



A WORLD OF DIFFERENCE

- ✓ Generell gjennomgang av virkemåten på **WABCO** sitt RSS-System.
- ✓ Gjennomgang av ODR-Rapport på en 4-akslet tømmerhenger.
- ✓ Systemskilt.



VIDEO



Hva gjør systemet?

RSS forhindrer tilhengeren i å velte ved for høy hastighet inn i sving samt ved unnamanøver.

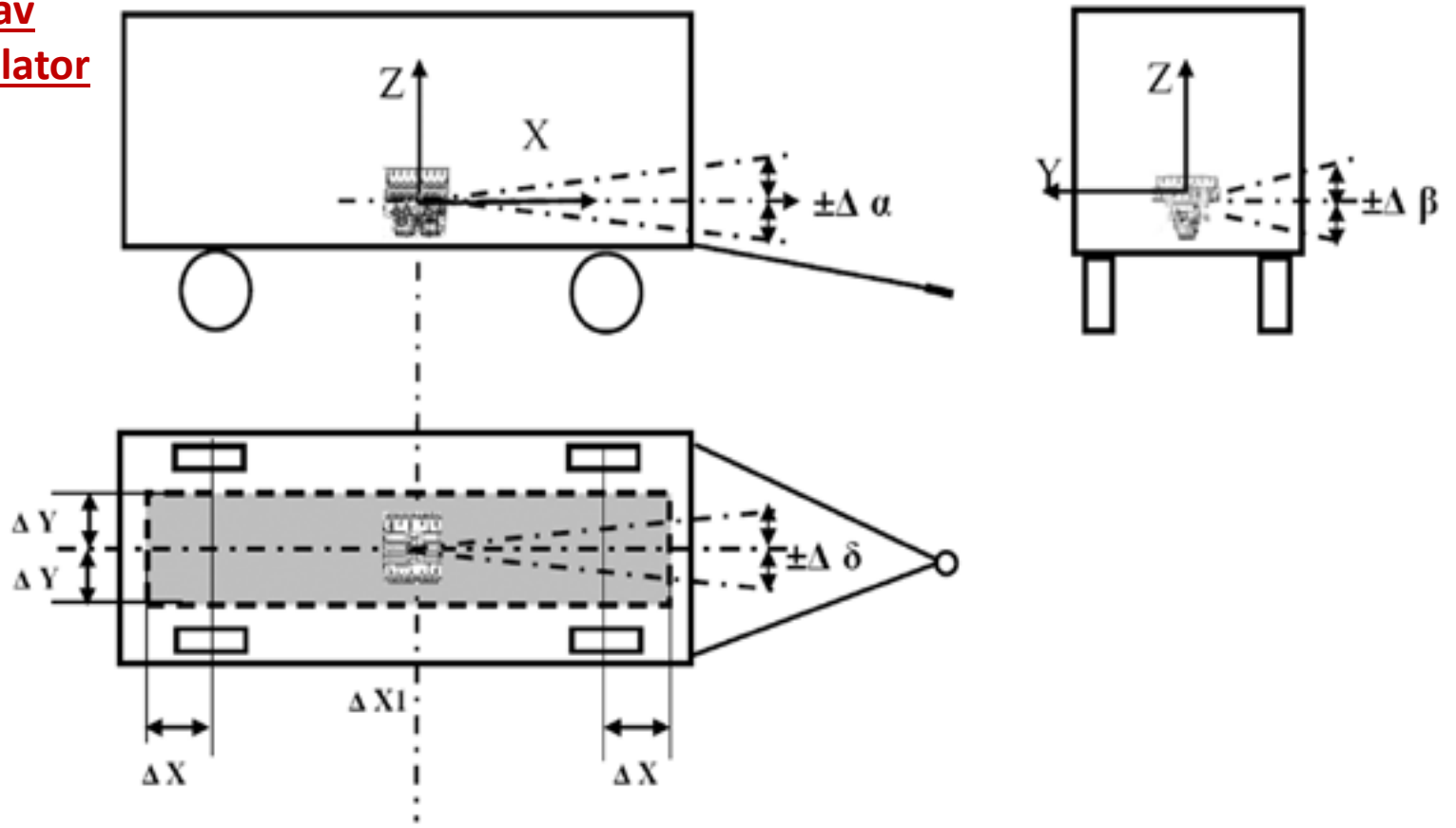
Hvorfor skal vi ha dette?

- Systemet vill automatisk gå inn å bremse tilhengeren føre den begynner å legge seg over/velte.
- Support/støtte for sjåfør ved raske unnamanøvreringer etc.

Hvordan virker systemet?

- EBS, kjenner av når tilhengerens hjul er på vei til å løfte og miste kontakten med veibanen.
- EBS, bremser automatisk tilhengeren føre (inner hjul/ene) hjulene er på vei til å forlate veibanen.
- Tilhengerens hastighet vill bli reudsert slik at den kommer tilbake til et stabilt nivå. (kontakt m/veibanen)

Montering av TEBS-Modulator



ΔX [mm]	ΔY [mm]	$\Delta \alpha$	$\Delta \beta$	$\Delta \delta$
600	500	$\pm 15^\circ$	$\pm 3^\circ$	$\pm 3^\circ$

Hvorfor velter tunge fordon?

Med en enkel modell kan forholdet mellom halva spårvidden og tyngdepunktens höjd räknas fram. Den kallas statistiska stabilitetsfaktorn, SSF.

$$SSF = \frac{\text{Spörvidde}/2}{\text{Tyngdepunkt}}$$

Om man jämför SSF med däckens maximala grepp får man fram säkerhetsmarginalen som varje fordon har till vältning.

Exempel:

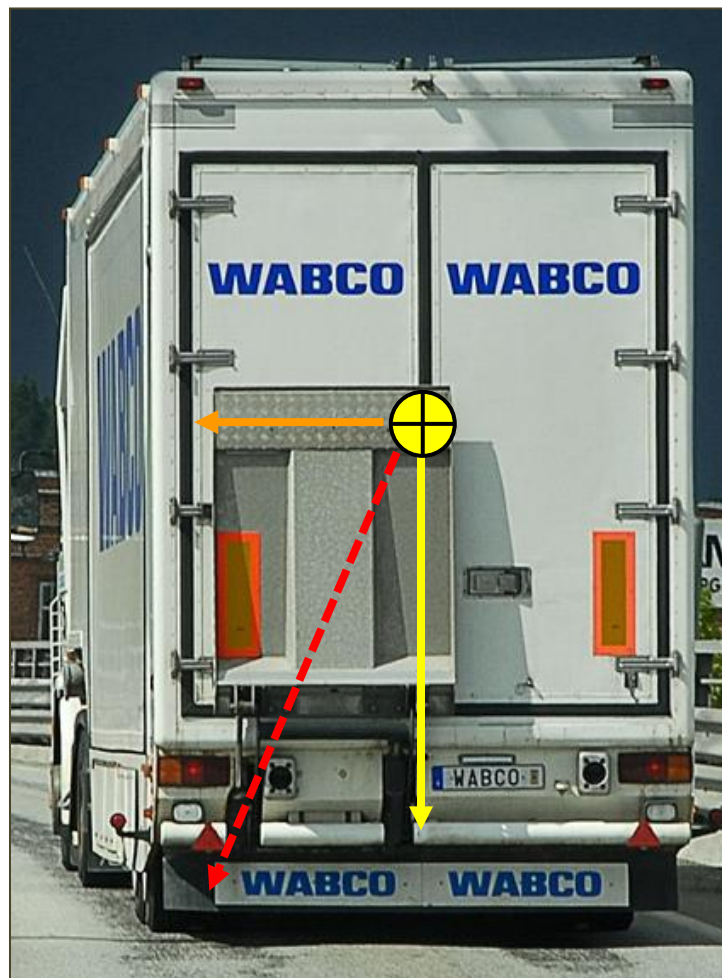
En lastad tankbilskombination har tyngdpunktshöjden 2200 mm, halv spårvidd 1000 mm, vilket ger en SSF på $1000/2200 = 0,45$.

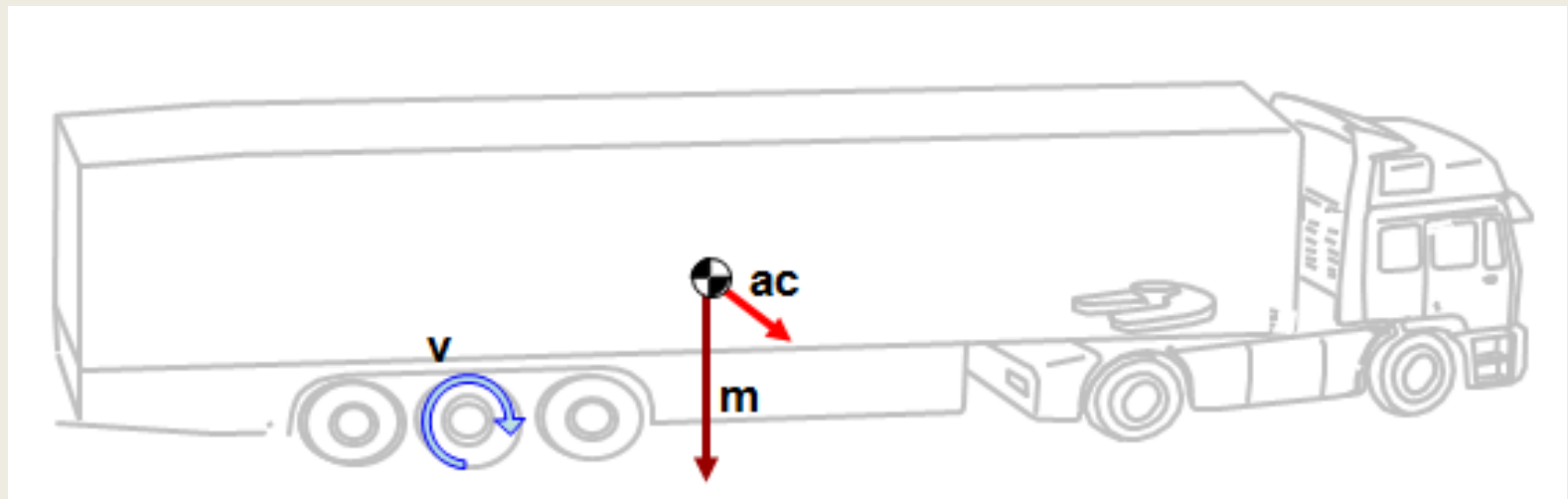
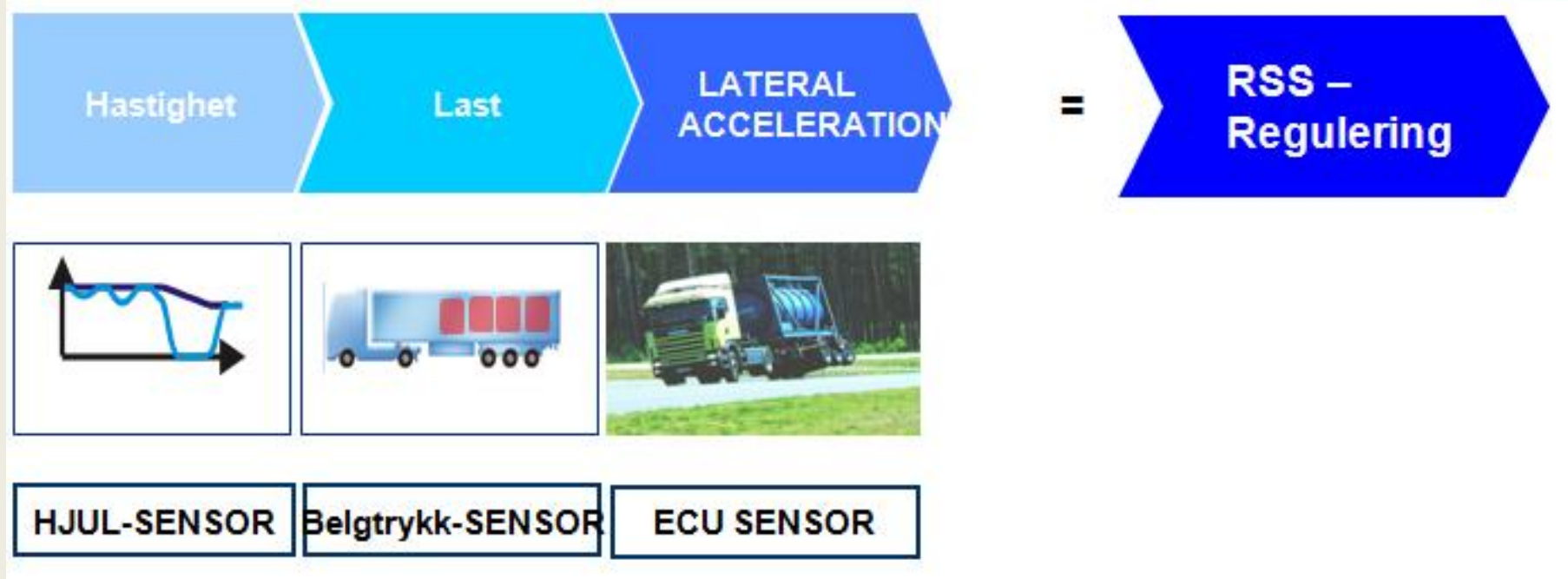
Maximal sidoacceleration för ett normalt däck $\sim 0,7$ g (vilket ger en marginal på $-0,25$ g.)

Fordonskombinationen kommer alltså att välta långt innan däckets grepp släpper.

Høyere hastigheter forårsaker høyere sidoacceleration når kjøretøyet svinger. Det gjelder altså at bremse kjøretøyet innen velterisken foreligger.

Veistandarden vill også være en faktor.

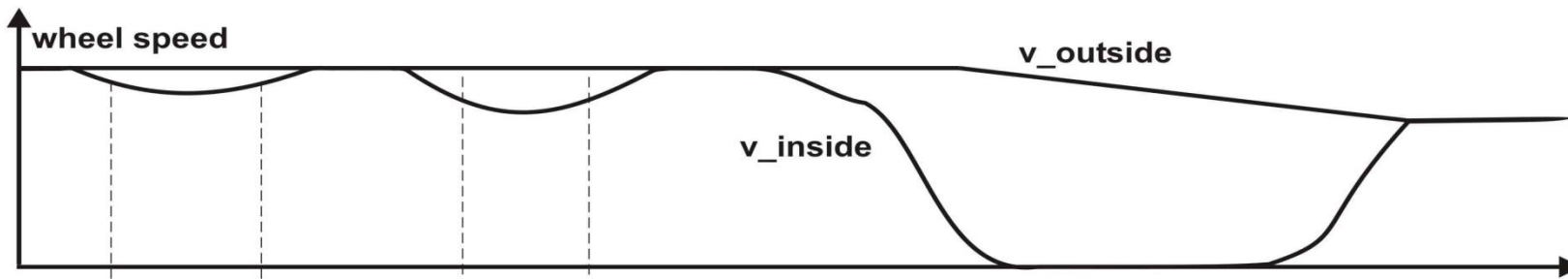




RSS- Roll Stability Support – Application Example

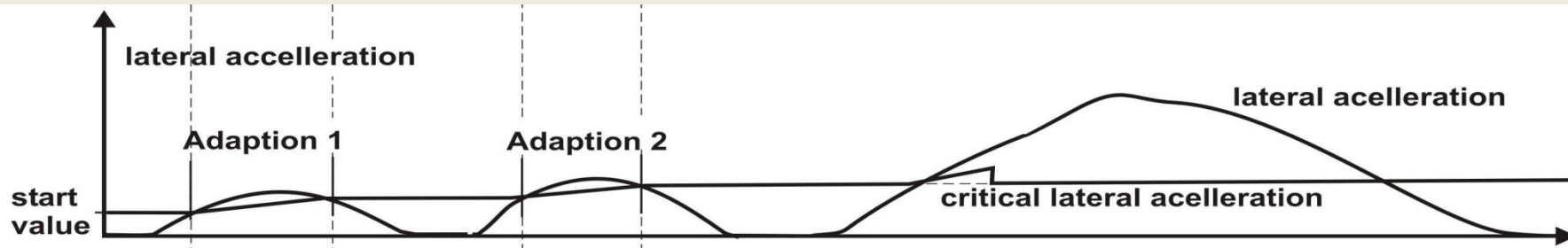


1. Monitoring of vehicle speed by wheel speed sensors



Difference in wheel speed left/right indicates possible critical lateral acceleration

2. Check of lateral acceleration with wheel speed sensor



If to the same time the ECU Sensors proofs lateral acceleration, the RSS Level 1 is activated

RSS- Roll Stability Support – Application Example



3. RSS Level 1: RSS Check Brake Application



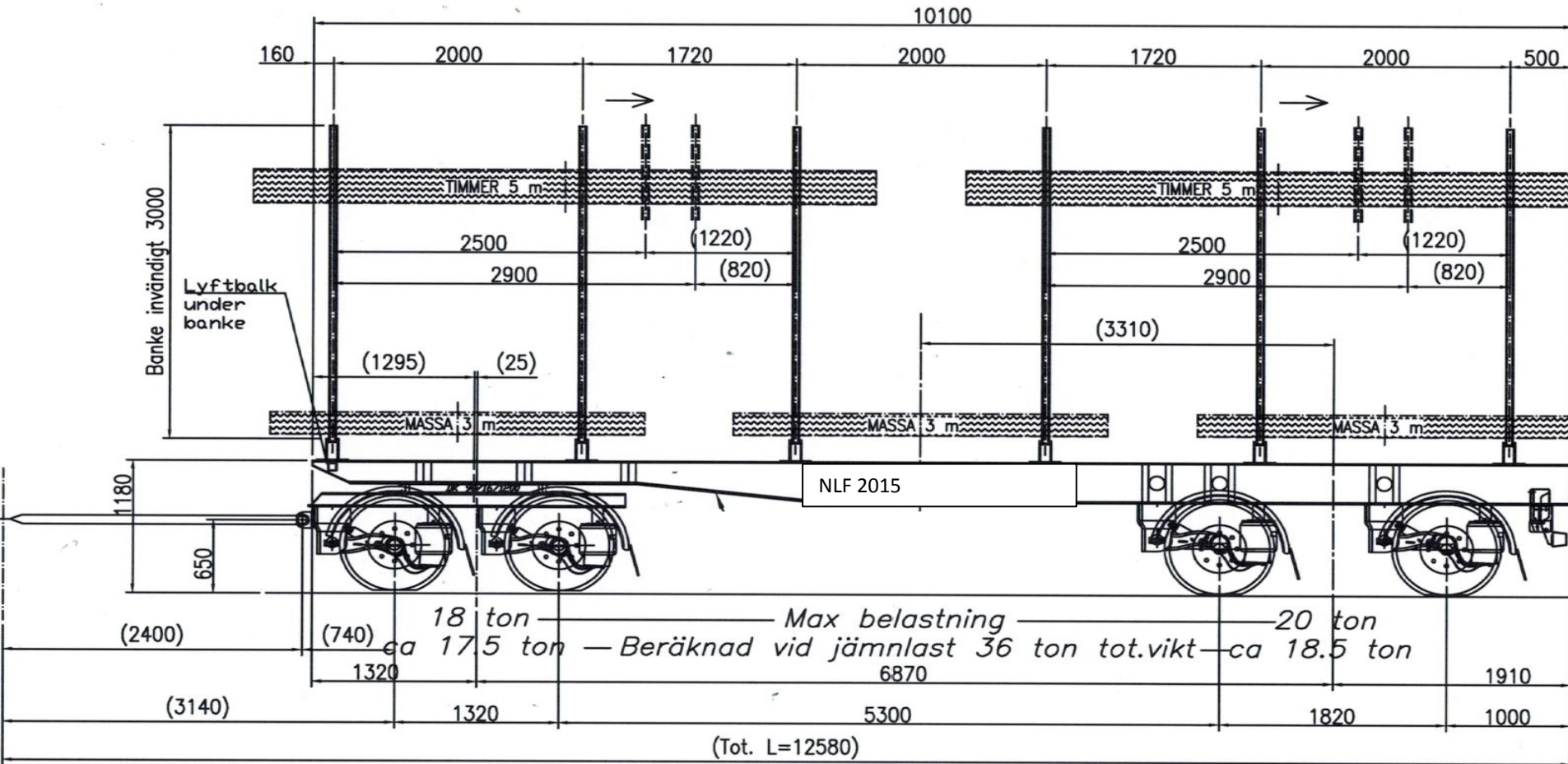
With the RSS Level 1 check brake application it is verified if the vehicle is arranged in a roll over critical situation

4. RSS Level 2: full Brake application



IF RSS Level 1 recognizes a locking wheel, the RSS Level 2 brake application is started

ODR-Analyse.



System	ODRTracker	Hersteller	
WABCO Teilenummer	480 102 060 0	Fahrzeugtyp	
Fertigungsdatum	2014-04-01	Fahrzeug-Ident.Nr.	
Seriennummer	436002826200L	Kilometerstand	50952.0 km
Diagnosekennung	0B020600	Diagnose-Seriennummer	01220010100-0

Fahrzeugdaten:

Kilometerstand Auslesedatum	50952.0 km
ODR gelöscht bei Kilometerstand	0.0 km
Für Auswertung relevante Kilometer	50952.0 km
Für Auswertung relevante Betriebsstunden	1464:53
Auslesedatum	2014-12-15 13:47:20
Fahrten gesamt (Trips)	558
Ausgewertete Fahrten (Trips)	558
Fahrzeug-Identifikationsnummer	
Hersteller	
Fahrzeugmodell	
Produktionsdatum Fahrzeug	W20/2014
Gerätenummer	480 102 060 0
Seriennummer (ECU)	436002826200L
Fahrzeugkennzeichen	

System	ODRTracker	Hersteller	
WABCO Teilenummer	480 102 060 0	Fahrzeugtyp	
Fertigungsdatum	2014-04-01	Fahrzeug-Ident.Nr.	
Seriennummer	436002826200L	Kilometerstand	50952.0 km
Diagnosekennung	0B020600	Diagnose-Seriennummer	01220010100-0

ODR Werte:

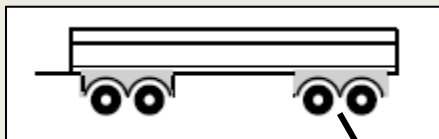
Bezeichnung		Wert Normiert	Wert Absolut
Bremsungen		4292.67 1/10000km	21872
Bremsfrequenz		0.43 1/km	--- 1/km
Mittlere Aggregatlast		--- t	18.5 t
Mittlere Aggregatlast		--- %	48.7 %
Mittlerer Steuerdruck		--- bar	1.23 bar
Fahrten mit Überlast		0.00 1/10000km	0
Bremsungen ohne ABS Stecker		0.00 1/10000km	0
Bremsungen mit Streckbremse		0.00 1/10000km	0
Bremsungen ohne CAN Vorgabe		0.00 1/10000km	0
RSS Eingriffe Stufe 1		17.07 1/10000km	87
RSS Eingriffe Stufe 2		0.00 1/10000km	0

System	ODRTracker	Hersteller	
WABCO Teilenummer	480 102 064 0	Fahrzeugtyp	
Fertigungsdatum	2010-03-18	Fahrzeugident.Nr.	
Seriennummer	284100834700M	Kilometerstand	312423.1 km
Diagnosekennung	0B020300	Diagnose-Seriennummer	01220010100-0

Eksempel på 3-akslet container slepvogn.

ODR Werte:

Bezeichnung		Wert Normiert	Wert Absolut
Bremsungen		4326.06 1/10000km	135156
Bremsfrequenz		0.43 1/km	--- 1/km
Mittlere Aggregatlast		--- t	19.2 t
Mittlere Aggregatlast		--- %	64.0 %
Mittlerer Steuerdruck		--- bar	1.33 bar
Fahrten mit Überlast		0.42 1/10000km	13
Bremsungen ohne ABS Stecker		1.22 1/10000km	38
Bremsungen mit Streckbremse		0.48 1/10000km	15
Bremsungen ohne CAN Vorgabe		19.17 1/10000km	599
Querbeschleunigung über 0,3g		799.91 1/10000km	24991
Querbeschleunigung über 0,4g		17.64 1/10000km	551



Gesamtstrecke / Achslast Achse c, d (100% = 19t)

Achslast in %	Gesamtstrecke in km
0 - 10	0
10 - 20	23420
20 - 30	720
30 - 40	140
40 - 50	170
50 - 60	210
60 - 70	280
70 - 80	6010
80 - 90	15290
90 - 100	9940
100 - 110	130
110 - 120	0
120 - 130	0
130 - 140	0
140 - 150	0
150 - 160	0

Histogramme Tabelle

Gesamtstrecke / Gesamtachslast (100% = 38t)

Aggregatlast in %	Gesamtstrecke in km
0 - 10	0
10 - 20	5930
20 - 30	1550
30 - 40	5450
40 - 50	170
50 - 60	200
60 - 70	160
70 - 80	3990
80 - 90	7630
90 - 100	6390
100 - 110	110
110 - 120	20
120 - 130	10
130 - 140	0
140 - 150	0
150 - 160	0

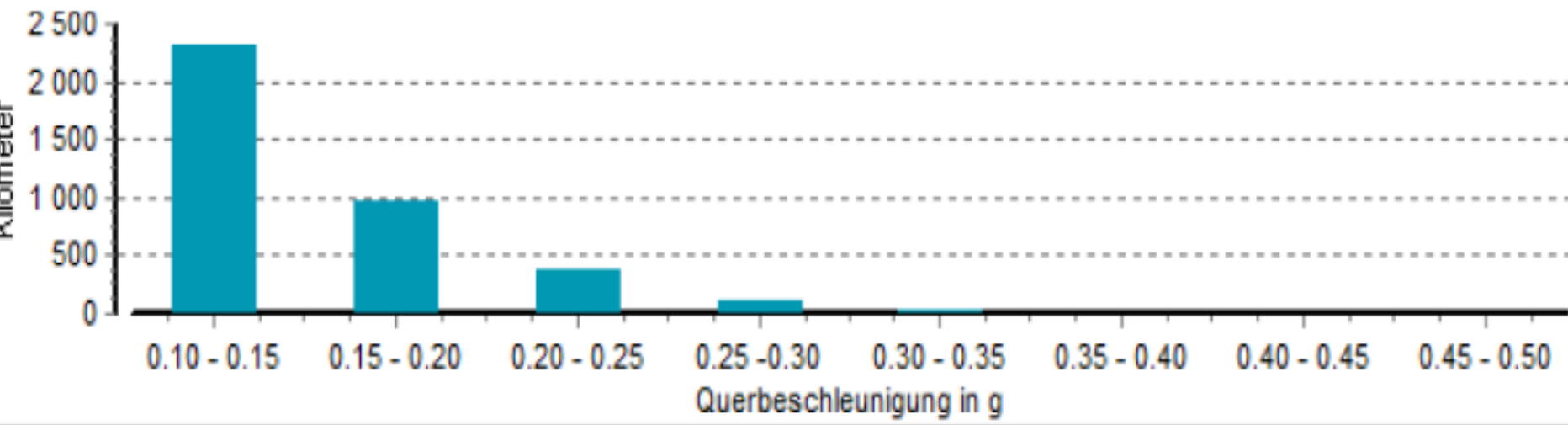
System	ODRTracker	Hersteller	
WABCO Teilenummer	480 102 060 0	Fahrzeugtyp	
Fertigungsdatum	2014-04-01	Fahrzeug-Ident.Nr.	
Seriennummer	436002826200L	Kilometerstand	50952.0 km
Diagnosekennung	0B020600	Diagnose-Seriennummer	01220010100-0

Gesamtstrecke / Querbeschleunigung

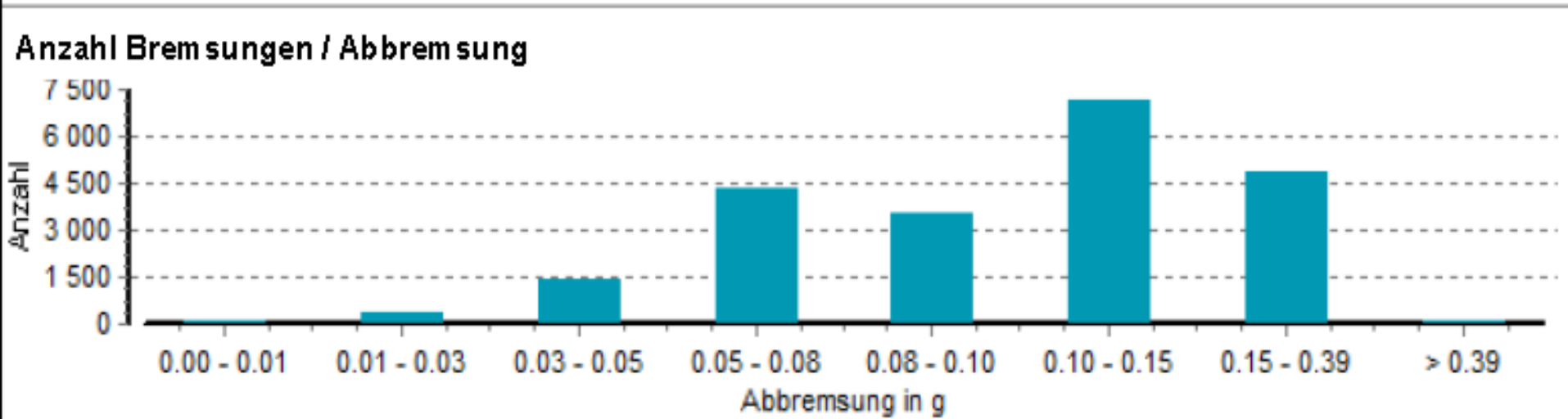
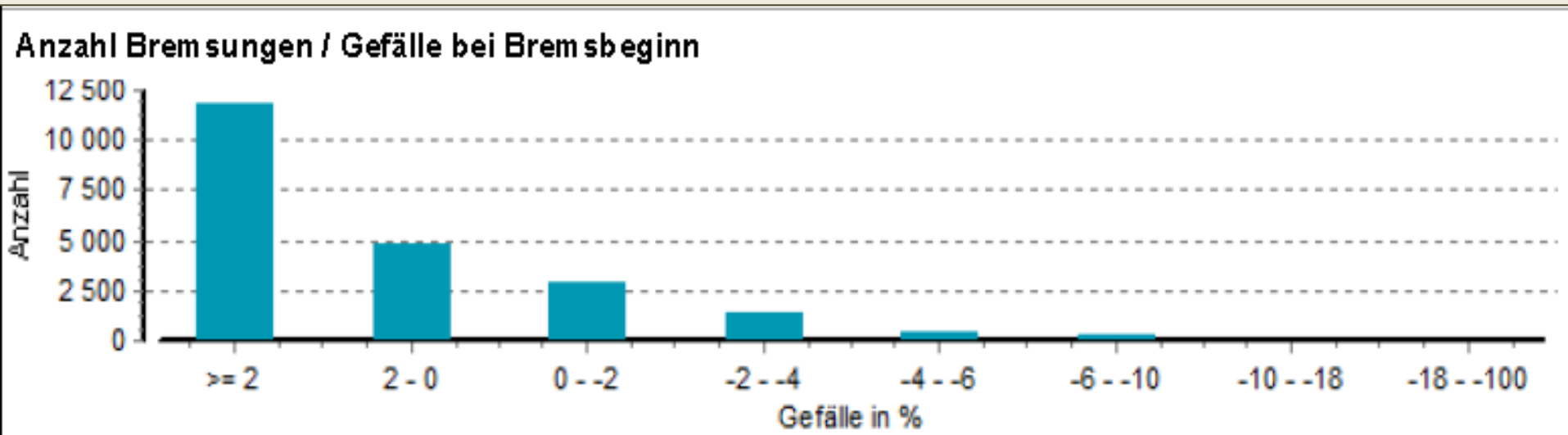
Querbeschleunigung in g	Gesamtstrecke in km
0.10 - 0.15	2317
0.15 - 0.20	959
0.20 - 0.25	368
0.25 - 0.30	97
0.30 - 0.35	15
0.35 - 0.40	1
0.40 - 0.45	0
0.45 - 0.50	0

System	ODRTracker	Hersteller	
WABCO Teilenummer	480 102 060 0	Fahrzeugtyp	
Fertigungsdatum	2014-04-01	Fahrzeug-Ident.Nr.	
Seriennummer	436002826200L	Kilometerstand	50952.0 km
Diagnosekennung	0B020600	Diagnose-Seriennummer	01220010100-0

Gesamtstrecke / Querbeschleunigung



Antall bremsinger. (Helling/retardasjon)



Systemskilt

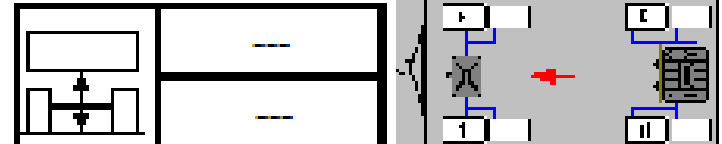
WABCO

TRAILER EBS-E

GGVSIADR TUEH TB 2007 - 019.0X

<small>IDENTIFICAZIONE MANIFATTURIERE CONSTRUCTEUR</small> NLF_RSS	
<small>TYP TYPE</small> ---	
<small>FATTORIALE IDENTIFICAZIONE CHASSIUMODULO NUMERO DI CHASSIUMODULO</small> YS901RSP22ST11111	
<small>INDICAZIONE IDENTIFICAZIONE DI BRANCA CALCOLO DI TRAZIONE</small> 1555957A	
<small>POLE PER L'ASSE C-D (a-f)</small> <small>POLE PER L'ASSE C-D (a-f)</small> <small>CONTRO L'ASSE C-D (a-f)</small>	80 80 4S/3M
<small>RSS</small> <small>RSS</small> <small>RSS</small>	<small>Einachsbarrenfahrig</small> <small>Single Tyre</small> <small>Montra simple</small> <small>Zwillingsbarrenfahrig</small> <small>Twin Tyre</small> <small>Montra jumelle</small>
<small>Subsystems</small>	--- I/O

GIO	Pin1	Pin3	Pin4
1	---	---	---
2	---	---	---
3	ALS2	ALS2	---
4	---	---	---
5	DIAG	DIAG	DIAG
6	---	---	---
7	---	---	---



														(bar)	
	pm (bar)	6.5	pm (bar)	0.6	2.0	---	6.5	1.0	Pz						
ACTIVE AXLE CONTROL														TR (daN)	
1	1450	0.5	1.5	9000	3.6	0.4	1.7	---	6.8	-	20	65	80	549	4692
2	1450	0.5	1.5	9000	3.6	0.4	1.7	---	6.8	-	20	65	80	549	4692
3	1250	0.4	1.2	10000	4.1	0.4	1.6	---	6.7	-	20 / 24	66	80	557	4628
4	1250	0.4	1.2	10000	4.1	0.4	1.6	---	6.7	-	20 / 24	66	80	557	4628
5	0	---	---	0	---	---	---	---	---	-	---	---	---	---	---



Spørsmål??





**Takk for meg!
Håper dette har gitt Dere et lite
innblikk ...**