foil and reinforced with a hem band



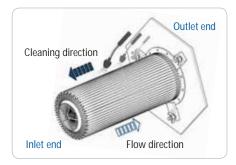
Step 5: A spacer is inserted into the filter pocket for stabilization purposes



#### Filter cleaning easy "DIY"

Filter system must not be replaced. Only filter units have to be demounted and to be cleaned with a normal steam blower. (10 minutes)





2002	2003	2005	2006	2008	2010	2011	2012
Launch of sintered metal diesel particulate filter (Jetfilter®) - HJS grants licence for passenger car applications to Robert Bosch	Deutscher Umweltpreis 2003 (German Environmental Award)	Founding of subsidiary Diesel Exhaust Systems – diesel emission reduction technologies for commercial vehicle and non-road applications.	"Germany – Land of Ideas" initiative sponsored by German government selects HJS as a landmark in the "Land of Ideas" for development of innovative and efficient Diesel Particulate Filter (DPF®) made of sintered metal. Sales cooperation between DES and MANN+HUMMEL – diesel emission reduction technologies for multiple non-road applications in international markets.	Non-road exhaust systems – HJS patent	Launch of autarkic "Standalone Exhaust-gas Afertreatment" for mobile machinery and stationary applications at bauma 2010	Founding of Indian subsidiary HJS India, Pvt. Ltd.	MAN Truck & Bus Supplier Award



### SCRT® for public transport buses

Soot particles have been able to be filtered from diesel exhaust gases, down to the limit of detection, with the aid of an HJS sintered metal filter (SMF<sup>®</sup>) for some time now. But it's not just particulate matter that pollutes the environment and damages people's health: gaseous substances such as nitrogen oxides are also harmful. In order to reduce the levels of these gases, HJS has contributed to the development of the SCRT<sup>®</sup> (Selective Catalytic Reduction Technology) system. SCRT<sup>®</sup> combines a diesel particulate filter with an SCR unit for controlling nitrogen oxides. New buses that are already fitted with particulate filters can be retrofitted with an SCR unit to create an SCRT<sup>®</sup> system. Likewise, older vehicles without an exhaust treatment system can be retrofitted with an SCRT<sup>®</sup> system. SCRT<sup>®</sup> is currently the most effective and state-of-the-art exhaust-gas after treatment technology available.

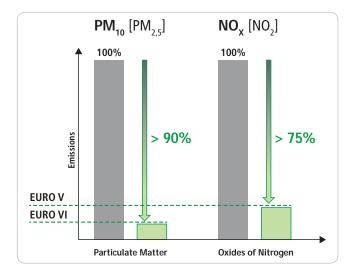
# Better emission class – from Euro III to Euro V and EEV with SCRT $\ensuremath{^{\circledast}}$

The SCRT<sup>®</sup> system reduces not only soot and fine particulate matter in diesel exhaust emissions right down to the delectability threshold, but also nitrogen oxide emissions by up to 90 per cent, as well as emissions of the remaining gaseous pollutants. Euro-III buses, for example, that have undergone an SCRT<sup>®</sup> retrofit comply with the Euro-V and even the EEV standard.

This new generation of exhaust-gas after treatment systems enables bus manufacturers and local authority fleet operators to comply with the globally applicable exhaust emissions legislation of the future right now.

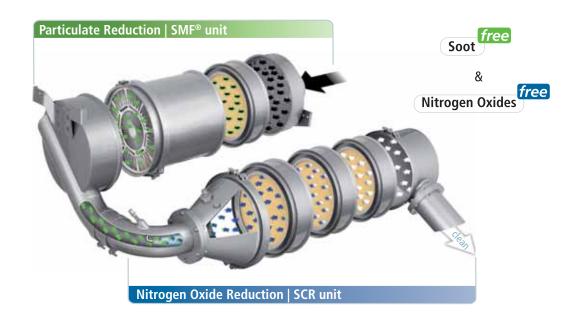


Retrofit – Efficiency SCR + DPF® Systems



#### SCRT® benefits at a glance

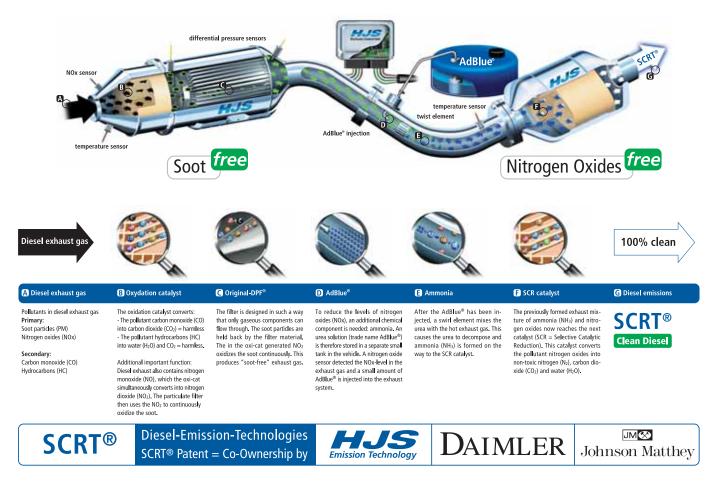
- ✓ Retrofitting of EURO II and EURO III city buses
- ✓ SCRT<sup>®</sup> satisfies emission classifications Euro V and EEV
- ✓ Modular design with SMF<sup>®</sup> and SCR unit
- ✓ Absolutely low-maintenance and economical





### The World's cleanest Diesel!

#### Engineering - SCRT<sup>®</sup> (Selective Catalytic Reduction Technology) (Technology for PC- and CV-applications)



#### **References SCRT®**

Customers	Units	Туре
Connexxion, NL	230	Citaro, Volvo, VDL
Tfl, London	10	Dennis, Scania, Volvo
Arriva	100	King Long, Citaro, MAN
Berlin	100	MAN A39 Dupple Deck
Puplic Transport Germany	210	Citaro, MAN, Solaris
EMT, Madrid	485	Citaro, MAN, Iveco, Scania



Euro III -> EEV/Euro V



### **Delivery range HJS**

#### EEV-BUS-Solutions with 100% SMF® - Sintered Metal Filter

- ✓ EvoBus Citaro G 457 hLA
- EvoBus Citaro S 906 hLA / 906 LA
- MAN A 23 (D2866)
- Volvo 8700 BLE DH12D340
- ✓ VDL Ambassador SB 200 ISBe 22030

#### Dennis Dart Euro III with Cummins 4 Cylinder

- ✓ SOLARIS URBINO (D2866)
- ✔ Dennis Dart Cummins ISBe 4
- Dennis Trident Cummins ISBe 6
- ✓ SCANIA Omnicity
- ✓ IVECO City class Cursor



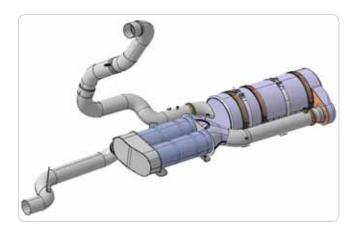
#### Dennis Trident Euro III with Cummins 6 Cylinder





Volvo Gemini B7TL







### Certificates

	MLTB CYCLE DIESEL	MILLEROO	ec .			MLTB CYCLE DIES	EL	MILLEROOK
	ONS TEST SUMMARY SHEET	-			EMISS	IONS TEST SUMMAI		
Customer:	HJS Emission Technology				Customer:	HJS Emission Tech		
Customer Address:	Dieselweg 12, 58706 Menden, Germany				Customer Address:		6 Menden, Germany	
Test Purpose:	SCRT System Demonstration on Wrightbus Vo	2 DYNAMOMETER SETTINGS			Test Purpose: Vehicle No:	SCRT Demonstratio	on on Wrightbus Volvo Site No.	2 DYNAMOMETER SETTINGS
Vehicle No: Vehicle Type:	LF52 USU Site No. 2 Wrightbus Volvo B7TL	INERTIA 14,643 kg			Vehicle Type:	Wrightbus Volvo B7TL		INERTIA 14,643 kg
Engine:	Volvo	F° 454.65 N F1 -8.9610 N/kml			Engine: Transmission:	Volvo Auto		F° 454.65 N F1 -8.9610 N/kmh
Transmission: Fuel Type:	Auto Diesel	F <sup>2</sup> 0.43618 N/km <sup>2</sup>	2		Fuel Type:	Diesel		F <sup>2</sup> 0.43618 N/kmh <sup>2</sup>
Fuel Batch No: Millbrook Project No:	EN590 Compliant PT0204-002-03	F <sup>a</sup> -0.0014030 N/kmh	1.0		Fuel Batch No: Milbrook Project No:	EN590 Compliant PT0204-002-03		F <sup>3</sup> -0.0014030 N/kmh <sup>3</sup>
minorook riopas no.								
					Test No. ML0201248	51 10-Jul-12		Fuel Cons
Test No. ML0201245 Odo 368141		O2 PM (Carb Bal)			Odo 368189	UNITS HC	CO NOx	CO2 PM (Carb Bal)
Phase 1 Outer Londo	n g/km 1.269 1.185 129	95.0 0.013 48.99			Phase 1 Outer Lond Phase 2 Inner Lond		9.801 9.806 13.973 13.996	1229.7 1.016 47.03 1642.0 1.447 62.85
Phase 2 Inner Londo Combined result		03.7 0.015 64.51 08.0 0.014 litres/100km			ombined result	g/km	10.974 10.984	1345.6 1.137 litres/100km 51.48
		53.28						
Test No. ML0201245	7 10-Jul-12				Test No. MI.020124	52 10- Jul-12		Fuel Cons
Odo 368153	UNITS HC CO NOx						0 NOx 72 9.904	CO2 PM (Carb Bal) 1241.4 1.030 47.49
Phase 1 Outer Londo Phase 2 Inner Londo		MILLBROOK	VEHICLE E	MISSIONS I	LABORATO	<b>)RY</b> mk45 2jq	77 14.230	1654.0 1.442 63.31 1357.1 1.146 litres/100km
Combined result	g/km 1.559 1.447							51.92
		TfL	NOx Abatement	I rial Results Su	mmary Sheet		-	
Test No. ML0201246	0 10-Jul-12	Customer:	IS Emission To 1	nology				
Odo 368165	UNITS HC CO NOx		HJS Emission Tech SCRT System Demo		is Dart			
Phase 1 Outer Londo Phase 2 Inner Londo			Fest Vehicle	Baseline Vehicle				
Combined result	g/km 1.394 1.495		RD02 BJK	RD02 BJK		neter Settings		
			Dennis Dart Cummins ISBe	Dennis Dart Cummins ISBe	Inertia F°	8,488 kg 220.94 N		
		Transmission:	Auto	Auto	F1	9.121 N/kmh	71 11.051	1351.4 1.141 51.70
August 10	and (allow)		Diesel 2T0204-002-04	Diesel PT0204-002-04		0.03120 N/kmh <sup>2</sup> 0.000630 N/kmh <sup>3</sup>		0.43 0.37 0.43
Average of Combined T Standard Deviation/Mea								
		Test No. 112032,033,035		Baseline	e Test	]		
		Date 17/2/12	NOx NO <sub>2</sub>	N <sub>2</sub> O CH	4 CO <sub>2</sub> C	O 2eq NH 3		
Comments:		Units: Analyser:	g/km g/km Modal FTIR	g/km g/km FTIR FTIR		g/km ppm (max) Iculated FTIR		
Compiling Engineer:	Date: Approving E 11-July-2012	Phase 1 Outer London	9.67 0.49	0.00 0.00	890.1	1.21 0.6	Approving Eng	gineer: Date:
/	11-July-2012	Phase 2 Inner London Combined result	18.02 0.85 12.03 0.60	0.01 0.00		1.59 0.5 1.32 0.6		1
This summary :	heet shall not be reproduced in part without the written a					,	thout the written con	roval of Millbrook Proving Ground Ltd.
Issue No.	Effective Date: 07-Jun-11	Test No. 112032,033		With NOx Abate	ement Device		tive Date: Jun-11	POF00 Page 1 of
-	07-300-11	Date 17/2/12	NOx NO <sub>2</sub>	N <sub>2</sub> O CH	4 CO2 C	O 2eq NH 3	-500-11	rage I of
		Units: Analyser:	g/km g/km Bag FTIR	g/km g/km FTIR FTIR		g/km ppm (max) Iculated FTIR		
		Phase 1 Outer London	3.23 0.24	0.07 0.00	869.8 2	2.77 26.5		
			5.50 0.37	0.10 0.00				
		Phase 2 Inner London Combined result	5.50 0.37 3.87 0.28	0.10 0.00 0.08 0.00	) <u>1175.2</u> 3 ) <u>956.0</u> 2	2.01 7.0 25.38 26.5		
					) <u>1175.2</u> 3 ) <u>956.0</u> 2	2.01 7.0		
		Combined result	3.87 0.28	0.08 0.00	) <u>1175.2</u> 3 ) <u>956.0</u> 2	2.01 7.0 25.38 26.5		
<u></u>		Combined result	3.87 0.28	0.08 0.00	) <u>1175.2</u> 3 ) <u>956.0</u> 2	2.01 7.0 25.38 26.5		
	MLTB CYCLE DIESEL	Combined result Change vs Baseline	3.87 0.28 -67.8% -53.7% NOx NO <sub>2</sub> g/km g/km	0.08 0.00 1821% 0.0%	0 1175.2 3 0 956.0 2 % -2% 18	2.01 7.0 25.38 26.5	EL	MILLINGON
	IONS TEST SUMMARY SHEET	Combined result Change vs Baseline	3.87         0.28           -67.8%         -53.7%           NOx         NO2           g/km         g/km           Bag         FTIR	0.08 0.00 1821% 0.0%	0 1175.2 3 0 956.0 2 % -2% 18	12.01         7.0           15.38         26.5           121.5%         4573%		MELEROOM
Customer:	HJS Emission Technology	Combined result Change vs Baseline	3.87 0.28 -67.8% -53.7% NOx NO <sub>2</sub> g/km g/km	0.08 0.00 1821% 0.0%	0 1175.2 3 0 956.0 2 % -2% 18	12.01         7.0           15.38         26.5           121.5%         4573%	RY SHEET	MELEROOM
Customer: Customer Address:	IONS TEST SUMMARY SHEET HJS Emission Technology Dieselweg 12, 58706 Menden, Germany	Combined result Change vs Baseline Units Analyzer Target Reduke Lint	3.87         0.28           -67.8%         -53.7%           NOx         NO <sub>2</sub> g/km         g/km           Bag         FTR           -70%         -50%           3.608         0.30	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           %         -2%         18           EMISSI           Customer:         Customer Address:	12:01         7.0           15:38         26.5           12:1.5%         4573%   MLTB CYCLE DIES ONS TEST SUMMAI HJS Emission Tech Dieselweg 12, 5870	RY SHEET nnology 16 Menden, Germany	MILLEROOM
Customer:	HJS Emission Technology	Combined result Change vs Baseline Units Analyse Target Rotative Limit Combined result	3.87         0.28           -67.8%         -53.7%           NOx         NO2           g/km         g/km           Bag         FTR           -70%         -50%           3.608         0.30           3.867         0.28           107%         93%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           %         -2%         18           EMISSI           Customer.           Customer.         Customer Address:           Test Purpose:         Test Purpose:	12.01         7.0           15.38         26.5           121.5%         4573%	RY SHEET nnology 16 Menden, Germany onstration on Dennis D	Iart, SCRT Injection 0.92
Customer: Customer Address: Test Purpose: Vehicle No: Vehicle Type:	IONS TEST SUMMARY SHEET HJS Emission Technology Dieselweg 12, 58706 Menden, Germany SCRT System Demonstration. Baseline D R002 BJK Site No. Dennis Durt Site No.	Combined result Change vs Baseline Units Analyzer Target Reduke Lint	3.87         0.28           -67.8%         -53.7%           NOx         NO <sub>2</sub> g/km         g/km           Bag         FTIR           -70%         -50%           3.608         0.30           3.867         0.28	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           %         -2%         18           EMISSI           Customer:         Customer Address:	12:01         7.0           15:38         26.5           121:5%         4573%           MLTB CYCLE DIES           ONS TEST SUMMAI           HJS Emission Tect         Dieselweg 12, 5870           Dieselweg 12, 5870         SCRT System Dem           R002 BJK         Demnis Dart	RY SHEET nnology 16 Menden, Germany	2 DYNAMOMETER SETTINGS INERTIA 8,488 kg
Customer: Customer Address: Test Purpose: Vehicle No: Vehicle Type: Engine: Transmission:	IONS TEST SUMMARY SHEET HJS Emission Technology Disselweg 12, 58706 Menden, Germany SCRT System Demonstration. Baseline D R002 BJK. Dennis Dart Cummins ISBe Auto Auto	Combined result Change vs Baseline Units Analyse Target Rotative Limit Combined result	3.87         0.28           -67.8%         -53.7%           NOx         NO2           g/km         g/km           Bag         FTR           -70%         -50%           3.608         0.30           3.867         0.28           107%         93%	0.08 0.00 1821% 0.0%	1175.2         3           9         956.0         2           %         -2%         16   EMISSI Customer: Customer: Customer Address: Test Purpose: Verice No:	12:01         7.0           15:38         26.5           12:1.5%         4573%	RY SHEET nnology 16 Menden, Germany onstration on Dennis D	2 DYNAMOMETER SETTINGS
Customer: Customer Address: Test Purpose: Vehicle No: Vehicle Type:	IONS TEST SUMMARY SHEET HJS Emission Technology Dieselweg 12, 58706 Menden, Germany SCRT System Demonstration. Baseline D R002 BJK Dennis Dart Cummins St8e Auto Dessel Dessel	Combined result Change vs Baseline Units Analyse Target Rotative Limit Combined result	3.87         0.28           -67.8%         -53.7%           NOx         NO2           g/km         g/km           Bag         FTR           -70%         -50%           3.608         0.30           3.867         0.28           107%         93%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           0         956.0         2           W         -2%         16   EMISSI Customer Customer Customer Customer TeatPurpose Yathon ho Yathis Type Empiric Transmissor Transmissor Fuel Type	12:01         7.0           15:38         26.5           15:38         26.5           12:1.5%         4573%   MLTB CYCLE DIES ONS TEST SUMMAI HJS Emission Tech Dieselweg 12, 5870 SCRT System Dem RD02 BJK Dennis Dart Cummins SBe Auto Diesel Diesel	RY SHEET nnology 16 Menden, Germany onstration on Dennis D	2 DYNAMOMETER SETTINGS NERTIA 8,488 kg F° 220,94 N F° 9.1210 N/kmh F² 0.03120 N/kmh ²
Customer: Customer Address: Test Purpose: Vehicle No: Vehicle Type: Engine: Transmission: Fuel Type:	IONS TEST SUMMARY SHEET HJS Emission Technology Disselweg 12, 58706 Menden, Germany SCRT System Demonstration. Baseline D R002 BJK. Dennis Dart Cummins ISBe Auto Auto	Combined result Change vs Baseline Units Analyser Tarpet Relative Line Combined result PassiFail	3.87         0.28           -67.8%         -53.7%           NOx         NO2           g/km         g/km           Bsg         FTR           -70%         -50%           3.860         0.30           107%         93%           Fail         Pass	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           %         -2%         18   EMISSI Customer: Customer Address: Customer Address: Test Purpose: Unitia No: Venina Tipe Engine Engi	12:01     7.0       15:38     26.5       121:5%     4573%   MLTB CYCLE DIES ONS TEST SUMMAI HJS Emission Tect Dieselweg 12, 8870 SCRT System Dem RD02 BJK Dennis Dart Cummins ISBe Auto	RY SHEET nnology 16 Menden, Germany onstration on Dennis D	2 DYNAMOMETER SETTINGS INERTIA 8,488 kg F° 220.94 N F1 9.1210 N/kmh
Customer: Customer Address: Test Purpose: Vehicle Type: Engine: Transmission: Fuel Type: Fuel Batch No:	IONS TEST SUMMARY SHEET HJS Emission Technology Disselweg 12, 58706 Menden, Germany SCRT System Demonstration. Baseline D Rob2 BJK Rob2 BJK Cummins ISBe Auto Desel ENS90 Compliant	Combined result Change vs Baseline Units Analyse Target Rotative Limit Combined result	3.87         0.28           -67.8%         -53.7%           MOx         NO2           ghm         ghm           Bag         FTR           -70%         -50%           3.860         0.30           3.87         0.28           107%         93%           Fail         Pass           d during test ML020120:         10/20120:	0.08 0.00 1621% 0.04 N, C 200 200 200 200 200 200 200 20	1         175.2         3           0         1956.0         2           %         -2%         18   EMISSI Customer: Customer: Customer Address: Test Pupose: Venice No: Venice No: Venice No: Testminuter: Testminuter: Fast Type: Empose Testminuter: Fast Type: Fast Typ	12:01     7.0       15:38     26.5       121:5%     4573%   MLTB CYCLE DIES ONS TEST SUMMAI HJS Emission Tect Diseselwegin 12, 5870 SCRT System Dem RD02 BJK Demnis Dart Demnis Dart Demnis Dart Desel ENS90 Compliant ENS90 Compliant	RY SHEET nnology 16 Menden, Germany onstration on Dennis D	2 DYNAMOMETER SETTINGS INERTIA 8,488 kg F° 220,94 N F° 9.1210 N/kmh F² 0.03120 N/kmh ²
Customer: Customer Address: Test Purpose: Vehicle No: Vehicle Type: Engine: Transmission: Pail Type: Pail Type: Pail Type: Pail Type: Mittrook Project No: Test No: <i>ML020120</i>	IN TEST SUMMARY SHEET  HJS Emission Technology Dieselweg 12, 58706 Menden, Germany SCRT System Demonstration. Baseline D R002 BJK Dennis Dart Cummins ISBe Auto Desel ENS90 Compliant PT0204-002-04  Iz 17-Feb-12	Combined result Change vs Baseline Change vs Baseline Unite Analyse Target Relative Limit Combined result Pass/Fail Baseline FTIR data measure CO2 equivalence factors: Combined	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           %         -2%         18   EMISSI Customer: Customer Address: Test Purpose Undea No: Ventea Type Engree Eng	12:01     7.0       15:38     26.5       121:5%     4573%   MLTB CYCLE DIES ONS TEST SUMMAI HJS Emission Tect Disesiveg 12, 5870 SCRT System Dem RD02 BJK Dennis Dart Cummins ISBe Auto Detesel ENS90 Compliant PT0204-002-04	RY SHEET nnology 16 Menden, Germany onstration on Dennis D	2 DYNAMOMETER SETTINGS NERTIA 8.488 kg F <sup>2</sup> 220.94 N F <sup>2</sup> 9.1210 Nkmh 7 F <sup>3</sup> 0.3320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0006300 Nkmh <sup>1</sup>
Customer: Customer Address: Test Purpose: Varies No: Varies No: Parentation: Par	IONS TEST SUMMARY SHEET HJS Emission Technology Dieselweg 12, 58706 Menden, Germany SCRT System Demonstration. Baseline D R022 BJK Dennis Dat Cummins ISBe Auto Diesel EW990 Compliant PT0204-002-04 IZ 177-Feb-12 UNITS HC CO NOX	Combined result Change vs Baseline Unit: Analyse: Target Reside Linit Combined result Pass/Fall Baseline FTIR data measure CO2 equivalence factors:	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -67.8%         -53.7%           -00x         phm           ghm         ghm           ghm         ghm           0.01         50%           3.860         0.30           3.867         0.28           107%         93%           Fail         Pass           d during test ML020120:         CO2 1.1           CO2 1.1         N20 3.2           DDT 3         DDT 3	0.08 0.00 1821% 0.0%	1         175.2         3           0         1956.0         2           %         -2%         18   EMISSI Customer: Customer: Customer Address: Test Pupose: Venice No: Venice No: Venice No: Testminuter: Testminuter: Fast Type: Empose Testminuter: Fast Type: Fast Typ	12:01         7.0           15:38         26.5           15:38         26.5           121:5%         4573%   MLTB CYCLE DIES ONS TEST SUMMAI HJS Emission Tect Dieselweg 12, 5870 SCRT System Dem RD02 BJK Dennis Dart Cummins ISBe Auto Diesel ENS90 Compliant PT024-002-04 2 17-Feb-12	RY SHEET Inology I6 Menden, Germany Onstration on Dennis D Site No. CO NOX	2 DYNAMOMETER SETTINGS NERTIA 8.488 kg F <sup>2</sup> 2204 N F <sup>2</sup> 9.1210 Nkmh F P 0.03120 Nkmh <sup>3</sup> P <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> F <sup>4</sup> 0.0005300 Nkmh <sup>3</sup>
Customer: Customer Address: Test Purpose: Variats No: Variats Type: Transmission: Test No: ML020120 Odo 14681 Phase 1 Outricols Phase 1 Outricols Phase 1 Outricols	IONS TEST SUMMARY SHEET           HJS Emission Technology           Disselweg 12, 58706 Menden, Germany           SCRT System Demonstration. Baseline C           R028 B/K           Cummins St8e           Auto           Diesel           EN599 Compliant           PT0204-002-04	Combined result Change vs Baseline Change vs Baseline Unit: Anagev Target Relative Limit Combined result Pass/Fail Baseline FTIR data measure CO2 equivalence factors: Compiling Engineer: D1.5 n/a 45.85	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           %         -2%         18   EMISSI Customer Customer Customer Customer Customer Customer Engen	12:01         7.0           15:38         28.5           15:38         28.5           15:38         28.5           State         4573%   MLTB CYCLE DIES ONS TEST SUMMAI HJS Emission Tech Dieselweg 12, 5870 SCRT System Dem RD02 B/K Dennis Dart Cummins ISBe Auto Diesel EM990 Compliant PT0204-002.04  2 17:Feb-12 UNITS HC 0,017	RY SHEET Inology If 6 Monden, Germany Onstration on Dennis D Site No. Site No. CO NOx 0.068 3.270	2 DVHAMOMETER SETTINGS nerrita 8,488 ig P <sup>-</sup> 22034 Nerh P <sup>-</sup> 0.31210 Nerh P <sup>-</sup> 0.3320 Nerh <sup>3</sup> P <sup>-</sup> 0.0065300 Nerh <sup>3</sup> P <sup>-</sup> 0.0006300 Nerh <sup>3</sup> P <sup>-</sup> 0.0006300 Nerh <sup>3</sup>
Customer: Customer Address: Test Purpose: Varies No: Varies No: Parts No: Net Tree: Net Tree: Net Black No: Millbrock Project No: Test No: ML020722 Phate 1 Outr Loss Phate 1 Outr Loss	IONS TEST SUMMARY SHEET           HJS Emission Technology           Diseelweg 12, 58706 Menden, Germany           SCRT System Demonstration. Baseline C           R028 B/K           Dennis Dart           Cummins ISBe           Auto           Diseel           EN590 Compliant           PT0204-002-04	Combined result Change vs Baseline Units Analyzer Target Restitut Lant Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer:	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	1         177.5.2         3           0         956.0         2           %         -2%         18           EMISSI           Customer         Customer           Customer         Customer           Customer Address:         Test Propos:           Venice Type:         Equit Type:           Equit Type:         Equit Type:           Test No. ML.2021203         Odo           Odo         14581	12:01         7.0           15:38         28.5           15:38         28.5           15:38         28.5           State         4573%   MLTB CYCLE DIES ONS TEST SUMMAI HJS Emission Tech Dieselweg 12, 5870 SCRT System Dem RD02 B/K Dennis Dart Cummins ISBe Auto Diesel EM990 Compliant PT0204-002.04  2 17:Feb-12 UNITS HC 0,017	RY SHEET Inology If 6 Monden, Germany Onstration on Dennis D Site No. Site No. CO NOx 0.068 3.270	2 DVHAMOMETER SETTINGS MERTIX 8,488 kg P 22054 MRmh P 0.31210 Nkmh P 0.3320 Nkmh <sup>3</sup> P 0.0005300 Nkmh <sup>3</sup> F <sup>2</sup> 0.0005300 Nkmh <sup>3</sup> Set 0.0004 22.82 1183.4 0.104 44.70 895.5 0.0051 ktras <sup>2</sup> 100m
Customer: Customer Address: Test Purpose: Variats No: Variats Type: Transmission: Test No: ML020120 Odo 14681 Phase 1 Outricols Phase 1 Outricols Phase 1 Outricols	IONS TEST SUMMARY SHEET           HJS Emission Technology           Disselweg 12, 58706 Menden, Germany           SCRT System Demonstration. Baseline C           R028 B/K           Cummins St8e           Auto           Diesel           EN599 Compliant           PT0204-002-04	Combined result Change vs Baseline Change vs Baseline Units Analyzer Target Rester Last Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer: Compling Engineer: S1.9 n/a Utesv100km	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	1         175.2         3           2         956.0         2           %         -2%         18           EMISSI           Customer:           Customer:           Customer Address:           Exit Purpose:           Variat Purpose:           Variat Purpose:           Customer Address:           Exit Purpose:           Treamision:           Exit Maco Pope fre:           Test No. ML2021203           Cdo 14581           Phate 1         Outer Colspan="2">Colspan="2"	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           State         4573%   MLTB CYCLE DIES ONS TEST SUMMAP HJS Emission Tech Dieselweg 12, 5970 SCRT System Dem RD02 BJK Denis Dart Cummins ISBe Auto Diesel Diesel ENS90 Compliant ENS90 Compliant ENS90 Compliant ENS90 Compliant ENS90 Compliant Oncode Cummins ISBe Auto Diesel Diesel ONCODE           2         77-Feb-12           UNITS         HC oo gkm<0.014	RY SHEET Inology If Menden, Cermany Onstration on Dennis D Site No. Site No. CO NOx 0.068 3.270 0.087 5.580	2 DYNAMOMETER SETTINGS NERTH 8.488 kg F <sup>2</sup> 2204 N F <sup>2</sup> 9.1210 Nkmh <sup>3</sup> F <sup>3</sup> 0.3320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup>
Customer: Customer Address: Test Pupose: Varies No: Varies Type: Engine: Tratemission: Tatemission: Tatemission: Tatemission: Test No: AtL/20120 Displace 1: Combined result Test No: AtL/20120	IONS TEST SUMMARY SHEET           HJS Emission Technology           Diseelweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline E           R022 BJK           Dennis Dart           Cummins St8e           Auto           Diesel           EX930 Comptiant           P77024002.04           2           177-Feb-12           0           0/ml T5           0           g/km           0.304           4.998           11.518           17	Combined result Change vs Baseline Units Analyzer Target Restine Line Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer: Compling Engineer: D1.5 n/a Utes/105km 37.24 Fuel Cons	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	1175.2         3           986.0         2           %         -2%         18   EMISSI Customer Address: Customer Address: Customer Address: Test Purpose: Venice No: Venice No: Venice No: Englistication Fault tipe: Fault tipe: Fault tipe: Test No: ML0207203 Odo 14581 Phase 2 more Loads Combined result	12:01         7.0           15:38         76.5           121:5%         457.3%           MLTB CYCLE DIES ONS TEST SUMMAI HJB Emission Tect Disselweg 12, 5870           SCRT System Dem RD02 BJK Dennis Dart Cummins ISBe Auto Desel         12, 5870           Dennis Dart Cummins ISBe Auto Desel         12, 5870           Dense Compliant PT0204-002-04         12, 11           2         17.Feb-12           UNITS         HC           a gkm         0.016	RY SHEET Inology If Menden, Cermany Onstration on Dennis D Site No. Site No. CO NOx 0.068 3.270 0.087 5.580	2 DYNAMOMETER SETTINGS Nerrta 8.488 kg F <sup>2</sup> 2204 N F <sup>2</sup> 0.3210 Nkmh <sup>3</sup> F <sup>3</sup> 0.3220 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup>
Customer	IONS TEST SUMMARY SHEET           HJS Emission Technology           Diseelweg 12, 58706 Monden, Germany           SCRT System Demonstration. Baseline D           RD02 BJK         Site No.           Dennis Dart         Cummins Site           Auto         Disei           Diseid Comptiant         Pr7024002.04           2         177-Feb-12           0 g/km         0.357         7.195           0.3024         4.998         11.818         977           13         17-Feb-12         CO         NOx         CC           0 y/km         0.357         7.195         17.598         320           0 y/km         0.357         7.195         17.898         320           0 y/km         0.357         7.195         17.898         320           0 y/km         0.304         4.998         11.818         977	Combined result Change vs Baseline Change vs Baseline Units Analyser Target Restrice Line Controlined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer: Compling Engineer: D15 n/a Utser100sm 37.24 D2 P4 Cons 02 P4 Cons 03.37.2 D2 P4 Cons 03.37.2 D3 n/a 33.72 D3	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16   EMISSI Customer: Customer: Customer: Customer: Customer: Transmission: Fuel Type: Eval Type: Combined result Test No. ML0201203 Odo 14591 Combined result Test No. ML0201203 Odo 14591	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           ONS TEST SUMMAI         HJS Emission Tech           Disselweg 12, 25870         SCRT System Dem           RD2 BJK         Dennis Dart           Cummins S38         Cummins S38           Auto         Diesei           Diesei         D017           a gkm         0.014           gkm         0.016           3         17.7eb-12           UNITS         HC	CO         NOx           0.085         3.270           0.085         3.270           0.085         3.220	2 DYHAMOMETER SETTINGS NERTIA 8.468 kg F <sup>2</sup> 220 4 Nm F <sup>2</sup> 0.31210 Nkmh <sup>3</sup> F <sup>2</sup> 0.03120 Nkmh <sup>3</sup> F <sup>2</sup> 0.0068300 Nkmh <sup>3</sup> F <sup>2</sup> 0.0068300 Nkmh <sup>3</sup> CO2 PM (Canh Bai) 88:0 0.044 42:70 1183.4 0.104 44:70 1183.4 0.104 Fell Cons CO2 PM (Canh Bai)
Customer: Customer Address: Test Purpose: Variab No: Variab Type: Transmissor: Tail Type: Transmissor: Tail Type: Tail Buch No: Millionak Project No: Millionak Project No: Test No: MIL020720 Odo 14681 Phate 1 Our Low Combined result Test No. MIL0207100 Odo 14691	IONS TEST SUMMARY SHEET           HJS Emission Technology           Diseelweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline E           R022 BJK           Densis           Cummins Ste           Auto           Diseel           Diseel           27 17-Feb-12           or           g/km           0.3324           4.199           556           g/km           0.3324           11.618           977           13           17-Feb-12           or           0.3324           1.178           0.324           1.178	Combined result Change vs Baseline Change vs Baseline Units Analyser Target Restive Line Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	1         1175.2         3           0         956.0         2           %         -2%         18   EMISSI Customer Customer Customer Customer Customer Engre Eng	12:01         7.0           15:30         26.5           121:5%         4573%           MLTB CYCLE DIES           ONS TEST SUMMAI           HJS Emission Tech           Disselweg 12, 5870           SCRT System Dem.           R022 B/K           Dennic Dart           Cummins ISBe           Auto           Deesel           ENS90 Compliant           P70204-002-04           2           17.Feb-12           UNITS           m           gkm         0.016           3         17.Feb-12           UNITS         HC           m         gkm         0.016	CO         NOx           0.066         3.270           0.067         5.580           0.076         3.920	2 DVHAMOMETER SETTINGS herrin 8,488 ig P 22034 h P 22034 h P 22034 h P 203120 h P 0.03220 h P 0.03220 h P 0.0005300 h P 0.0005300 h P 0.0005300 h P 0.0005300 h P 0.000530 h P 0.000530 h P 0.0005 h P
Customer: Customer Address: Test Purpose: Varies No: Varies Type: Engree: Transmissor: Fait Type: Test No: MIL020120 Odo 14581 Phase 2 mori Lons Combined result Test No. MIL020120 Test No: MIL020120 Test No: MIL020120 Test No: MIL020120 Combined result	NONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Beneils Dart           Cammins ISBe           Aute           Diesel/colspan="2">Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Pennis Dart           Cammins ISBe           Aute           Diesel           Pr0204-002-04           Pr0204-002-04           T7-Feb-T2           Qhm         0.337           3         17-Feb-12           UNITS         HC           O         NOX           City         Qhm           0.337         17.195           13         17-Feb-72           UNITS         HC           O         NOX           Corr         Qhm           0.344         1908           11.158         115	Combined result           Change vs Baseline           Change vs Baseline           Unite           Audyre           7arget           Rotative Linit           Combined result           PassiFail           Baseline FTIR data measure           CO2 equivalence factors:           Compling Engineer:           21.9           7.6           0.5           0.5           1.9           0.5           1.9           Compliant           Control           0.5           1.9	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           %         -2%         18   EMISSI Customer. Customer. Customer. Customer. Customer. Customer. Customer. Customer. East Purpos. Fast Purpos. Fast Purpos. Fast Purpos. Fast Purpos. Fast Purpos. Fast Purpos. Continuent result. Test No. ML.0207203 Continuent result. Customer Custo	12:01         7.0           15:30         26.5           121:5%         4573%           MLTB CYCLE DIES           ONS TEST SUMMAI           HJS Emission Tech           Disselweg 12, 5870           SCRT System Dem.           R022 B/K           Dennic Dart           Cummins ISBe           Auto           Deesel           ENS90 Compliant           P70204-002-04           2           17.Feb-12           UNITS           m           gkm         0.016           3         17.Feb-12           UNITS         HC           m         gkm         0.016	CO         NOx           0.066         3.270           0.067         5.580           0.076         3.920	2         DYHAMOMETER SETTINGS           NERTIA         8.488 kg           F <sup>2</sup> 2204 N           F <sup>2</sup> 9.1210 Nkmh <sup>2</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> B50.0         0.044           S20.1         Fuel Cons           (Carb Bal)         (Garb Bal)           B57.5         0.061           B70.6         0.032           S2.8         1167.0           854.5         0.048           B654.5         0.048
Customer: Customer Address: Test Purpose: Varies No: Varies Type: Engree: Transmissor: Fait Type: Test No: MIL020120 Odo 14581 Phase 2 mori Lons Combined result Test No. MIL020120 Test No: MIL020120 Test No: MIL020120 Test No: MIL020120 Combined result	NONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Beneils Dart           Cammins ISBe           Aute           Diesel/colspan="2">Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Pennis Dart           Cammins ISBe           Aute           Diesel           Pr0204-002-04           Pr0204-002-04           T7-Feb-T2           Qhm         0.337           3         17-Feb-12           UNITS         HC           O         NOX           City         Qhm           0.337         17.195           13         17-Feb-72           UNITS         HC           O         NOX           Corr         Qhm           0.344         1908           11.158         115	Combined result Change vs Baseline Change vs Baseline Units Analyser Target Restive Line Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16             EMISSI           Customer         Customer           Customer         Customer           Vales ho         Yates ho           Yates ho         2           Yates ho         3	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           0NS TEST SUMMAI         HJS Emission Tech           Dieselweg 12, 5870         SCRT System Dem           RD22 BJK         Oennis Dart           Cammin SBe         Auto           Diesel         Diesel           ENS90 Compliant         PT0204-002-04           2         17.Feb-12           UNITS         HC           a gkm         0.016           3         17.Feb-12           UNITS         HC           a gkm         0.016	CO         NOx           0.095         3.80	2         DYHAMOMETER SETTINGS           nerrtn         6.468 kg           F²         220 4Nmh           F²         0.3120 Nmh²           F²         0.3320 Nmh²           F²         0.0068300 Nmh²           F²         0.0006300 Nmh²           F²         0.0006300 Nmh²           F²         0.0006300 Nmh²           F2         0.0006300 Nmh²           F3         0.0006300 Nmh²           G02         PM           (Carb Ba)         56.16           C02         PM           (Carb Ba)         57.6           60.032         22.88           1167.0         0.098           44.8         44.8
Customer: Customer Address: Test Purpose: Varies No: Varies Type: Engree: Transmissor: Fait Type: Test No: MIL020120 Odo 14581 Phase 2 mori Lons Combined result Test No. MIL020120 Test No: MIL020120 Test No: MIL020120 Test No: MIL020120 Combined result	NONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Beneils Dart           Cammins ISBe           Aute           Diesel/colspan="2">Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Pennis Dart           Cammins ISBe           Aute           Diesel           Pr0204-002-04           Pr0204-002-04           T7-Feb-T2           Qhm         0.337           3         17-Feb-12           UNITS         HC           O         NOX           City         Qhm           0.337         17.195           13         17-Feb-72           UNITS         HC           O         NOX           Corr         Qhm           0.344         1908           11.158         115	Combined result Change vs Baseline Change vs Baseline Units Analyser Target Restive Line Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16             EMISSI           Customer         Customer           Customer         Customer           Vales ho         Yates ho           Yates ho         2           Yates ho         3	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           0NS TEST SUMMAI         HJS Emission Tech           Dieselweg 12, 5870         SCRT System Dem           RD22 BJK         Oennis Dart           Cammin SBe         Auto           Diesel         Diesel           ENS90 Compliant         PT0204-002-04           2         17.Feb-12           UNITS         HC           a gkm         0.016           3         17.Feb-12           UNITS         HC           a gkm         0.016	CO         NOx           0.095         3.80	2         DYHAMOMETER SETTINGS           NERTIA         8.488 kg           F <sup>2</sup> 2204 N           F <sup>2</sup> 9.1210 Nkmh <sup>2</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> B50.0         0.044           S20.1         Fuel Cons           G07.5         0.061           B75.5         0.061           B706         0.032           S2.88         1167.0           S45.5         0.048           B654.5         0.048
Customer: Customer Address: Test Purpose: Varies No: Varies Type: Engree: Transmissor: Fait Type: Test No: MIL020120 Odo 14581 Phase 2 mori Lons Combined result Test No. MIL020120 Test No: MIL020120 Test No: MIL020120 Test No: MIL020120 Combined result	NONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Beneils Dart           Cammins ISBe           Aute           Diesel/colspan="2">Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Pennis Dart           Cammins ISBe           Aute           Diesel           Pr0204-002-04           Pr0204-002-04           T7-Feb-T2           Qhm         0.337           3         17-Feb-12           UNITS         HC           O         NOX           City         Qhm           0.337         17.195           13         17-Feb-72           UNITS         HC           O         NOX           Corr         Qhm           0.344         1908           11.158         115	Combined result Change vs Baseline Change vs Baseline Units Analyser Target Restive Line Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16             EMISSI           Customer         Customer           Customer         Customer           Vales ho         Yates ho           Yates ho         2           Yates ho         3	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           0NS TEST SUMMAI         HJS Emission Tech           Dieselweg 12, 5870         SCRT System Dem           RD22 BJK         Oennis Dart           Cammin SBe         Auto           Diesel         Diesel           ENS90 Compliant         PT0204-002-04           2         17.Feb-12           UNITS         HC           a gkm         0.016           3         17.Feb-12           UNITS         HC           a gkm         0.016	CO         NOx           0.095         3.80	2         DYHAMOMETER SETTINGS           NERTIA         8.488 kg           F <sup>2</sup> 2204 N           F <sup>2</sup> 9.1210 Nkmh <sup>2</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> B50.0         0.044           S20.1         Fuel Cons           G07.5         0.061           B75.5         0.061           B706         0.032           S2.88         1167.0           S45.5         0.048           B654.5         0.048
Customer: Customer Address: Test Purpose: Varies No: Varies Type: Engree: Transmissor: Fait Type: Test No: MIL020120 Odo 14581 Phase 2 mori Lons Combined result Test No. MIL020120 Test No: MIL020120 Test No: MIL020120 Test No: MIL020120 Combined result	NONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Beneils Dart           Cammins ISBe           Aute           Diesel/colspan="2">Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Pennis Dart           Cammins ISBe           Aute           Diesel           Pr0204-002-04           Pr0204-002-04           T7-Feb-T2           Qhm         0.337           3         17-Feb-12           UNITS         HC           O         NOX           City         Qhm           0.337         17.195           13         17-Feb-72           UNITS         HC           O         NOX           Corr         Qhm           0.344         1908           11.158         115	Combined result Change vs Baseline Change vs Baseline Units Analyser Target Restive Line Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16             EMISSI           Customer         Customer           Customer         Customer           Vales ho         Yates ho           Yates ho         2           Yates ho         3	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           0NS TEST SUMMAI         HJS Emission Tech           Dieselweg 12, 5870         SCRT System Dem           RD22 BJK         Oennis Dart           Cammin SBe         Auto           Diesel         Diesel           ENS90 Compliant         PT0204-002-04           2         17.Feb-12           UNITS         HC           a gkm         0.016           3         17.Feb-12           UNITS         HC           a gkm         0.016	CO         NOx           0.095         3.80	2         DYHAMOMETER SETTINGS           NERTIA         8.488 kg           F <sup>2</sup> 2204 N           F <sup>2</sup> 9.1210 Nkmh <sup>2</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> B50.0         0.044           S20.1         Fuel Cons           G07.5         0.061           B75.5         0.061           B706         0.032           S2.88         1167.0           S45.5         0.048           B654.5         0.048
Customer: Customer Address: Test Purpose: Varies No: Varies Type: Engree: Transmissor: Fait Type: Test No: MIL020120 Odo 14581 Phase 2 mori Lons Combined result Test No. MIL020120 Test No: MIL020120 Test No: MIL020120 Test No: MIL020120 Combined result	NONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Beneils Dart           Cammins ISBe           Aute           Diesel/colspan="2">Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Pennis Dart           Cammins ISBe           Aute           Diesel           Pr0204-002-04           Pr0204-002-04           T7-Feb-T2           Qhm         0.337           3         17-Feb-12           UNITS         HC           O         NOX           City         Qhm           0.337         17.195           13         17-Feb-72           UNITS         HC           O         NOX           Corr         Qhm           0.344         1908           11.158         115	Combined result Change vs Baseline Change vs Baseline Units Analyser Target Restive Line Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16             EMISSI           Customer         Customer           Customer         Customer           Vales ho         Yates ho           Yates ho         2           Yates ho         3	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           0NS TEST SUMMAI         HJS Emission Tech           Dieselweg 12, 5870         SCRT System Dem           RD22 BJK         Oennis Dart           Cammin SBe         Auto           Diesel         Diesel           ENS90 Compliant         PT0204-002-04           2         17.Feb-12           UNITS         HC           a gkm         0.016           3         17.Feb-12           UNITS         HC           a gkm         0.016	CO         NOx           0.095         3.80	2         DYHAMOMETER SETTINGS           NERTIA         8.488 kg           F <sup>2</sup> 2204 N           F <sup>2</sup> 9.1210 Nkmh <sup>2</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> B50.0         0.044           S20.1         Fuel Cons           G07.5         0.061           B75.5         0.061           B706         0.032           S2.88         1167.0           S45.5         0.048           B654.5         0.048
Customer: Customer Address: Test Purpose: Varies No: Varies Type: Engree: Transmissor: Fait Type: Test No: MIL020120 Odo 14581 Phase 2 mori Lons Combined result Test No. MIL020120 Test No: MIL020120 Test No: MIL020120 Test No: MIL020120 Combined result	NONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Beneils Dart           Cammins ISBe           Aute           Diesel/colspan="2">Dieselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Pennis Dart           Cammins ISBe           Aute           Diesel           Pr0204-002-04           Pr0204-002-04           T7-Feb-T2           Qhm         0.337           3         17-Feb-12           UNITS         HC           O         NOX           City         Qhm           0.337         17.195           13         17-Feb-72           UNITS         HC           O         NOX           Corr         Qhm           0.344         1908           11.158         115	Combined result Change vs Baseline Change vs Baseline Units Analyser Target Restive Line Combined result PassiFail Baseline FTIR data measure CO2 equivalence factors: Compling Engineer: Compling Engineer	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16             EMISSI           Customer         Customer           Customer         Customer           Vales ho         Yates ho           Yates ho         2           Yates ho         3	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           0NS TEST SUMMAI         HJS Emission Tech           Dieselweg 12, 5870         SCRT System Dem           RD22 BJK         Oennis Dart           Cammin SBe         Auto           Diesel         Diesel           ENS90 Compliant         PT0204-002-04           2         17.Feb-12           UNITS         HC           a gkm         0.016           3         17.Feb-12           UNITS         HC           a gkm         0.016	CO         NOx           0.095         3.80	2         DYHAMOMETER SETTINGS           NERTIA         8.488 kg           F <sup>2</sup> 2204 N           F <sup>2</sup> 9.1210 Nkmh <sup>2</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> B50.0         0.044           S20.1         Fuel Cons           G07.5         0.061           B75.5         0.061           B706         0.032           S2.88         1167.0           S45.5         0.048           B654.5         0.048
Cuitomer: Cuitomer Address: Test Purpose: Varies No: Varies No: Varies No: Test Page: Engine: Test No: Mittook Puget No: Varies No: Mittook Puget No: Varies No: Mittook Puget No: Test No: Mittook Puget No: No: No: Mittook Puget No:	IONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58768 Menden, Germany           SCRT System Demonstration. Baseline D           Bonis Dart           Beneil Dart           Cummins ISBe           Aute           Briegel           ENS96 Compliant           PT0204-002-04           PT0204-002-04           PT0204-002-04           T7-Feb-T2           Om John           0.387           Jaylem           0.387           Jaylem           0.341           aylem           0.342           aylem           0.344           Jaylem           0.344           Jaylem           Jaylem           367           Jaylem           0.341           Jaylem           Jaylem           0.342           Jaylem           Jaylem           1.385           Jaylem           Jaylem           Jaylem           Jaylem           Jaylem           Jaylem           Jaylem	Combined result Change vs Baseline Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Target Restre Lint Combined result Combined result Combined result Dass(Fall Baseline FTIR data measure CO2 equivalence factors: Compiling Engineer: Unit Solution Dis Inia Unit Unit Eval Dis Inia Unit Unit Dis Inia Unit Dis In	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16             EMISSI           Customer         Customer           Customer         Customer           Vales ho         Yates ho           Yates ho         2           Yates ho         3	12:01         7.0           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           15:38         26.5           0NS TEST SUMMAI         HJS Emission Tech           Dieselweg 12, 5870         SCRT System Dem           RD22 BJK         Oennis Dart           Cammin SBe         Auto           Diesel         Diesel           ENS90 Compliant         PT0204-002-04           2         17.Feb-12           UNITS         HC           a gkm         0.016           3         17.Feb-12           UNITS         HC           a gkm         0.016	CO         NOx           0.095         3.80	2         DYHAMOMETER SETTINGS           NERTIA         8.488 kg           F <sup>2</sup> 2204 N           F <sup>2</sup> 9.1210 Nkmh <sup>2</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> B50.0         0.044           S20.1         Fuel Cons           G07.5         0.061           B75.5         0.061           B706         0.032           S2.88         1167.0           S45.5         0.048           B654.5         0.048
Customer: Customer Address: Test Purpose: Varies No: Varies No: Varies Type: Engine: Transmission: Test No: Mitbook Mitbook Test No: Mitbook Mitbook Phase 2 Inser Loss Phase 1 Customer Combined result Test No: Mitbook Mitbook Phase 2 Inser Loss Combined result	IONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58768 Menden, Germany           SCRT System Demonstration. Baseline D           Bonis Dart           Beneil Dart           Cummins ISBe           Aute           Briegel           ENS96 Compliant           PT0204-002-04           PT0204-002-04           PT0204-002-04           T7-Feb-T2           Om John           0.387           Jaylem           0.387           Jaylem           0.341           aylem           0.342           aylem           0.344           Jaylem           0.344           Jaylem           Jaylem           367           Jaylem           0.341           Jaylem           Jaylem           0.342           Jaylem           Jaylem           1.385           Jaylem           Jaylem           Jaylem           Jaylem           Jaylem           Jaylem           Jaylem	Combined result Change vs Baseline Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Target Restre Lint Combined result Combined result Combined result Dass(Fall Baseline FTIR data measure CO2 equivalence factors: Compiling Engineer: Unit Solution Dis Inia Unit Unit Eval Dis Inia Unit Unit Dis Inia Unit Dis In	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.0%	0         1175.2         3           0         956.0         2           0         956.0         2           %         -2%         18   EMISSI Customer Customer Customer Customer Customer Customer Customer Enges Enges Test Pail table Pail Enge Enges Testmentation Figure 100 Enges Enges Enges Testmentation Figure 200 Enges Enges Enges Testmentation Figure 200 Enges En	12:01         7.0           15:38         28.5           15:38         28.5           15:38         28.5           MLTB CYCLE DIES           ONS TEST SUMMAI           HJS Emission Tech           Dieselweg 12, 5870           SCRT System Dem           RD02 B/K           Dennis Dart           Cammins ISBE           Aute           Diesel -           F70204-002.04           2         17.Feb-12           UNITS         HG           g/km         0.014           g/km         0.016           3         17.Feb-12           UNITS         HC           g/km         0.006           n         g/km         0.004	CO         NOx           0.087         5.580           0.076         3.920	2         0YHAMOMETER SETTINGS           metrita         8,488 kg           F*         220 4N min           F*         9,1210 Nkmh ²           F*         0.0320 Nkmh ²           F*         0.0320 Nkmh ²           F*         0.006300 Nkmh ²           F*         0.0006300 Nkmh ²           F*         0.0006300 Nkmh ²           F*         0.0006300 Nkmh ²           F*         0.0006 Nkmh ²           F*         0.000 Nkmh ²
Cuitomer: Cuitomer Address: Test Purpose: Varies No: Varies No: Varies No: Test Page: Engine: Test No: Mittook Puget No: Varies No: Mittook Puget No: Varies No: Mittook Puget No: Test No: Mittook Puget No: No: No: Mittook Puget No:	IONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58768 Menden, Germany           SCRT System Demonstration. Baseline D           Bonis Dart           Beneis Dart           Cummins ISSe           Aute           Dieselweg 12, 58768 Menden, Germany           Stort System Demonstration. Baseline D           Peneis Dart           Cummins ISSe           Aute           Diesel           EM595 Compliant           PT0204-002-04           PT0204-002-04           T7-Feb-T2           Om John           0.337           71.7Feb-T2           Om John           Oxid Michael A 4098           Jabr           0.341           Oxid Michael A 11.818           g/bm           0.341           Jabr           Jabr           Jabr           Jabr           Jabr           Jabr           Jabr           Jabr           Store Store           Store Store           Store Store           Store Store           Store Store           Store Sto	Combined result Change vs Baseline Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Target Restre Lint Combined result Combined result Combined result Dass(Fall Baseline FTIR data measure CO2 equivalence factors: Compiling Engineer: Unit Solution Dis Inia Unit Unit Eval Dis Inia Unit Unit Dis Inia Unit Dis In	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.01	0         1175.2         3           0         1956.0         2           0         956.0         2           %         -2%         16             EMISSI           Customer         Customer           Customer         Customer           Vales ho         Yates ho           Yates ho         2           Yates ho         3	12:01         7.0           15:38         26.5           121:5%         4573%           MLTB CYCLE DIES ONS TEST SUMMAIN HJS Emission Tech Dieselweg 12, 870           SCRT System Dem RD02 B/K Dennis Dart Cummins ISBe Auto Delesel ENS90 Compliant PT0204-002-04           2         77-Feb-12           UNITS         HC m           0,9km         0.016           3         77-Feb-12           uNITS         HC m           gkm         0.000           gkm         0.006           gkm         0.006           gkm         0.006           gkm         0.006           gkm         0.004	CO         NOx           0.066         3.270           0.066         3.270           0.066         3.270           0.075         3.920	2         DYHAMOMETER SETTINGS           NERTIA         8.488 kg           F <sup>2</sup> 2204 N           F <sup>2</sup> 9.1210 Nkmh <sup>2</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>2</sup> 0.0320 Nkmh <sup>3</sup> F <sup>3</sup> 0.0005300 Nkmh <sup>3</sup> B50.0         0.044           S20.1         Fuel Cons           G07.5         0.061           B75.5         0.061           B706         0.032           S2.88         1167.0           S45.5         0.048           B654.5         0.048
Cuitomer: Cuitomer Address: Test Purpose: Varies No: Varies No: Varies No: Test Page: Full Time Full Time Full Time Full Time Test No: Mitbrock Purget No: Mitbrock Purget No: No: Mitbrock Purget No: Mitbrock Purget No: No: Mitbrock Purget No: M	IONS TEST SUMMARY SHEET           HJS Emission Technology           Dieselweg 12, 58768 Menden, Germany           SCRT System Demonstration. Baseline D           Bonis Dart           Beneis Dart           Cummins ISSe           Aute           Dieselweg 12, 58768 Menden, Germany           Stort System Demonstration. Baseline D           Peneis Dart           Cummins ISSe           Aute           Diesel           EM595 Compliant           PT0204-002-04           PT0204-002-04           T7-Feb-T2           Om John           0.337           71.7Feb-T2           Om John           Oxid Michael A 4098           Jabr           0.341           Oxid Michael A 11.818           g/bm           0.341           Jabr           Jabr           Jabr           Jabr           Jabr           Jabr           Jabr           Jabr           Store Store           Store Store           Store Store           Store Store           Store Store           Store Sto	Combined result Change vs Baseline Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Target Restre Lint Combined result Combined result Combined result Dass(Fall Baseline FTIR data measure CO2 equivalence factors: Compiling Engineer: Unit Solution Dis Inia Unit Unit Eval Dis Inia Unit Unit Dis Inia Unit Dis In	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.01	0         1175.2         3           0         956.0         3           0         956.0         3           %         -2%         18   EMISSI Customer: Customer Address: Test Purpose Varias Tas Englist Unicia Tas Englist Taset Purpose Varias Tas Englist Engl	12:01         7.0           15:38         26.5           121:5%         4573%           MLTB CYCLE DIES ONS TEST SUMMAIN HJS Emission Tech Dieselweg 12, 870           SCRT System Dem RD02 B/K Dennis Dart Cummins ISBe Auto Delesel ENS90 Compliant PT0204-002-04           2         77-Feb-12           UNITS         HC m           0,9km         0.016           3         77-Feb-12           uNITS         HC m           gkm         0.000           gkm         0.006           gkm         0.006           gkm         0.006           gkm         0.006           gkm         0.004	CO         NOx           0.066         3.270           0.066         3.270           0.066         3.270           0.075         3.920	2         DYHAMOMETER SETTINGS           Nerrtn         6.468 kg           F²         220 4 N           F²         0.3120 Nkmh²           P3         0.0320 Nkmh²           P4         0.006300 Nkmh²           P5         0.006300 Nkmh²           P4         0.006300 Nkmh²           P5         0.0064 32 82           1183.4         0.044 4270           967.5         0.041 889           97.6         0.032 32.83           1167.0         0.080 44.08           954.5         0.046 84.76           36.05         36.05
Customer: Customer Address: Test Purpose: Varies tre informer: Customer Address: Test Purpose: Varies tre informer: Test No. ML020120 Odo 14351 Phase 1 Out Phase 2 Inter Loss Combined result Test No. ML020120 Odo 14351 Phase 2 Inter Loss Combined result Combined result	IONS TEST SUMMARY SHEET           HJS Emission Technology           Diseelweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline C           Diseselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline C           Diseselweg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline C           Disesel           Auto           Disesel           ENS90 Comptant           PT024.002.04           IT           INTS           MC           Optim           0.304           4.998           IL1818           T7-Feb-12           Image: Stree System	Combined result Change vs Baseline Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Target Restre Lint Combined result Combined result Combined result Dass(Fall Baseline FTIR data measure CO2 equivalence factors: Compiling Engineer: Unit Solution Dis Inia Unit Unit Eval Dis Inia Unit Unit Dis Inia Unit Dis In	3.87         0.28           -67.8%         -53.7%           -67.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.8%         -53.7%           -07.9%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           3.867         0.28           -70%         -50%           -50.8         0.30           3.867         0.28           -70%         -50%           -67.8         -70%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -50%           -70%         -70%           -70%         -70%           -70%         -70%           -70%         -70%	0.08 0.00 1821% 0.01	2)         1175.2         3           2)         956.0         2           3)         956.0         2           %         -2%         18             EMISSI           Customer         Customer           Transmission         Eagree           Customer         Customer           Customer         Customer           Customer         Customer           Customer         Customer           Customer         Customer           Combined result         Combined result           Test No.         ML0207203           Odo         14581           Combined result         Combined result           Combined result         Combined result	12:01         7.0           15:38         26.5           121:5%         4573%           MLTB CYCLE DIES ONS TEST SUMMAIN HJS Emission Tech Disselverg 12, 870           SCRT System Dem RD02 B/K Dennis Dart Cummins ISBe Auto Delesel ENS90 Compliant PT0204-002-04         Commins ISBe Auto Delesel ENS90 Compliant PT0204-002-04           2         17-Feb-12         UNNTS MR 0.016           3         17-Feb-12           UNITS m gArm 0.016         HC m gArm 0.000 gArm 0.0004           3         17-Feb-12           UNITS m gArm 0.000 gArm 0.0004         HC m 0.000 gArm 0.0004	CO         NOx           0.066         3.270           0.066         3.270           0.066         3.270           0.075         3.920	2         DYHAMOMETER SETTINGS           Nerrth         6.468 kg           F²         220 4 N           F²         0.3120 Nkmh²           P3         0.0320 Nkmh²           P4         0.006300 Nkmh²           P5         0.006300 Nkmh²           P4         0.006300 Nkmh²           P5         0.0064 32 82           1183.4         0.044 4270           967.5         0.041 889           97.6         0.032 32.83           1167.0         0.080 44.08           954.5         0.046 8470           36.05         36.05
Customer: Customer Address: Test Purpose: Vetes No: Vetes No: Vetes No: Vetes No: Last Tree: France: Trees No: ML020122 Od: 14691 Phase 1 Od: 14691 Phase 2 Der Coord Combined result  Veterage of Combined Standard DeviationMe Comments: NOx ab	IDISECT SUMMARY SHEET           HJS Emission Technology           Disealwag 12, 58768 Manden, Germany           SCRT System Demonstration. Baseline I           Bonnis Deri         Site No           Dennis Deri         Site No           Dennis Deri         Site No           Dennis Deri         Site No           Dennis Deri         Site No           Diesel         Diesel           Dirt Tröbe 72         No         No           Orgen Jahr         ProBublication         No         No           Dirt Tröbe 72         O         No         No           Oglym         0.337         7/195         17.899         Diesel           Jahr         HC         CO         Nox         Co           a dhm         0.337         7/195         17.899         Diese           a dhm         0.342         1.198         13.237         970           Bay         OZ11         1.385         12.237         970           Gen Jahr         OZ21         1.385         12.237         970           Bay         0.271         1.385         12.202         974           Station         0.575         56.62         1.74	Combined result Change vs Baseline Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Unit Change vs Baseline Target Restre Lint Combined result Combined result Combined result Dass(Fall Baseline FTIR data measure CO2 equivalence factors: Compiling Engineer: Unit Solution Dis Inia Unit Unit Eval Dis Inia Unit Unit Dis Inia Unit Dis In	3 87 0.28 -07.8% 63.7% NOx 9/m	0.08 0.00 1821% 0.01	0         1175.2         3           0         956.0         2           0         956.0         2           %         -2%         18   EMISSI Customer:           Customer         Customer           Test Purpose:         Valea           Valea         No           Multicoa         Progent No:           Test No.         ML0207203           Odo         14581           Phase 1         One customer           Combined result         Combined result           Average of Combined result         Combined result           Average of Combined result         Scret Syn	12:01         7.0           15:38         26.5           121:5%         4573%           MLTB CYCLE DIES ONS TEST SUMMAIN HJS Emission Tech Disselverg 12, 870           SCRT System Dem RD02 B/K Dennis Dart Cummins ISBe Auto Delesel ENS90 Compliant PT0204-002-04         Commins ISBe Auto Delesel ENS90 Compliant PT0204-002-04           2         17-Feb-12         UNITS MSM         0.016           3         17-Feb-12         UNITS MSM         0.006 m g/km         0.006           3         17-Feb-12         UNITS MSM         0.016           3         17-Feb-12 m g/km         0.006         0.000           g/km         0.006         0.000         0.004           ests (g/km)         0.010           n x100         57.88         estem active - injection: 0.92	CO         NOx           0.062         3.867           23.86         1.37	2         DYHAMOMETER SETTINGS           Nerrita         8.468 kg           F*         2.20 4 N           F*         9.1210 Nkmh *           P*         0.3120 Nkmh *           P*         0.006300 Nkmh *           P*         0.006300 Nkmh *           B*00         0.004 432 82           1183.4         0.104         437 8           B*7.5         0.061 Hitre/100km           B*7.6         0.032 92 88           1167.0         0.080 44.08           854.5         0.046 Hitre/100km           36.65         36.11           0.15         14.36         0.16
Customer Address: Test Purpose: Varies No. Varies No. Varies No. Varies Type Engine Transition: Full Trace Full Bach No. Millbook Phage No. Millbook Pulses No. Phase 1 - Counting Test No. Millbook Phase 2 - Inver Long Phase 1 - Counting Test No. Millbook Phase 2 - Inver Long Phase	IDISENT SUMMARY SHEET           HJS Emission Technology           Disesviveg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Bornin Dart           Commins 68te           Auto           Diesei           EW300 Compilant           PT004-002-04           Imit State           Imit St	Combined result     Change vs Baseline     Change vs Baseline     Change vs Baseline     Interview of the second sec	3 87 0.28 -07.8% 63.7% NOx 9/m 9/m Bag FTR -70% -50% 3.600 0.30 107% 93% Fail Pass d during test ML.021120 CO2 : 1 - N20 : 3 DATE: 21-Feb-201	0.08 0.00 1821% 0.01	0         1175.2         3           0         956.0         2           0         956.0         18           2%         -2%         18           Customer         Customer         19           Customer         19         19           Customer         19         19           Venes Type         Test Purpose         19           Venes Type         Test No. ML.2021203         19           Phate 1         Out 14951         19           Phate 2         Inset Control         19           Phate 1         Out 14951         19           Phate 2         Inset Control         19           Combined result         Combined result         19           Average of Combined TowatomMean         19         19           Compaing Engineer         Compaing Engineer         19	12:01         7.0           15:33         28.5           15:34         28.5           15:35         28.5           15:36         28.5           MLTB CYCLE DIES         ONS TEST SUMMAI           HJS Emission Tech         Disselweg 12, 5870           SCRT System Dem         RD22 B/K           Dennis Dart         Cummins ISBE           Auto         Diesel           EMS0 Compliant         PT020-4002-04           2         17.Feb-12           a         g/km         0.014           g/km         0.014           g/km         0.004           3         17.Feb-12           a         g/km         0.004           g/km         0.004           g/km         0.004           g/km         0.004           g/km         0.004	CO         NOx           0.062         3.867           0.062         3.867	2         DVHAMOMETER SETTINGS           nemma         8488 ig           P         220 4 N           P         1210 Nmh²           P         0.03120 Nmh²           P         0.0320 Nmh²           P         0.006300 Nmh²           P         0.0006300 Nmh²           PM         (Cam Bal)           890         0.044           957.5         0.061 Nmre*           964.5         0.046           1167.0         0.080           964.5         0.046           1169.70         0.605           964.5         0.046           965.5         0.161           965.5         0.165           966.0         0.053           966.0         0.053           965.1         0.16
Customer Address: Test Purpose: Varies No. Varies No. Varies No. Varies Type Engine Transition: Full Trace Full Bach No. Millbook Phage No. Millbook Pulses No. Phase 1 - Counting Test No. Millbook Phase 2 - Inver Long Phase 1 - Counting Test No. Millbook Phase 2 - Inver Long Phase	IDISENT SUMMARY SHEET           HJS Emission Technology         Disestive 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline C         Disestive 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline C         Disestive 12, 58766 Menden, Germany           Commins Dart         Commins State           Commins State         Site No.           Auto         Disestive 12, 58766 Menden, Germany           Disestive 12, 58766 Menden, Germany         Site No.           Prozet-ooz-od         Site No.           2         177-Feb-12           Diversitient         120           3         177-Feb-12           Diversitient         0.304           10         0.422           3         177-Feb-12           Diversitient         0.242           3         177-Feb-12           Diversitient         0.242           3         178           3         176-Bold           2         20km           0.241         1.188           1.385         12.237           3         171           3         1.18           3         1.188           3         1.202	Combined result     Change vs Baseline     Change vs Baseline     Change vs Baseline     Change vs Baseline     Combined result     Analyser     Target     Restine Line     Combined result     PassiFail     Baseline FTIR data measure     CO2 equivalence factors:     Compling Engineer:     Com	3 87 0.28 -07.8% 63.7% NOx 9/m	0.08 0.00 1821% 0.01	0         1175.2         3           0         956.0         2           0         956.0         18           2%         -2%         18           Customer         Customer         19           Customer         19         19           Customer         19         19           Venes Type         Test Purpose         19           Venes Type         Test No. ML.2021203         19           Phate 1         Out 14951         19           Phate 2         Inset Control         19           Phate 1         Out 14951         19           Phate 2         Inset Control         19           Combined result         Combined result         19           Average of Combined TowatomMean         19         19           Compaing Engineer         Compaing Engineer         19	12:01         7.0           15:30         28.5           12:1.5%         4573%           MLTB CYCLE DIES ONS TEST SUMMAI Disselveg 12, 5870           SCRT System Dem RD02 B/K Dennis Dart Cummins ISBe Auto Detesel         12, 5870           2         17.Feb-12           0         14, 578           0         17.Feb-12           0         0, 117           0         9, 178           0         9, 178           0         0, 107           0         9, 178           0         0, 117           0         9, 178           0         0, 117           0         9, 178           0         0, 117           0         9, 178           0         0, 117           0         9, 117           0         9, 117           0         9, 117           0         9, 117           0         9, 117           0         9, 117           0         9, 117           0         9, 116           0         9, 116           0         9, 116           0         9, 116 <tr< td=""><td>CO         NOx           0.062         3.867           23.86         1.37</td><td>2         DYHAMOMETER SETTINGS           Nerrita         8.468 kg           F*         2.20 4 N           F*         9.1210 Nkmh *           P*         0.3120 Nkmh *           P*         0.006300 Nkmh *           P*         0.006300 Nkmh *           B*00         0.004 432 82           1183.4         0.104         437 8           B*7.5         0.061 Hitre/100km           B*7.6         0.032 92 88           1167.0         0.080 44.08           854.5         0.046 Hitre/100km           36.65         36.11           0.15         14.36         0.16</td></tr<>	CO         NOx           0.062         3.867           23.86         1.37	2         DYHAMOMETER SETTINGS           Nerrita         8.468 kg           F*         2.20 4 N           F*         9.1210 Nkmh *           P*         0.3120 Nkmh *           P*         0.006300 Nkmh *           P*         0.006300 Nkmh *           B*00         0.004 432 82           1183.4         0.104         437 8           B*7.5         0.061 Hitre/100km           B*7.6         0.032 92 88           1167.0         0.080 44.08           854.5         0.046 Hitre/100km           36.65         36.11           0.15         14.36         0.16
Customer: Customer Address: Test Pupose: Varies tre inform: Treat Type Engine: Treat Type Treatmission: Treat Type Treat	IDISENT SUMMARY SHEET           HJS Emission Technology           Disesviveg 12, 58766 Menden, Germany           SCRT System Demonstration. Baseline D           Bornin Dart           Commins 68te           Auto           Diesei           EW300 Compilant           PT004-002-04           Imit State           Imit St	Combined result     Change vs Baseline     Change vs Baseline     Change vs Baseline     Complexed of the second sec	3 87 0.28 -07.8% 63.7% NOx NO 2 -07.8% 63.7% NOx NO 2 -07.0% -50% 3.600 0.30 0.28 107% 93% Fail Pass DATE: 21-Feb-201	0.08 0.00 1821% 0.09	2)         1175.2         3           2)         956.0         2           3)         956.0         2           %         -2%         18   EMISSI           Customer         Customer           Latera         Customer           Latera         Customer           Latera         Combined result           Test No. ML0207203         Combined result           Phase 1         Come incomp           Phase 2         Device incomp           Phase 1         Come incomp           Phase 2         Combined result           Average of Combined result         Combined result           Compling Engineer:         Compling Engineer	12:01         7.0           15:38         26.5           121:5%         4573%           MLTB CYCLE DIES ONS TEST SUMMAIN HJS Emission Tech Disselveg 12, 5870           SCRT System Dem RD02 BJK         Dennis Dat Cummins ISBe Aute Densel Summins ISBe Aute Deseveg 2           2         17-Feb-12           WINTS         HO           0:016         3           3         17-Feb-12           0         9km           0:016         0.004           3         17-Feb-12           0         9km           0:016         57.88           ests (gkm)         0.010           in 100         57.88           atem active - Injection: 0.92	CO         NOx           0.062         3.867           0.062         3.867           0.062         3.867           0.062         3.871	2         DVHAMOMETER SETTINGS           nemma         8488 ig           P         220 4 N           P         1210 Nmh²           P         0.03120 Nmh²           P         0.0320 Nmh²           P         0.006300 Nmh²           P         0.0006300 Nmh²           PM         (Cam Bal)           890         0.044           957.5         0.061 Nmre*           964.5         0.046           1167.0         0.080           964.5         0.046           1169.70         0.605           964.5         0.046           965.5         0.161           965.5         0.165           966.0         0.053           966.0         0.053           965.1         0.16





INFO-HOTLINE +49 2373 987-555 tech-sales@hjs.com

tech-sales@hjs.com

The solution for clean coaches!

## Put your trust in HJS DPF<sup>®</sup> and benefit from our many years of experience in the business

- ✓ Minimal downtime
- Extremely low-maintenance
- ✓ Low servicing costs
- ✓ Active protection of health and the environment







 $\leq$ 

 Gerd van Aaken

 HJS UK Representation · Emission Engineering Ltd

 Phone
 +44 (0) 1344 707 335

 Mobile
 +44 (0) 7949 123 361

 E-mail
 gerd@vanaakendiesel.com / gerd.vanaaken@hjs.com



Hubertus Borgmeier / Salesmanager EuropeHJS Emission Technology GmbH & Co. KGPhone+49 (0) 2373 987-282Mobile+49 (0) 170 91 33 621E-mailhubertus.borgmeier@hjs.com

 Mark Cooper

 HJS UK Representation · Emission Engineering Ltd

 Phone
 +44 (0) 1344 707 335

 Mobile
 +44 (0) 7733 227 889

 E-mail
 mark.cooper@hjs.com

HJS Emission Technology GmbH & Co. KG Dieselweg 12 D-58706 Menden/Germany Phone +49 2373 987-0 Fax +49 2373 987-199 E-mail hjs@hjs.com Internet www.hjs.com

