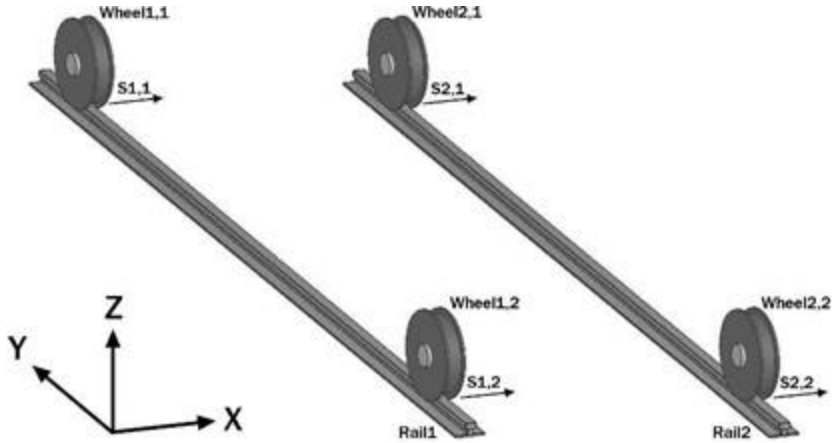
Wheel loads according to EN 1991-3 Table 2.2

Calculation number / work number	CXTD 2 x 12.5t x 35m /
Rated capacity of crane, [kg]	25 000
Span, [m]	35,000
Wheel base, [mm]	4 500
Rail type / Wheel groove width, [mm]	70*40 / 95
Crane use as a whole	U4/Q2



Dynamic factors according to EN 13001-2

ϕ_1	1,10	For hoisting and gravity effects acting on the mass of the crane
ϕ_2	1,18	For inertial and gravity effects acting on the hoist load
ϕ_3	1,00	For sudden release of a part of the hoist load
ϕ_4	1,00	Loads caused by travelling on uneven surface
$\phi_{5,Trolley}$	2,07	For loads caused by acceleration of traversing machinery
$\phi_{5,Bridge}$	1,20	For loads caused by acceleration of travelling machinery
ϕ_6	1,09	Dynamic factor for test loads
ϕ_7	1,25	For buffer forces

Vertical wheel loads (given wheel loads are without dynamic factors and partial safety factors)

Load action / Component	**Wheel1,1**	**Wheel1,2**	**Wheel2,1**	**Wheel2,2**
Self weight of the crane (tp1), $F_{z,i,j}$	-67,6 kN	-71,9 kN	-61,7 kN	-65,5 kN
Self weight of the crane (tp2), $F_{z,i,j}$	-61,7 kN	-65,5 kN	-67,6 kN	-71,9 kN
Weight of the hoist load (tp1), $F_{z,i,j}$	-115 kN	-122 kN	-5,12 kN	-4,98 kN
Weight of the hoist load (tp2), $F_{z,i,j}$	-4,74 kN	-4,58 kN	-116 kN	-122 kN
Dynamic test load (tp1), $F_{z,i,j}$	-127 kN	-134 kN	-5,63 kN	-5,48 kN
Dynamic test load (tp2), $F_{z,i,j}$	-5,21 kN	-5,04 kN	-127 kN	-134 kN

(tp1 = Trolley position closest to Rail 1, tp2 = Trolley position closest to Rail 2)

Horizontal wheel loads (given wheel loads are without dynamic factors and partial safety factors)

Load action / Component	**Wheel1,1**	**Wheel1,2**	**Wheel2,1**	**Wheel2,2**
Acceleration of the crane bridge (tp1), $F_{x,i,j}$	-8,58 kN	8,58 kN	-3,13 kN	3,13 kN
Acceleration of the crane bridge (tp1), $F_{y,i}$	Total longitudinal force on Rail 1 = -3,23 kN		Total longitudinal force on Rail 2 = -3,23 kN	
Acceleration of the crane bridge (tp2) , $F_{x,i,j}$	3,13 kN	-3,13 kN	8,65 kN	-8,65 kN
Acceleration of the crane bridge (tp2), $F_{y,i}$	Total longitudinal force on Rail 1 = -3,23 kN		Total longitudinal force on Rail 2 = -3,23 kN	
Skewing of the crane (tp1), (Rail 1 guiding), $F_{x,i,j}$, $S_{1,2}$=43,0 kN	0 kN	-31,5 kN	0 kN	-11,5 kN
Skewing of the crane (tp2), (Rail 1 guiding), $F_{x,i,j}$, $S_{1,2}$=43,0 kN	0 kN	-11,4 kN	0 kN	-31,6 kN
Skewing of the crane (tp1), (Rail 2 guiding), $F_{x,i,j}$, $S_{2,2}$=43,0 kN	0 kN	-31,5 kN	0 kN	-11,5 kN
Skewing of the crane (tp2), (Rail 2 guiding), $F_{x,i,j}$, $S_{2,2}$=43,0 kN	0 kN	-11,4 kN	0 kN	-31,6 kN
Acceleration of trolley(s), $F_{x,i,j}$	-0,579 kN	-0,650 kN	-0,606 kN	-0,623 kN
In-service wind (tp1), $F_{y,i}$	Total longitudinal wind force on Rail 1 = 0 kN		Total longitudinal wind force on Rail 2 = 0 kN	
In-service wind (tp2), $F_{y,i}$	Total longitudinal wind force on Rail 1 = 0 kN		Total longitudinal wind force on Rail 2 = 0 kN	
Storm wind, $F_{y,i}$	Longitudinal force on storm lock 1 = 0 kN		Longitudinal force on storm lock 2 = 0 kN	
Crane collision to buffers (tp1), $F_{B,i}$	Buffer force on Rail 1 = 66,0 kN		Buffer force on Rail 2 = 60,1 kN	
Crane collision to buffers (tp2), $F_{B,i}$	Buffer force on Rail 1 = 60,1 kN		Buffer force on Rail 2 = 66,0 kN	

($F_{x,i,j}$ = Transverse force of Wheel j on Rail I, $F_{y,i}$ = Longitudinal force on Rail I, $F_{z,i,j}$ = Vertical force of Wheel j on Rail I, $S_{1,I}$ = Guiding force on Rail 1, $S_{2,I}$ = Guiding force on Rail 2)