

Towards Climate-friendly Temperature-controlled Logistics

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- 1 Company Presentation
 - 1 Facts and Figures
 - 2 Logistics Services
 - 3 Industries and Regions Served
 - 4 Customer References
- 2 Energy and Operations Efficiency
 - 1 Facility Setup
 - 2 Refrigeration
 - 3 Truck Technology
 - 4 Logistics
 - 5 Outlook

1.1 Facts & Figures [SCHÜSSLER Group]

- Field of activity Temperature-controlled transportation and warehousing solutions
- Year of establishment 1950
- Branches Heppenheim/ Bergstr., Nossen/ Sa., Luxembourg
- Employees 100
- Own fleet 40 trucks (6 – 37 pallet places, mostly multi-temperature equipped)
- Storage capacity 10,000 pallet places (-27° <> +25°C)
- Association memberships and initiatives



1.2 Scope of Logistics Services

Multitemperature Logistics*

Transportation

Full truckloads
Less than truckloads
Groupage
Shuttle services
Pick-up & distribution services
Freight brokering
Dispatching services
Shelf packing
Return of packaging
Express carriages (< 1,400 kgs)



Warehousing

Cargo handling
Storage
Picking & packing
Assembling (mixed cases)
Palletisation
Container de-/ consolidation
Veterinary services
Customs clearance
Bonded warehousing
Inventory control



* Temperature ranges: frozen, chilled, conditioned, ambient

1.3.1 Industry Scope



Quick Service
Restaurant
Chains



Foodstuffs
Industry



Pharmaceutical &
Extractive
Industry

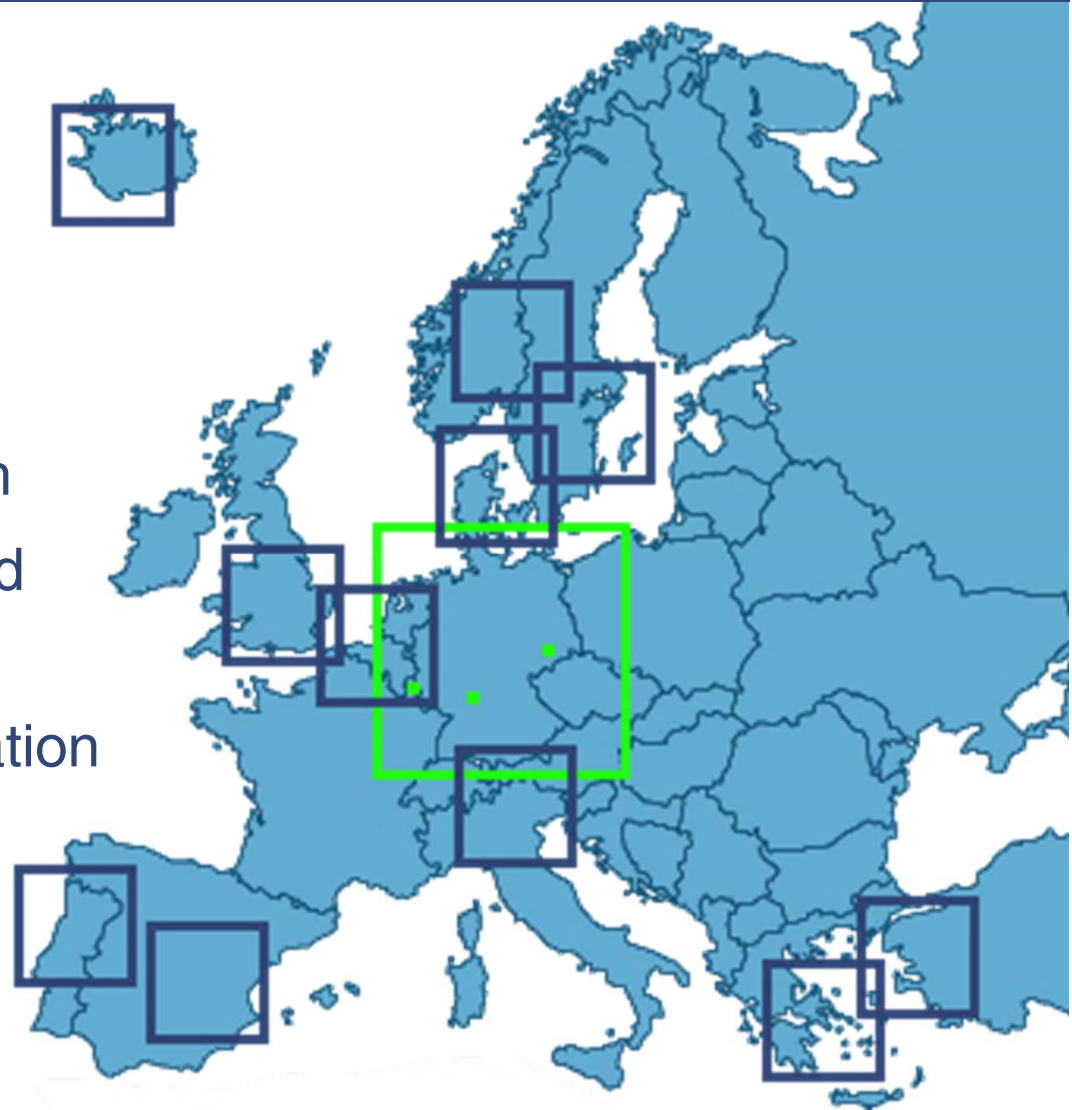


Retail
Chains &
Groceries



1.3.2 Geographic Scope

European regions served with
(multi-) temperature-controlled
groupage, full truckload and
less than truckload transportation



1.4 References [Abstract]



2 Energy and Operations Efficiency



- 1 Facility Setup
- 2 Refrigeration
- 3 Truck Technology
- 4 Logistics
- 5 Outlook

2.1 Facility Setup: LED Lighting

- General Benefits LED Lighting
 - Improved illumination/ less capacity installed
 - Lower operating costs
 - Reduced CO₂ emissions
 - Decreased industrial waste heat



- Test of LED Lighting

COMPARISON	Fluorescent Lamp	LED-Tubes (and Controls)	
Number of Lamps/ Tubes Installed	20	16	80%
Total Power Consumption per Year	6.934 kWh	1.092 kWh	16%
Total CO2 Emission per Year	3.925 kgs	618 kgs	
Total Sulphur Emission per Year	2.947 g	464 g	
Total Power Costs per Year	1.005,46 €	158,34 €	

2.2.1 Refrigeration: Powered by Renewables **SCHÜSSLER** SPEDITION

- Affiliation with Buying Association IntelligentPower GmbH & Co. KG
 - Affiliates from the industry and logistics service sectors
 - Purchasing volume of appr. EUR 100 Million
 - Procurement of renewable energy including long-term lease of own hydroelectric power plants
 - Atypical grid use
- 42% of energy consumption comes from renewable resources*
- Saves 280,000 kgs p.a. of CO₂ emissions compared to the German energy mix

*) Year 2011



2.2.2 Refrigeration: Refrigerants Deployed



Alternative refrigerants – overview

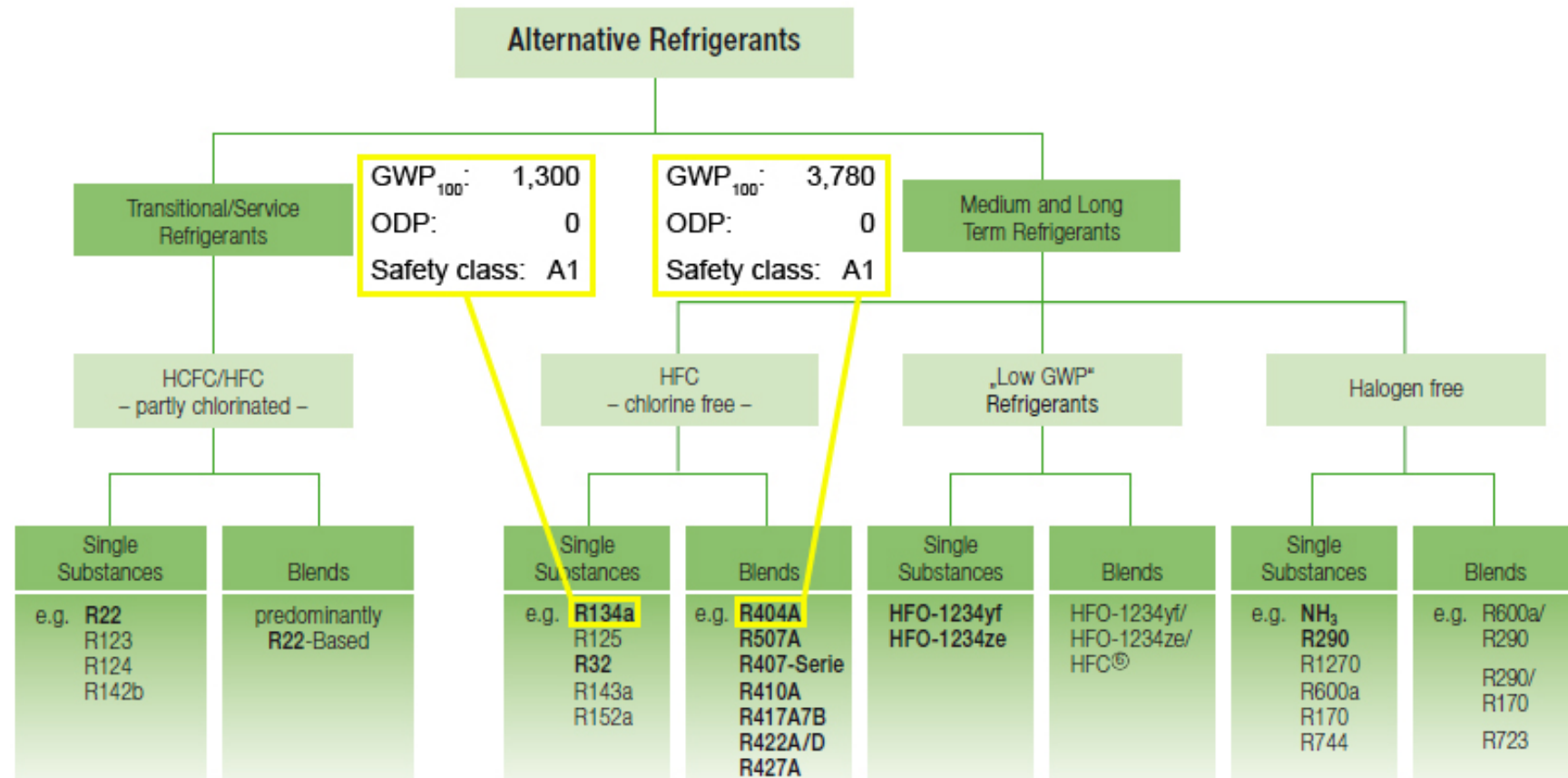
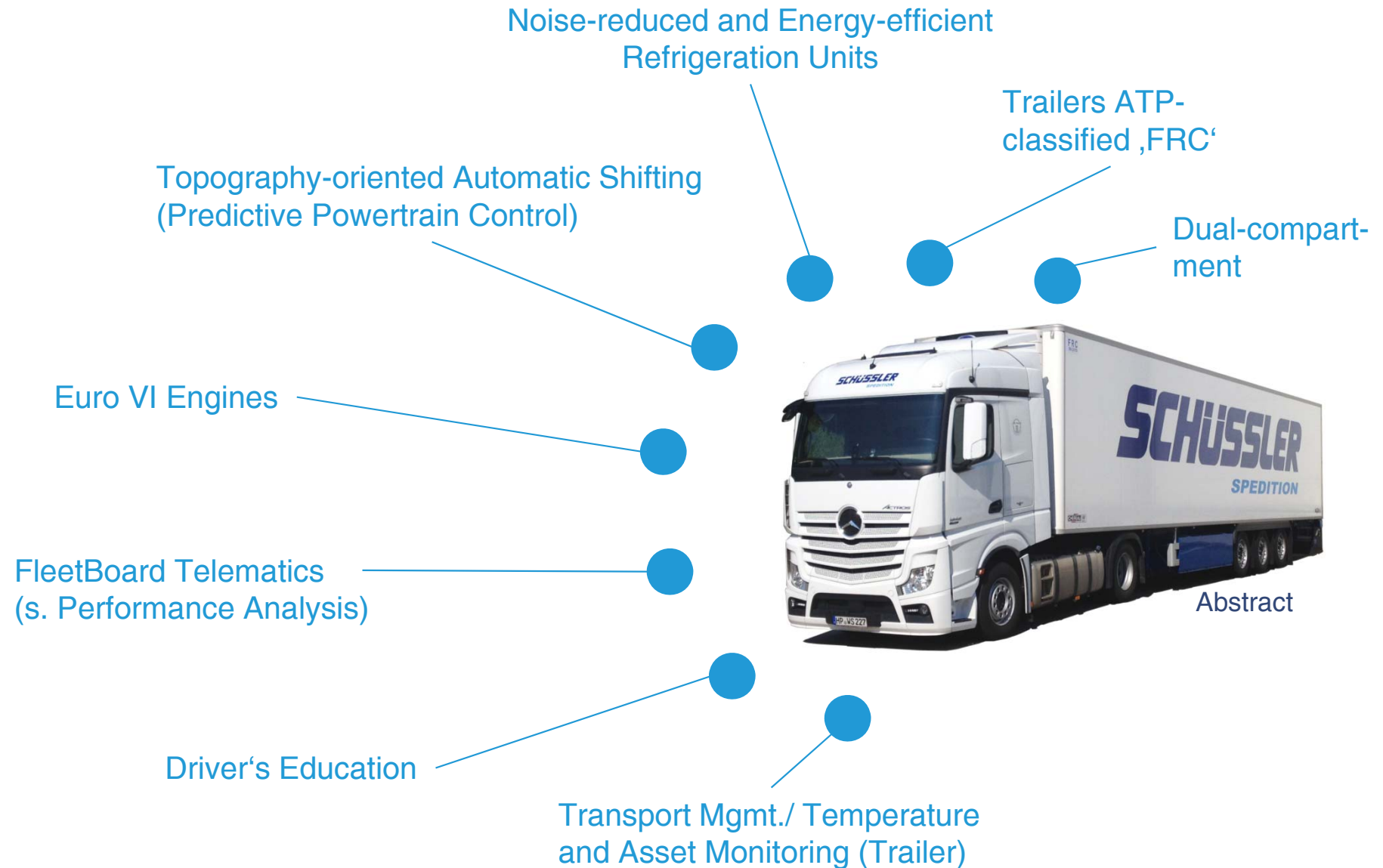


Fig. 1 General survey of the alternative refrigerants

GWP = Global Warming Potential
ODP = Ozone Depletion Potential

Bitzer Refrigerant Report 17, p. 4

2.3.1 Truck Technology: Equipment



Abstract

2.3.2 Truck Technology: Telematics

Driver's Performance Analysis

FLEETBOARD

DRIVER'S PERFORMANCE ANALYSIS																										
General Information				Performance Overview						Consumption-related Partial Evaluation						Brake-related Partial Evaluation			Evaluation of the Degree of Difficulty			Further Performance Features				
Ranking [All Driver Groups]	Driver's Name [Employed on Trucks Only]	MB	Driver Group	sorted by: Driving Style [Grade]	Degree of Difficulty [Grade]	Ø-Weight [mt]	Ø-Speed [km/h]	Ø-Overall Consumption [l/100 km]	Ø-Drive Consumption [l/100 km]	Overall Driving Style [Grade]	Preventive Driving Style [Grade]	Pedal Movements [Grade]	Stops [Grade]	Engine Operation M/h (Not Highest Gear) [Grade]	Uniform Speed [Grade]	Driving Style [Grade]	Preventive Driving Style [Grade]	Deceleration [Grade]	Ø-Slope Rate [Grade]	Ø-Weight [Grade]	Stops [Grade]	Speed >85 km/h of Total Distance [%]	Braking Distance/ Total Distance [%]	Cruise Control/ Total Distance [%]	...	
LINE-HAUL (LH)																										
1	Nemet, Mihai		LH	9,6	4,8	28	72	26,6	26,4	9,8	10,0	9,6	9,7	9,5	9,8	9,4	10,0	8,8	5,3	6,3	1,4	30	0	82		
2	Wöllner, Harry		LH	9,6	4,6	28	76	28,9	28,7	9,6	10,0	8,9	9,8	9,6	9,8	9,5	10,0	9,1	4,9	6,3	1,3	60	0	83		
3	Schwabe, Frank		LH	9,5	4,8	33	77	30,7	30,6	9,5	9,8	8,7	9,6	9,7	9,8	9,5	9,8	9,1	4,6	7,7	1,1	65	1	74		
4	Povillakis, Petras		LH	9,5																						
5	Stanka, Johann		LH	9,4																						
6	Becker, Alexander Manfred		LH	9,4																						
7	Urmovic, Vjekoslav		LH	9,4																						
10	Ziegler, Clemens		LH	9,0																						
11	Lutzi, Vladimir		LH	8,9																						
14	Mollitor, Frank		LH	8,8																						
15	Knapp, Marco		LH	8,8																						
18	Stankevidus, Valdas		LH	8,7																						
19	Stumpf, Klaus		LH	8,7																						
20	Zukauskas, Arunas		LH	8,6																						
XX	D. DF00019751023000, -		LH	8,5																						
23	Arnold, Christian		LH	8,5																						
24	Winkel, Herbert		LH	8,5																						
25	Dittrich, Klaus-Dieter		LH	8,5																						
28	Rakocevic, Darko		LH	8,0																						
29	Vinksnaitis, Valdas		LH	8,0																						
XX	Average		LH	8,9																						
DISTRIBUTION (DN)																										
27	Brenner, Ronny		DN	8,3																						
31	Kusmaul, Paul		DN	7,7																						
33	Zubkov, Pavel		DN	7,7																						
34	Langner, Franz Josef		DN	7,6																						
35	Petrovic, Rastislav		DN	7,5																						
36	Funk, Heinrich Rainer		DN	7,3																						
37	Klöve, Thomas		DN	6,9																						
38	Apenko, Viktor		DN	6,8																						
XX	Average		DN	7,5																						
MIXED OPERATIONS Line-haul & Distribution (MO)																										
12	Schamp, Erwin		MO	8,9																						
16	Bergbold, Stefan		MO	8,8																						
26	Koch, Vitali		MO	8,4																						
32	Radosovic, Nedjelko		MO	7,7																						
39	Rauba, Nerius		MO	6,3																						
XX	Average		MO	8,0																						
AUXILIARY (AX)																										
8	Triller, Thomas		AX	9,3																						
9	Koob, Michael		AX	9,3																						
13	Fuller, Erwin		AX	8,9																						
17	Bodenmüller, Alexander		AX	8,7																						
21	Erdle, Wilhelm Michael		AX	8,6																						
30	Salzmanshausen, Gerd		AX	7,8																						
XX	Average		AX	8,8																						
Period: 01/01/2013 till 10/03/2013																										
Distance per Driver: > 10,000 km																										

DRIVER'S PERFORMANCE ANALYSIS

General Information

Performance Overview

Ranking
[All Driver
Groups]

Driver's Name
[Employed on
MB Trucks Only]

Driver
Group

sorted by:
Driving Style
[Grade]

Degree of
Difficulty
[Grade]

Ø-Weight
[mt]

Ø-Speed
[km/h]

Ø-Overall
Consumption
[l/100 km]

Ø-Drive
Consumption
[l/100 km]

LINE-HAUL (LH)

1

2

3

4

5

6

7

10

11

14

15

18

19

20

Nemet, Mihai

Wöllner, Harry

Schwabe, Frank

Povillakis, Petras

Stanka, Johann

Becker, Alexander Manfred

Urmovic, Vjekoslav

Ziegler, Clemens

Lutzi, Vladimir

Mollitor, Frank

Knapp, Marco

Stankevidus, Valdas

Stumpf, Klaus

Zukauskas, Arunas

D. DF00019751023000, -

Arnold, Christian

Winkel, Herbert

Dittrich, Klaus-Dieter

Rakocevic, Darko

Vinksnaitis, Valdas

Average

LH

LH

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4,8

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28

76

77

72

76

77

26,6

28,9

30,7

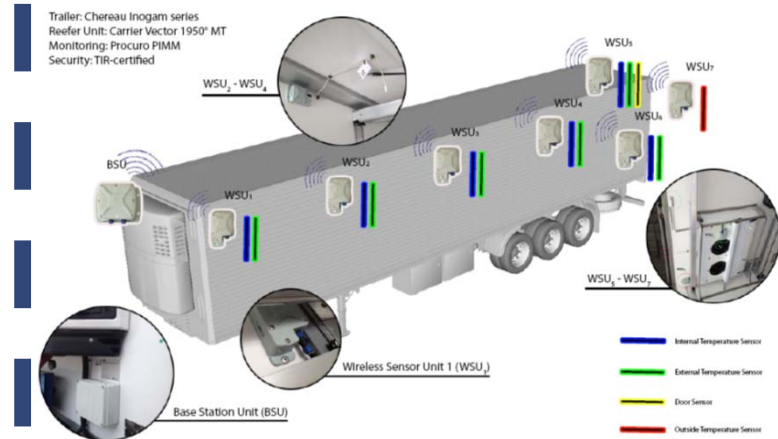
26,4

28,7

30,6

Ø-Overall consumption < Q3/2012: 31.1 l / 100 km
Q3/2013: 29.2 l / 100 km

SCHÜSSLER
SPEDITION



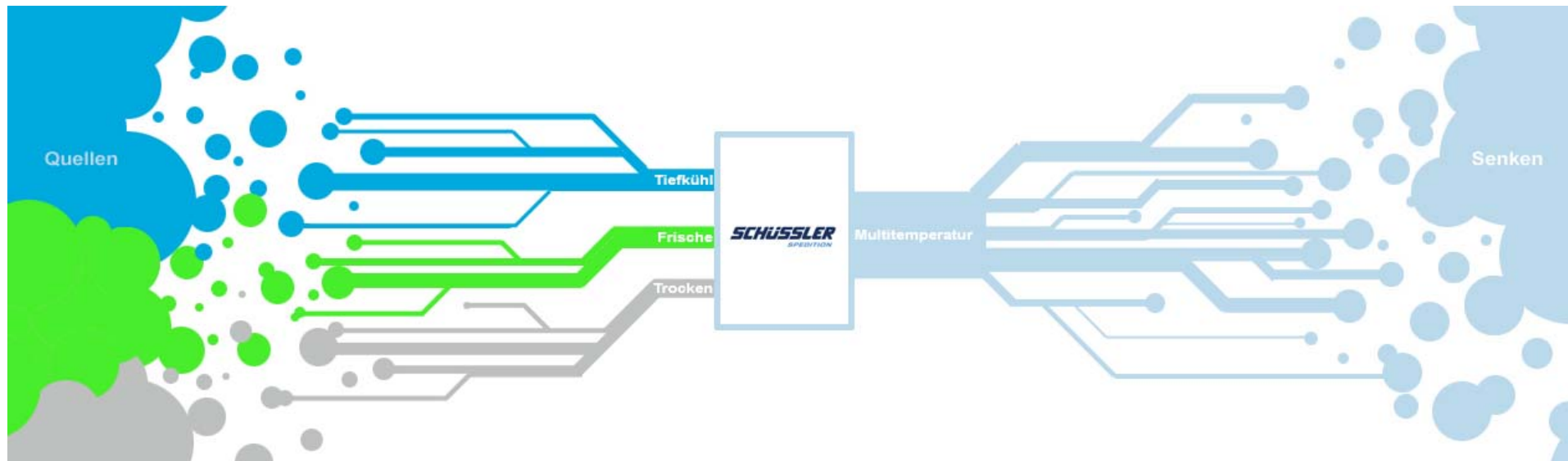
ks@schuessler-spedition....
iPIMM™ RMS - [null]

October 10, 2013		Route Information	Asset Information	Temperatures
Trackers Trailers Drivers		Route: Status: Departure: Time: Stops Made: Return Time: Route Duration:	Tractor: Driver: Helper: Trailer: Last Valid GPS: Time: Speed:	COMP 2 Intern: COMP 2 Extern: CoolerProduct: COMP 1 Intern: COMP 1 Extern: ReeferPower: --
<div style="display: flex; justify-content: space-between;"> <div> HP-WS 421 HP-WS 422 HP-WS 423 HP-WS 441 HP-WS 454 HP-WS 891 HP-WS 933 TL 2011 TL 2013 TL 2014 TL 2022 TMC 6077 </div> <div> ▶ ▶ ▶ ▶ ▶ ▶ ▶ ▶ ▶ ▶ ▶ ▶ </div> </div>		<div> <p>iPIMM™ TL 2013 : 10.10.2013 - 10.10.2013</p> <p>TL 2013 Last Valid GPS Time: 10.10.2013 19:50 Speed: 0.0 COMP 2 Intern: 9.2 COMP 2 Extern: 10.7 CoolerProduct: Unknown (Last Value "3.3" on 28.08.2012 01: COMP 1 Intern: 9.7 COMP 1 Extern: 10.0 Rear Door Open ReeferPower: Off</p> </div>		

Locate
Dispatch
Routes
Alerts
Reports
Dashboard

2.4.2 Logistics: Efficient Solution Design

- Multitemperature logistics
- Multi-user system

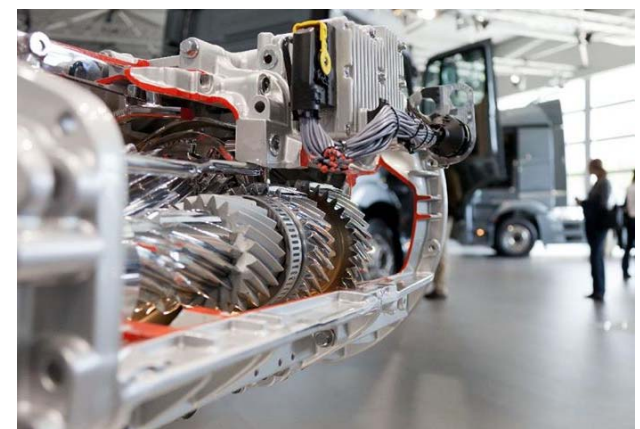


2.5 Outlook



Projects/ initiatives

- Intermodal transport
- Hybrid trucks
- Electrification of motorways



in Cooperation with



TECHNISCHE
UNIVERSITÄT
DARMSTADT
... and Others



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