

## **Racking Design Software (RDS)**

# **Explanation of the Racking Design Software of NEDCON**

**In this document, you will find an explanation of the Racking Design Software from NEDCON. A system that meets your needs as a NEDCON partner by means of compositional adjustments!**

## **Intro**

For many years now, you have been familiar with our design tool PST for pallet racking, an Excel and VBA oriented tool that we have developed and continuously adapted since the mid-90s.

Because Microsoft will no longer support the Excel and VBA versions in the future and the calculation method is an (accurate) approximation of a finite element package, we decided to develop new software for the design of pallet racks.

## **The Racking Design Software**

The Racking Design Software (RDS) will replace the PST system. The RDS system contains all the current features of PST. However, the new RDS system has been extended with new functionalities. RDS was developed using the latest technologies. The advantage of this is that RDS can be used directly via the internet, without a Citrix connection. A PC, laptop, tablet or even a mobile phone with internet connection is enough for this tool.

The main difference between PST and RDS is that RDS automatically generates and checks complete calculation models. These models are comparable to models generated by a structural engineer. This development makes RDS even more accurate than PST and gives it more possibilities.

***As mentioned above, RDS also includes new features. These are as follows:***

- The height classification can deviate (within certain limits) from the height classification of the rack row
- Pick and Deposit stations
- Slide-through protection
- Preparations for earthquakes in several European countries
- Can be used in several languages

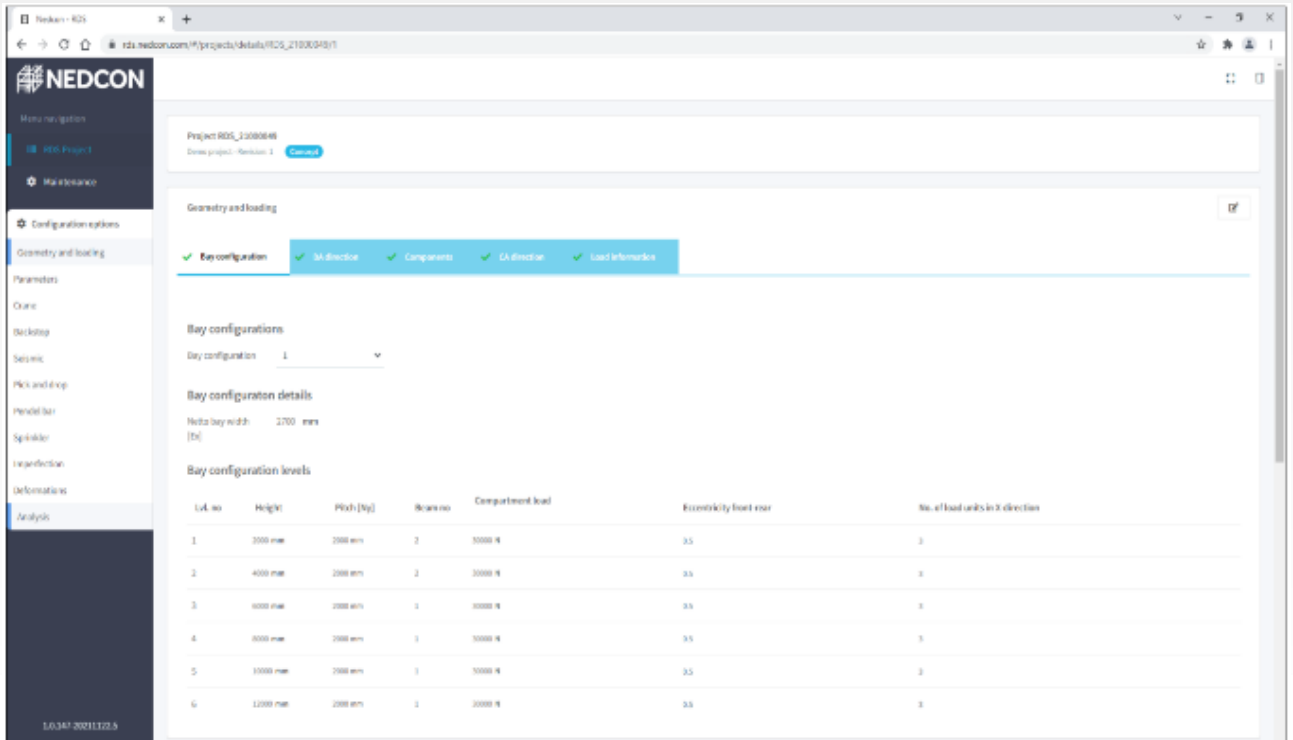
RDS will initially be available in English and German. As a NEDCON partner and current PST user, you will automatically gain access to RDS. We can also grant access to partners who are not yet using our design tool.

By the time RDS will be available for you as a NEDCON-partner, depending on the development of Covid-19, there will be live trainings and online tutorials. We will communicate with you in an early stage about the availability and the training sessions.

Do you have any other questions regarding RDS? Please contact us at [resellers@nedcon.com](mailto:resellers@nedcon.com)

To give you, as an idea of the RDS layout, here are some screenshots:

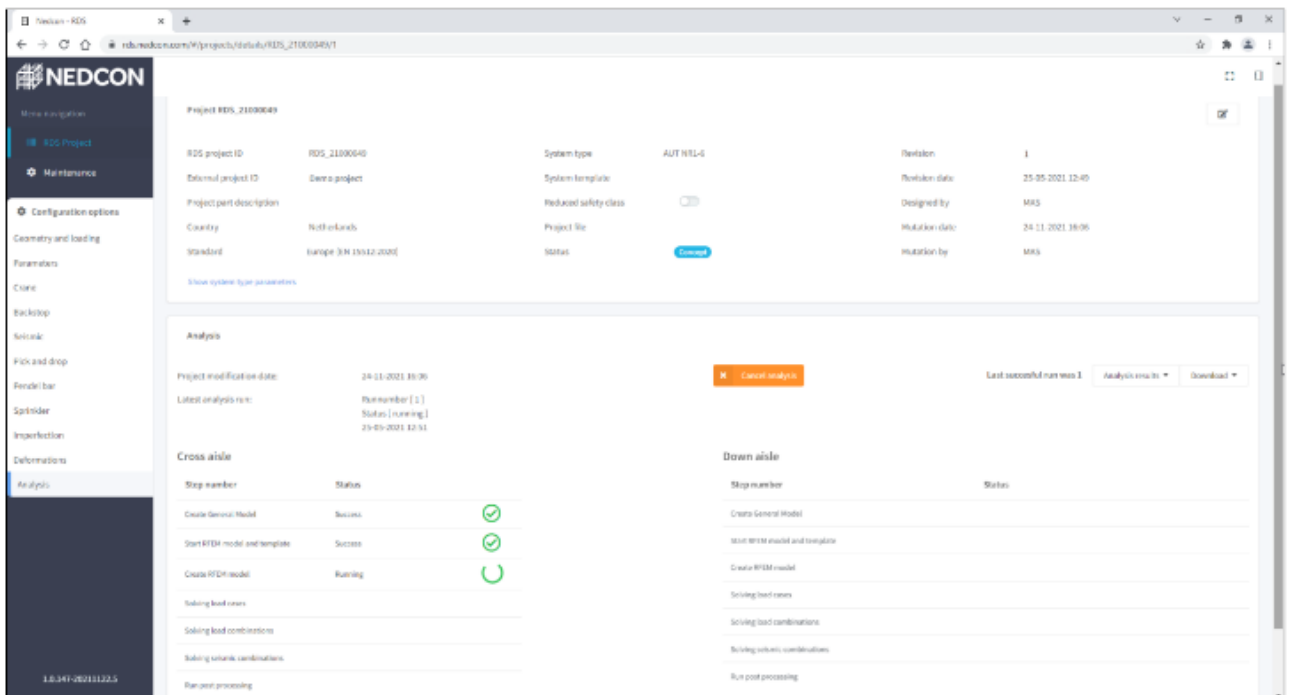
Input of project data:



The screenshot shows the 'Geometry and loading' configuration page in the NEDCON RDS application. The left sidebar contains navigation options like 'Menu navigation', 'RDS Project', 'Maintenance', and 'Configuration options'. The main content area is titled 'Project RDS\_21000049' and includes a 'Connect' button. Below this, there are status indicators for 'Bay configuration', 'Substructure', 'Components', 'CA structure', and 'Load information'. The 'Bay configurations' section shows a dropdown for 'Bay configuration' set to '1'. The 'Bay configuration details' section lists 'Netto bay width' as 2700 mm. The 'Bay configuration levels' section contains a table with the following data:

Level no	Height	Pitch [kg]	Scenario	Compartment load	Eccentricity load case	No. of load units in X direction
1	3000 mm	2000 mm	2	30000 N	0.5	3
2	4000 mm	2000 mm	2	30000 N	0.5	3
3	5000 mm	2000 mm	1	30000 N	0.5	3
4	6000 mm	2000 mm	1	30000 N	0.5	3
5	10000 mm	2000 mm	1	30000 N	0.5	3
6	12000 mm	2000 mm	1	30000 N	0.5	3

Analyzing a construction:



The screenshot shows the 'Analysis' page in the NEDCON RDS application. The left sidebar is the same as in the previous screenshot. The main content area is titled 'Project RDS\_21000049' and displays a table of project metadata:

Field	Value
RDS project ID	RDS_21000049
System type	AUT 101-G
Revision	1
External project ID	Demo project
System template	
Revision date	25-05-2021 12:40
Project part description	
Reduced safety class	<input type="checkbox"/>
Designed by	MKS
Country	Netherlands
Project file	
Validation date	24-11-2021 16:06
Standard	Europe (EN 19942:2005)
Status	<a href="#">Connect</a>
Validation by	MKS

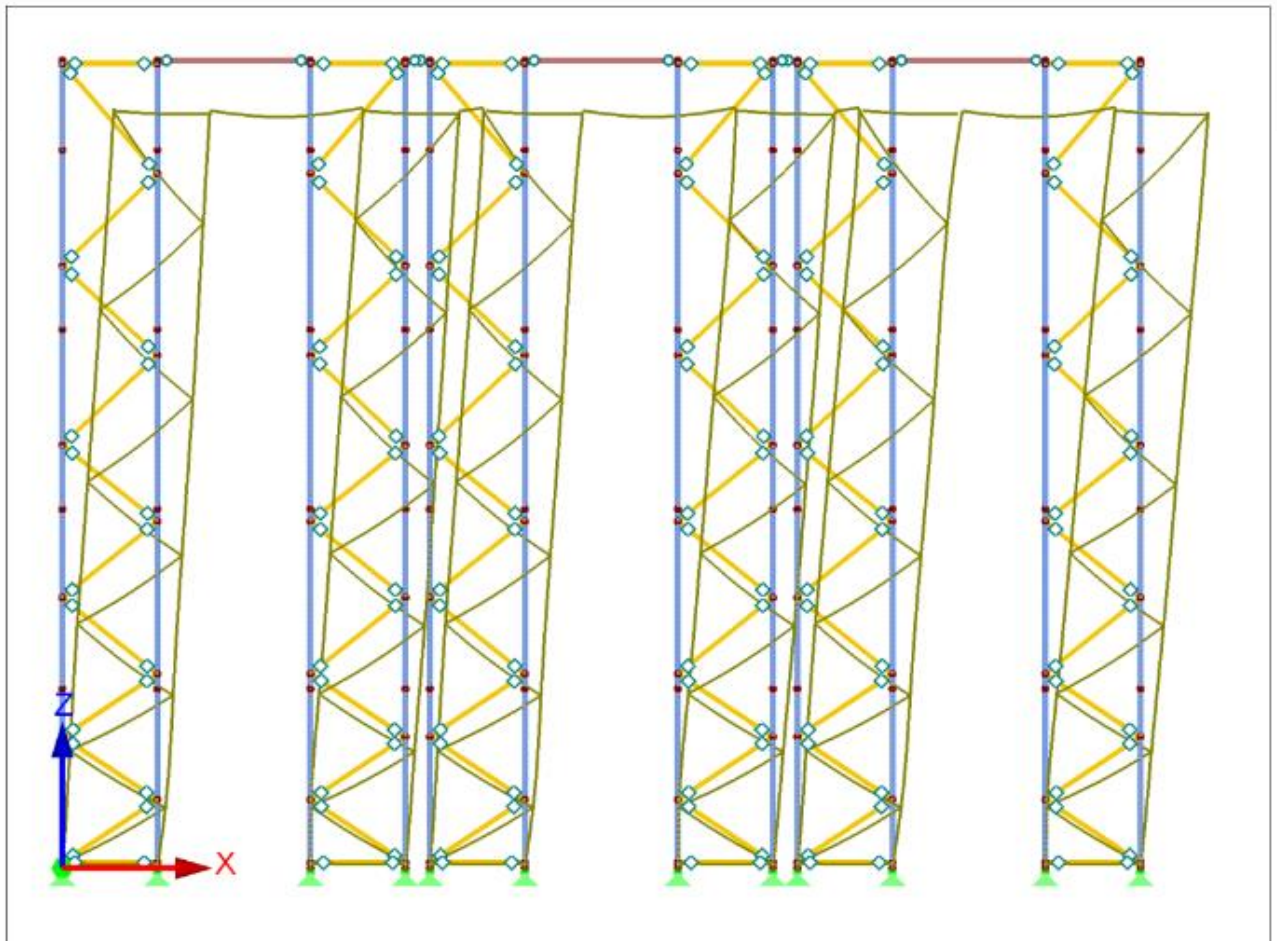
Below the metadata table, there is a 'Show system type parameters' link. The 'Analysis' section shows 'Project modification date' as 24-11-2021 16:06 and 'Latest analysis run' with 'Run number [1]' and 'Status [running]' as of 23-09-2021 12:51. A 'Cancel analysis' button is visible. The 'Cross aisle' and 'Down aisle' sections show progress bars and status indicators for various steps:

Step number	Status
1	Success <span>✓</span>
2	Success <span>✓</span>
3	Running <span>🔄</span>
4	
5	
6	
7	
8	
9	
10	

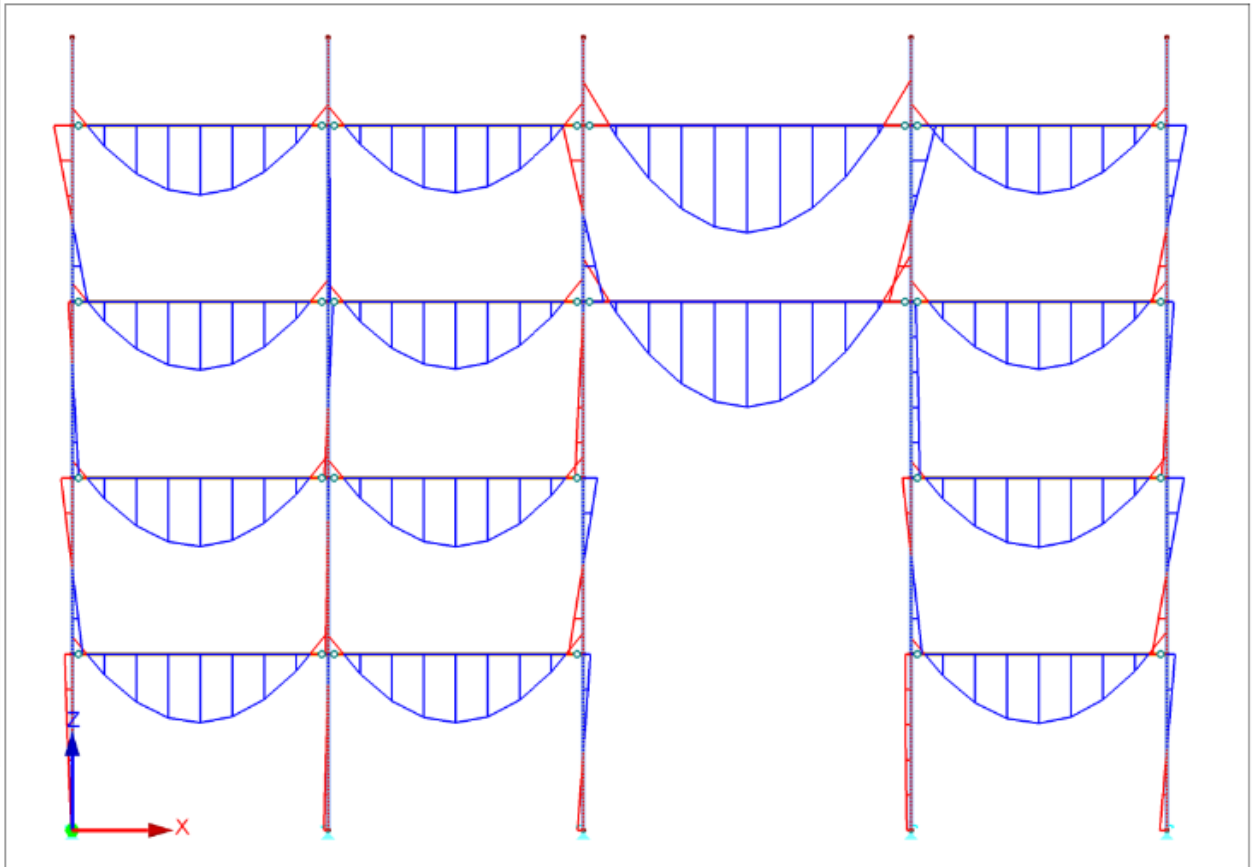
Overview with component checks:

Summary of Post Processing Results - runnumber [5]					
Cross aisle - Checks on strength			Down aisle - Checks on strength		
Component	UC Section	UC Ends	Component	UC Section	UC Ends
12083255070PR_M10-S355MC	49%		12083255070PR_M10-S355MC	59%	14%
OB704015_M10-S250GD	4%	7%	CC1305015-S275JR	77%	70%
			CC1505015-S355MC	88%	97%
Cross aisle - Checks on Stiffness			Down aisle - Checks on Stiffness		
Deformation		UC	Deformation		UC
Upright CA		11%	Upright DA		28%
			Hook-in beams		102%

Deformation of a rack in a frame direction:



Bending moments of a racking (with tunnel) in downaisle:



Report of an upright generated by RDS:

RDS report				
<b>Project</b>				
RDS project ID	RDS_21000544			
Project ID	Demo project			
RDS revision	0			
Project designed by	MAS			
Project created on	25-10-2021			
Project designed by	MAS			
Date of last modification	25-10-2021			
Date of report generation	24-11-2021 16:16			
<b>General data</b>				
System type	NR6			
Detailed system type	AUT NR1 - Single sided			
Country	Germany			
Standard	EN 15512:2020			
abZ+aBG	Z-14.8-833, Z-14.8-834 & Z-14.4-853			
Material handling	Automatic			
Safety class	Normal safety class			
Number of middle frames	2			
Number of outside frames	1			
Entry of frames	Single sided			
<b>Bay configurations</b>				
Number of bay configurations	2			
<b>Bay configuration 1</b>				
Netto bay width	2,800 mm			
Height [mm]	Pitch [mm]	Compartment [N]	Ecc. F-R	No. DA bins
2,000	2,000	30,000	0.50	3
4,000	2,000	30,000	0.50	3
6,000	2,000	30,000	0.50	3
8,000	2,000	30,000	0.50	3

Start of a report generated by RDS:

RDS frame arrangement report				
<b>Frame geometry</b>				
Frame depth	1,100	mm		
Frame height	9,000	mm		
<b>Parts list</b>				
<b>Frame</b>				
Upright	12083255070PR_M10			
Frame brace	OB704015_M10			
$\Sigma$ frame brace length	15,111	mm		
Frame arrangement	600-2			
<b>Vert. height</b>	<b>L<sub>FBR,ctc</sub></b>	<b>L<sub>FBR,tot</sub></b>	<b>No. braces</b>	
<b>[mm]</b>	<b>[mm]</b>	<b>[mm]</b>	<b>in frame</b>	
0	970.00	1,026.00	2	
600	1,140.57	1,196.57	3	
750	1,226.13	1,282.13	3	
900	1,323.22	1,379.22	3	
1,050	1,429.48	1,485.48	1	

