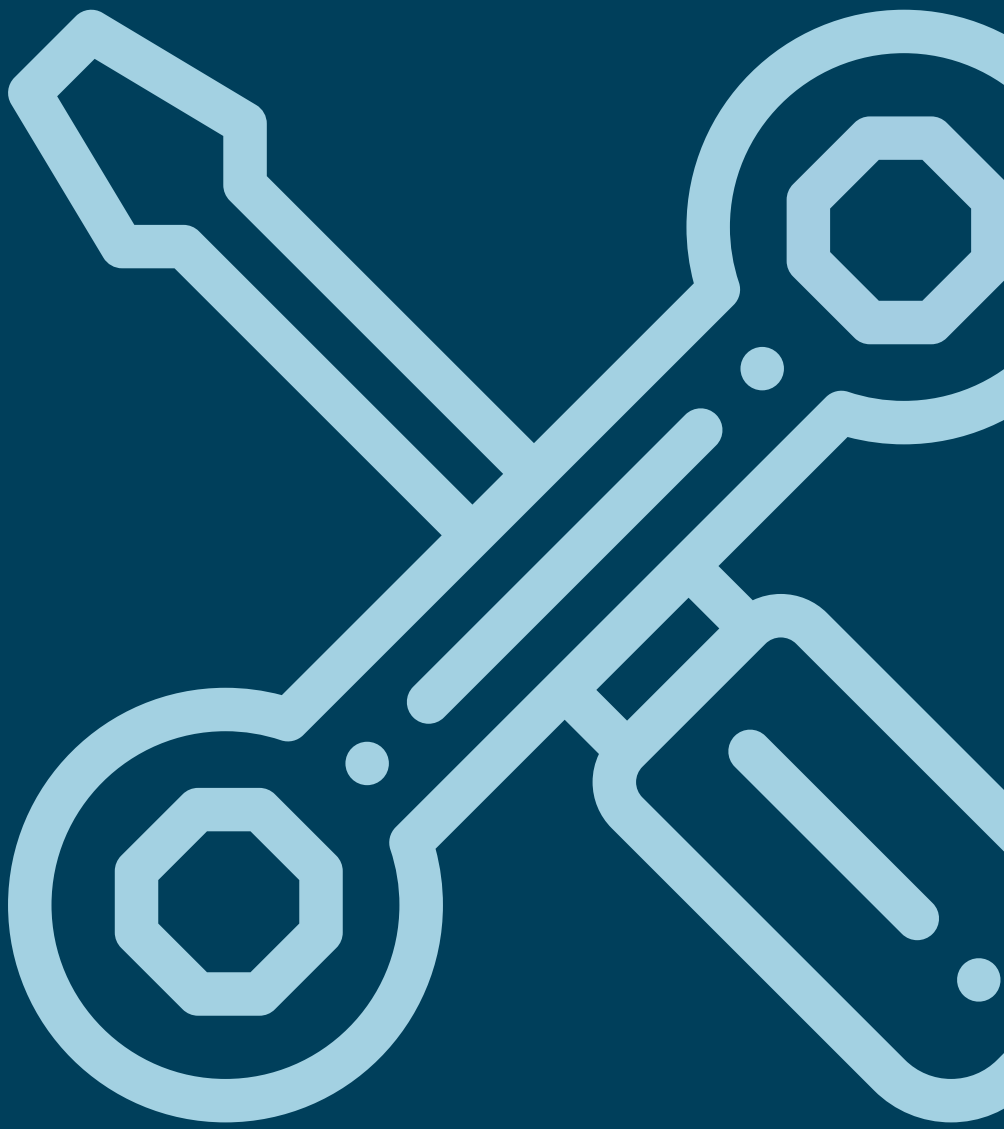


Operation Manual

Bolt-Check Cloud

R&D Engineering A/S

Rev. date. 08-07-2024

Contents

1 Document revision table

Rev. no.:	Rev. Date:	Change:	Responsible
01	29-05-2024	First edition	JES
02	08-07-2024	Minor corrections	MKG

2 Introduction

2.1 Purpose

The purpose of this operating manual is to describe the usability of the R&D Bolt-Check Cloud and secure safe and correct use of the platform.
Bolt-Check cloud is a management platform to evaluate data, change targets, spring constants, manage roles and sites.

2.2 Customer support

R&D maintains a customer support, capable of assistance regarding questions not covered in this operation manual. Customer support can be reached via the following contact information:

Customer support
R&D Engineering A/S Sigma 3 8382 Hinnerup Denmark **Mail:** Service@rdas.dk **Phone:** +45 28 51 89 50

2.3 Disclaimer

The manual should be read and understood prior to use. Lack of understanding can lead to false entering/editing of data, resulting in false analysing of elongation data.

This manual only covers the R&D Bolt-Check Cloud.

For operation manual regarding Bolt-Check Standard, see References on page 12

2.4 Field of scoop

Bolt-Check Cloud is designed exclusively to:

- **Evaluate elongation measurements performed with Bolt-Check Standard ultrasonic measurement tool**
- **Define or change joint specific acceptance criteria and spring constant**
- **Administrate users with access to cloud database and Bolt-Check Standard tool**

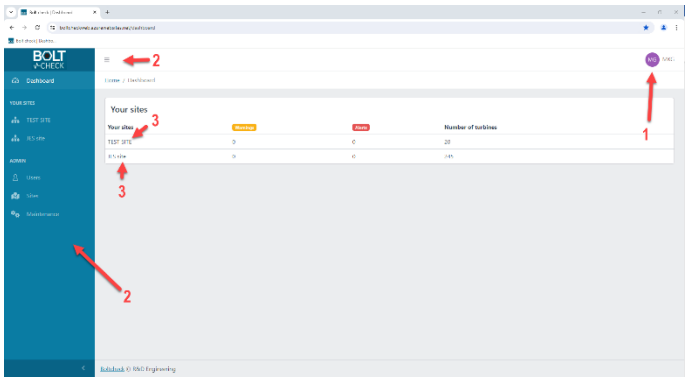
3 Getting started

3.1 New user

To get a new user, contact your company administrator.
A new user must contain an e-mail address for logins as well as a password.
Passwords can be temporarily standard created, and later reset to a personal password by the new user.

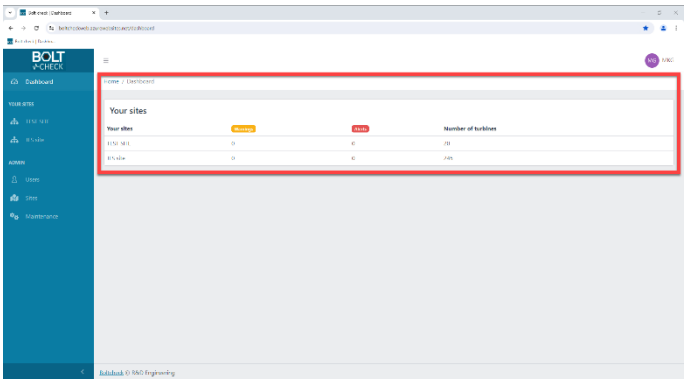
3.2 Navigation

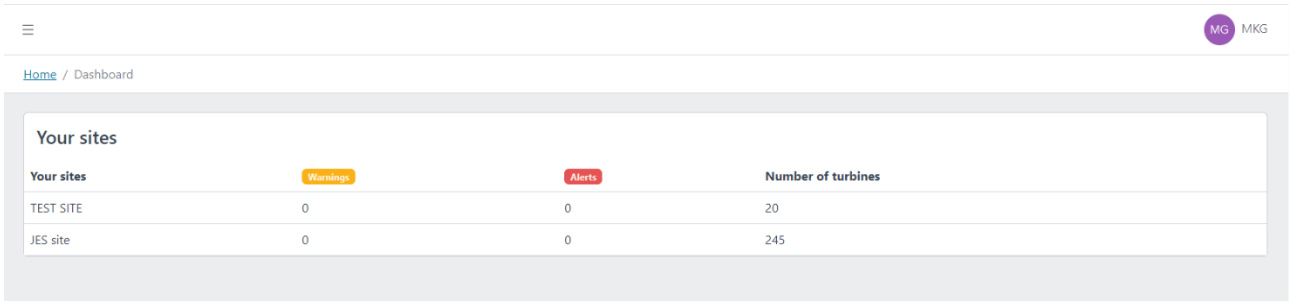
- **Top right corner the user logged in is shown. (1)**
- **Top left corner besides Bolt-Check logo contains access to: (2)**
  - **Dashboard**
  - **Your Sites**
  - **Admin**
- **"Your sites" can be navigated from "Dashboard". (3)**



3.2.1 Dashboard

- **From "Dashboard" there's overview over all "Your Sites", if any warnings or alerts are present, these will be displayed here. Contains number of total turbines on every site.**





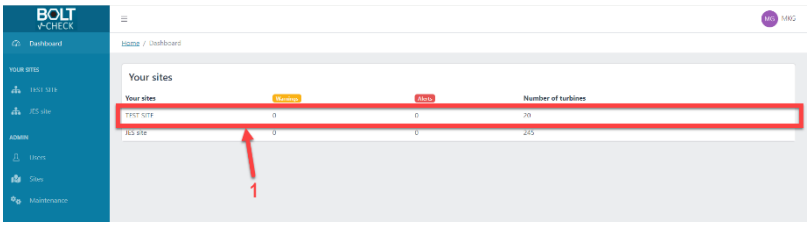
3.2.2 Your sites

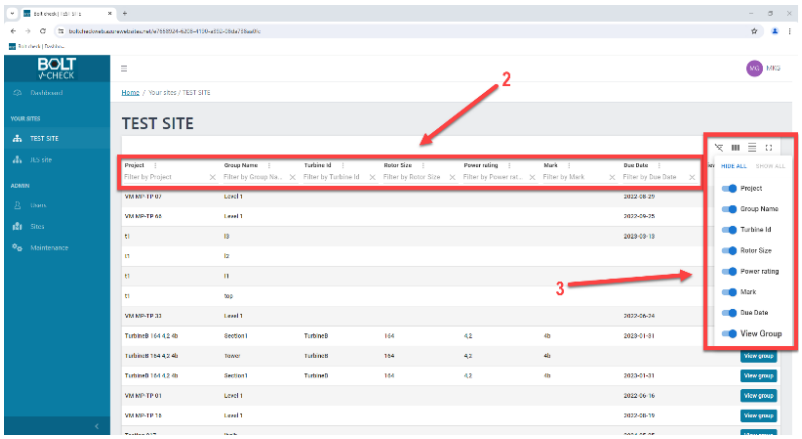
To access a site:

- **Press on the desired “Site”. (1)**

- **Filters make for easy search on the desired specifications: (2)**
  - **Project**
  - **Group Name**
  - **Turbine ID**
  - **Rotor Size**
  - **Power Rating**
  - **Mark**
  - **Due Date**

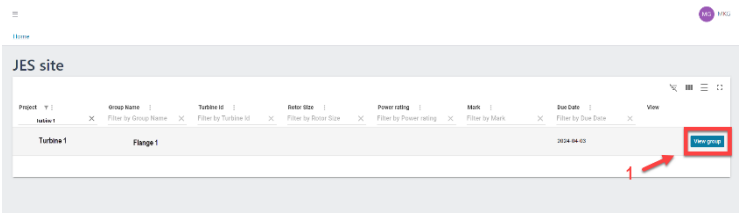
- **On the right hand side of the filters, there are different options to sort how to view such as: (3)**
  - **Show/Hide filters**
  - **Show/Hide columns**
    - **Under “Show/Hide columns” theres an option to select which colum to hide.**
  - **Toggle density**
  - **Toggle full screen**

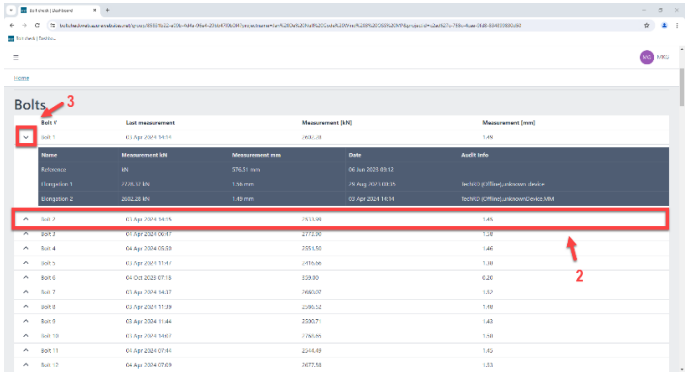




3.3 Viewing data

- Find the deserid project and press on “View Group”. (1)
- From here there’s an overview over all bolts in project.
- The overview shows: (2)
  - Last measurement (Day/Month/Year)
  - Measurement [kN] (Current)
  - Measurement [mm] (Current)
- Press the arrow (3) to get more detaileds on performed measurements.

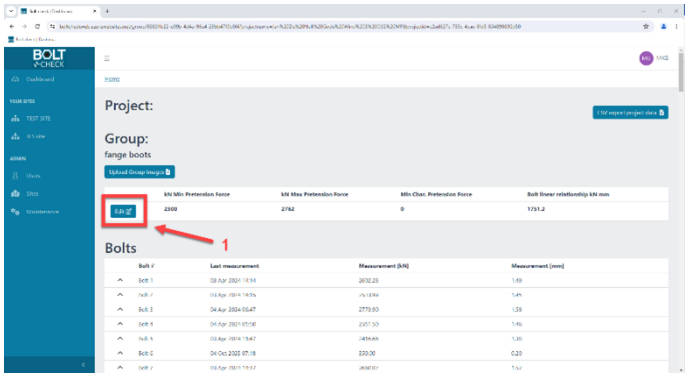


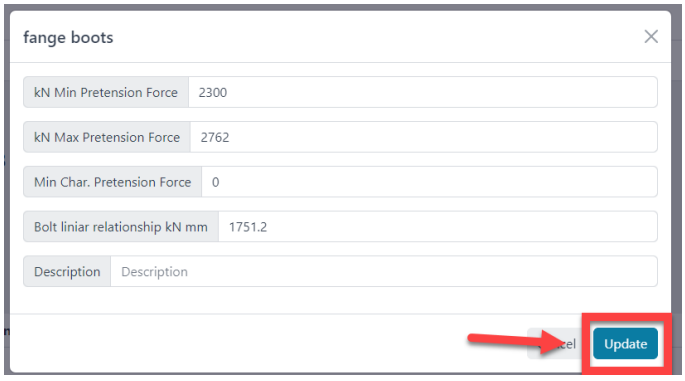


4 Data editing

For making the first data or editing:

- Go to the desired project and press “Edit” (1)
- From there a window opens up with options to set:
  - kN Min Pre-tension Force
  - kN Max Pre-tension Force
  - Min Char. Pre-tension Force
  - Bolt liniar relationship [kN/mm]
  - Description
- When everything is set to the desired specifications press “Update”
- In top right corner there is an option to export projects data as a CSV file for exel.

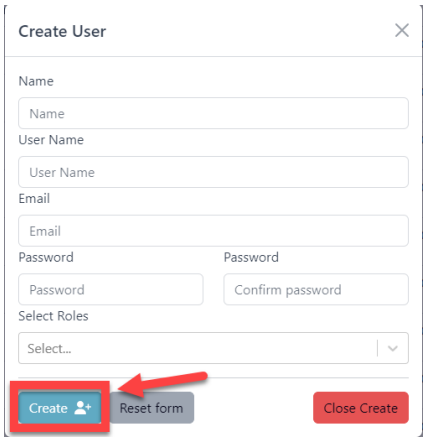




5 Admin features

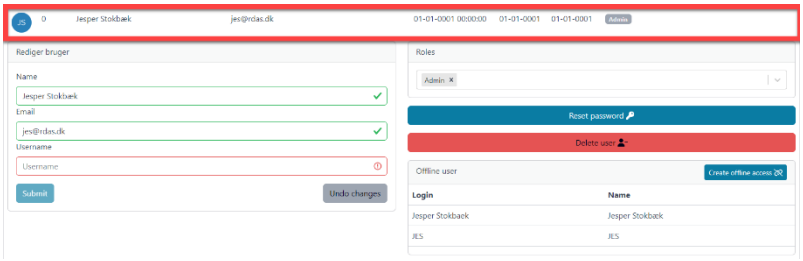
5.1 Users

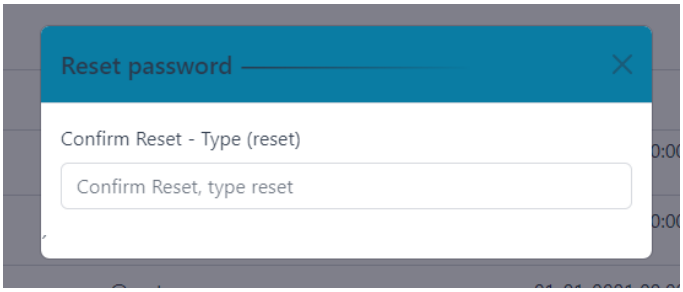
- Pressing on “Users” gives an overview over all users. (1)
- From here the option to “Create user” is located. (2)
- After pressing “Create user” a window will appear with boxes to fill out: (3)
  - Name
  - User Name
  - Email
  - Password
    (Can be reset later)
  - Select Roles
    (Can be changed later)
- Press “Create” to finish new user creation



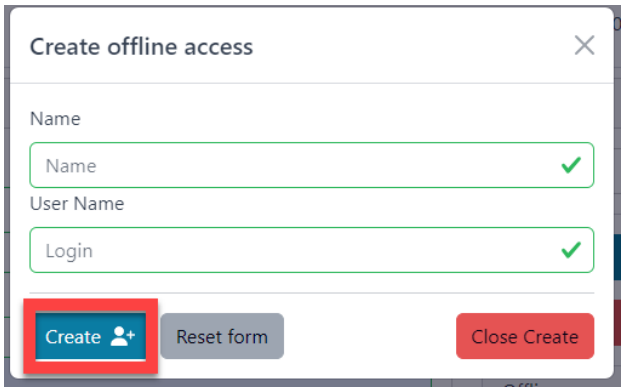
5.1.1 Edit users

- By pressing on the user needing to be edited, a menu will appear. Details to change:
  - Name
  - Email
  - Username
  - Roles
    Go to “5.1.2 Edit roles” for more.
  - Reset password
  - Delete user
  - Create offline access
- Press “Reset password” and follow the instruction, type (reset) press “Reset”.
- After an email with reset password link, will be sent to the persons mail adress.



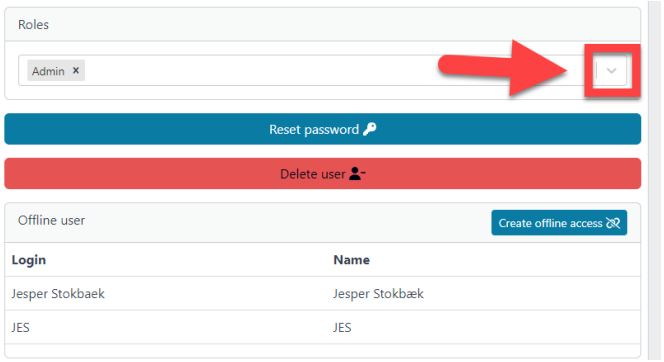


- To create offline access press on “Create offline acess” type name and user name and press “Create”.
- To delete user the same metod as “Reset password” is used. Press “Delete user” and type (delete) press “Delete”.



5.1.2 Edit roles

- Press the highlighted arrow to get a menu with the roles. Now select the specific role to assign them, this step needs to be repeated if more than one role is required.
- Admin
  - Admin rights to all existing sites, and/or created by themselves
  - Can give access to other admins to their sites (and assign to role below in hierarchy)
- Back office engineer (product manager etc.)
  - Must be given site access by higher role in hierarchy
  - Can not assign site access to anyone
- Measurement Manager
  - Must be given site access by higher role in hierarchy
  - Can assign site access to techs (lower in hierarchy)
- Tech
  - Must be given site access by higher role in hierarchy



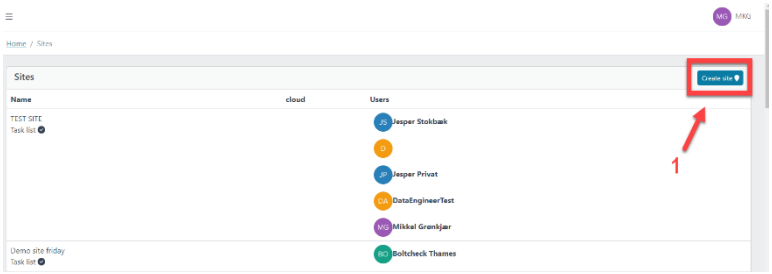
	BC Standard	BC Cloud			
Role	Use BC Standard	View sites	Assign user to a site	Create new site	Create new users
Admin	X	X	X	X	X
Measurement Manage	X	X	X		
Back Office Engineer	X	X			
Tech	X				

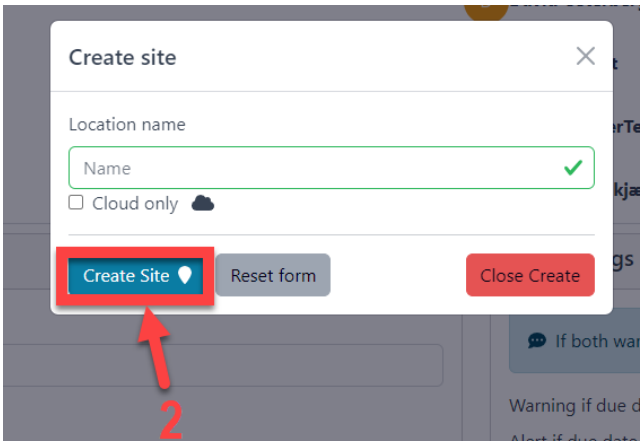
5.2 Sites

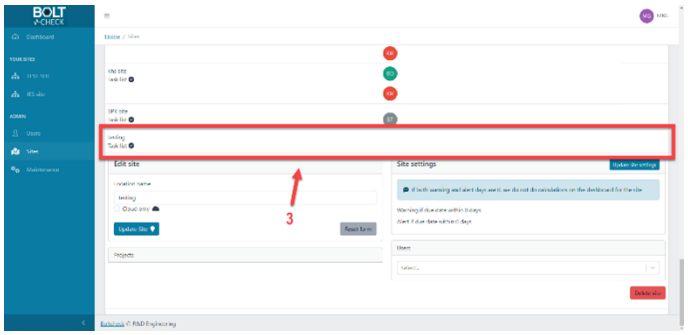
From here there is an overview over all sites assigned to the user. The list includes:

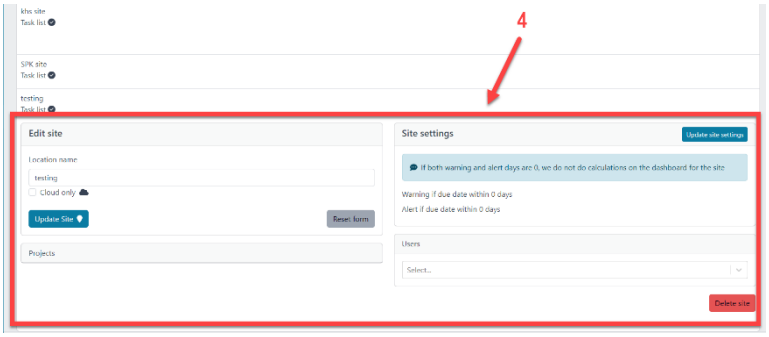
- Name of the sites
- Users on the sites

- To create a new site, press “Create site”. (1)
- Type the site name and press “Create site”. If the box “Cloud only” is pressed, the site cannot be synced down onto Bolt-check standard. (2)
  “Cloud only” can be put on or taken off later.
- The new site will appear in the bottom of the list of sites.
- Press on the site as shown in the picture. (3)
- A menu will appear, from here “Cloud only” can be put on or off. Site settings can be put on to give warnings and alerts.
  Users can also be assigned to the site from here. (4)
- If site needs to be deleted, press “Delete site” a window will appear. type “delete” and press on delete.









5.3 Maintenance

- **Type in sites, projects, etc. to sort the list of flanges avaliable for selection**
- **Press and select desired site/project/group (1)**

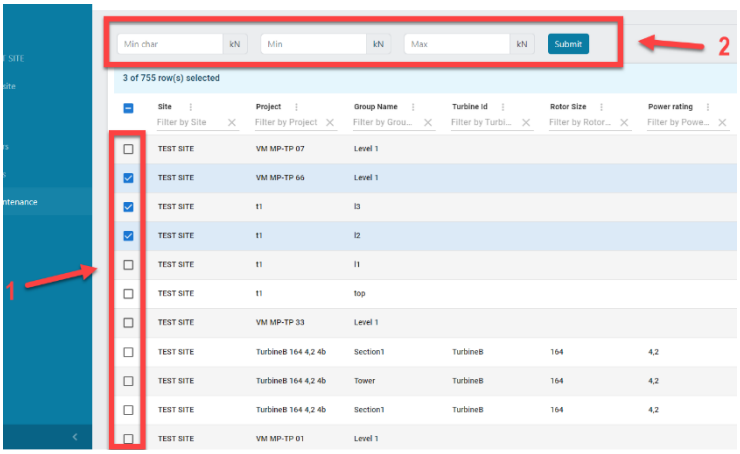
- **Set: (2)**
  - **Min char [kN]**
  - **Min [kN]**
  - **Max [kN]**

  This is used for easy mass setting

- **"Min Pre-tension Force" can be set after the specific task. Minimum Pre-tension Force is set to know when to retighten.**

- **"Max Pre-tension Force" can also be set after the specific task. Maximum Pre-tension Force is set to know when somethings wrong.**

- **"Min Char. Pre-tension Force".**
  $\mu - Kn.\sigma$
  μ: Mean of sample
  Kn: Coefficient from table
  σ: Sample standard deviation



Characteristic Pretension

μ - $k_n.\sigma$

where:
μ : mean of sample
k_n : coefficient from Table 13-1
σ : sample standard deviation
n : number of measurements in sample

n	3	4	5	6	8	10	20	30	∞
k_n	3.37	2.63	2.33	2.18	2.00	1.92	1.76	1.73	1.64

Table 13-1: Value for the k_n for the 5% characteristic value, based on EN 1990:2002+A1:2005 (E).

For values of n not available in Table 13-1, the following approach can be used for obtaining k_n, depending on n value of interest:

- for $3 < n < 30$,

$$k_n = \frac{(n_2 - n)}{(n_2 - n_1)} \cdot k_{n1} + \frac{(n - n_1)}{(n_2 - n_1)} \cdot k_{n2}$$

Corresponding to a linear interpolation using the following values from Table 13-1:
n_2 : n value closest to and immediately higher than n
n_1 : n value closest to and immediately lower than n
k_{n2} : k_n value correspondent to n_2
k_{n1} : k_n value correspondent to n_1

- for $n > 30$. $k_n = k_{30}$.

6 References

Ref [1] 0001-401-MAN-Bolt-Check Standard Operation Manual rev. 09