

MecaStack Revision History

<u>Version</u>	<u>Date</u>	<u>Revision Description</u>
5.5.0.0	1/6/2020	Fix bug with NBR 6123 not retaining dynamic override setting
5.5.0.1	1/13/2020	Fix problems with extractions not extracting all items correctly. Revise Breach form to remove special * note
5.5.0.2	1/16/2020	Fixed a problem where refractory was being under-estimated in some scenarios. Also corrected the same issue with Jacket.
5.5.0.3	1/22/2020	Fixed bug in External Load form, when metric was base units and user selected API loads using English it caused a prob
5.5.0.4	2/3/2020	Revise formatting of tables to have lines outlining, fix problem with symmetrical prop's to find true min sec modulus (Never released this version due to problems with lines causing out-of-memory errors).
5.5.0.5	3/9/2020	Removed lines around tables due to memory issues. Corrected redundant load cases in Euro code. Added eccentric moment due to breach centerlines being off centerline, and added a flag to allow user to turn off to compare to old files. Changed lifting to only check lifting for 0 deg angle since that is the most important, and trying to check other lift angles was problematic and not reflecting real problems. Corrected units conversion error that caused major overstress in circumferential stress on NBR 6123 code.
5.5.0.6	4/15/2020	Made the following revisions: 1) Under Help menu added a Teamviewer Option 2) Minor Correction in guy wire length calculation 3) Make Standard Struc Flange procedure use Num of Bolts divisible by 4 4) For STS vortex shedding we estimate Damping required to limit defl to 1% of Diameter 5) Fix bug with regard to wind speed entered in mph for BS CP3 6) Fix bug where operating and live load still being incl in Seismic, even when the factors were zero 7) Added a new Breach analysis method that is being Beta tested 8) Add the ability to enter multiple elevations for a single flange detail
5.5.0.7	4/17/2020	Fix bug on stiffening ring menu, and more refinement of new Breach Troitsky Feature (Beta)
5.5.0.8	4/27/2020	Release new Troitsky Breach analysis, and Nozzle Loads.
5.5.0.9	4/30/2020	Fix minor bugs found with Breach and Nozzle.
5.5.1.0	5/9/2020	Fix bugs with Breach, Nozzle and Vertical Stiffener. Added option to enter radial dimensions for flanges. Add field weld input. Calcualte section weights for Lifting sections (Defined by flange or field weld). Added new Elevations shown on graphic as well as adding these to a layer so that they can be shown or hidden as desired.
5.5.1.1	5/13/2020	Fix bug with Breach that was inflating Circumferential Stiff Moment when $UR_{Sb} > 1$.
5.5.1.2	5/27/2020	More bug fixes with Breach & Nozzle, add nozzle and breach flange option, updates to manual seismic, bug fix on Flange radial flange dimensions, update load combinations for NBCC 2015 based upon user feedback.
5.5.1.3	5/29/2020	Fix bug with Flange dim's changing, and allow comma to be entered in project location and client fields
5.5.1.4	6/5/2020	Minor bug fixes, and addition of Modified Troitsky method for Breach to give less conservative results
5.5.1.5	6/11/2020	Fix bug with Breach Calc for Modified Troitsky, removed StrucShapes multiple creation which was slowing down soft
5.5.1.6	6/12/2020	Fix bug with SiteSpec in EQ Indian 2015, fix other minor bugs with regard to Nozzle Loads

5.5.1.7	6/19/2020	Fixed bug - adding Nozzle Loads sometimes locks up the application
		Fixed bug - Nozzle Standard Pipe helper now supports Imperial and Metric
		Enhancement - Nozzle's Standard Pipe helper will autoselect the correct Nominal Diameter based upon previous Actual Diameter (Outer Diameter)
		Cleaned up Misc Warnings, References
		Fix bugs related to the Indian Code Seismic (Site Specific) and Wind Shape factors
5.5.1.8	6/25/2020	Added an option to STS to allow user to disable vortex shedding (To be used for initial sizing)
		Removed Revision history option from "File" menu, now it is only under "Help" menu
		Corrections to EQ Manual which had problems with guy wires
		Vertical Stiffener and breach stiffener were unable to change material from A-36
		Breach Elevation problem when reference elevations being used
		Shape factor override was a problem for L&P's
		Wind CFE (Mexican) had issues with hr and Altitude
		Nozzle flange selection had some problems
5.5.1.9	7/1/2020	Resolved Stiffening Rings error adding new rings
		Improved Stiffening Rings Menu
		Resolved Nozzle Loads not accept negative value
		Changed WRC537 warning system
		Resolved GenAttachConc to use Load Fac in RisMasses
		Resolved AISC check for Angles
		Cleaned up Misc issues & Improved error tracking
5.5.2.0	8/11/2020	Improved Stiffening Rings Menu & Vertical Stiffeners Menu
		Fix Extraction feature for Strakes and Breach
		Corrections to Breach Wt there was a discrepancy in the two lifting Wt by section summaries
		Performance Improvements- 3D Rendering
		UI Improvements
		Resolved Various Memory Errors
		Add Support Chair Option in Baseplate
		Analysis Report improvements: removed memory issues, increased performance, reduced file size, added Word and RTF support
		Main Menu Toolbar Improvement
		Layer Slideout Gui Improvement
		Fix bugs in the vertical stiffener form and stiffener forms for the breach input
		Added STEP, OBJ and HTML file output options in 3D export. Only exports layers selected (when possible)
		Adjust NBCC10 and NBCC15 to effectively use $I_w = 0.75$ for deflection load combinations
		Fix bug where single struc flange at an elevation was throwing a warning as if it was used on multiple elevations
5.5.2.1	8/24/2020	Resolved Installer issues for compatibility, stability, and faster download.
		Migrated to .net 4.6.1

		Improved application performance
		Resolved issues and improved UI for materials
		Added Export ED for parts Drawings
		Resolved issue with structural flanges
		Resolved "Default File does not exist" error
		Resolved "WRC Noz load tables" missing from report and fitting on report page
		Corrections to breach wt calculations
		Improved Stiffener WT calc.
		Resolved "TMD Repad not being saved " error
5.5.2.2	9/3/2020	Resolved Unable to License Issue
		Resolved Misc. Errors
		Performance Improvements
5.5.2.3	9/9/2020	Resolved ini file load and save error
		Application Start Stability Improvements
		Application Start Performance Improvements
5.5.2.4	9/22/2020	Internal use only, not released. Clean up comments in code.
5.5.2.5	10/3/2020	Internal use only, not released. Testing changes to matrix operations changes.
5.5.2.6	10/6/2020	Fix problem with Breach Reinforcement selection and weight calculations
		Fix bug with flange on inside of stack equivalent stiffening ring that is created
		Fix problem with breach not drawing correctly
		Correct some problems with a flange when it was located on a cone
		Correct some weight calculation problems with Lifting section weights not matching
		Fix problem where some of the details (i.e. Code input parameters, etc..) not included in output
5.5.2.7	10/13/2020	Fix bug with UBC 97 Seismic
		Switched to new Math Library
5.5.2.8	10/21/2020	Removed all Arraylist, and new Batch process
		Corrected issue with CFE wind where fc was significantly too high
		Added warning when no material entered
5.5.2.9	10/26/2020	Update Graphics library to latest version, Add OS and 64 Bit detection, Revised way structural shapes database used
5.5.3.0	10/27/2020	Fix issue with Nozzle and Flange entry throwing error, and fix issue with Nozzle option of doing breach analysis.
5.5.3.1	11/2/2020	Internal code clean-up (Static XML, refactor Struc Shape data, New BT, ClsFlange. Eliminate ML)
		New Report Print Save options to be more Robust.
5.5.3.2	11/4/2020	Fix Issue with Wind Area calculation, when multiple external attach entered (Jacket, ext insul, ver stiff) take worst only

5.5.3.3	11/21/2020	Fixed several issues with regard to Indian Code: 1) Allow user to specify whether to calc shape factor per IS 875 Table 25 or to use 0.7 per IS 6533 2) Correct dynamic wind to only be considered on modes with Period > 0.25 sec 3) Clean up the stress table summaries, there were some problems and inconsistencies 4) Added a check on Shape factor per Table 25 to look at $V_b * b$ to select correct data
5.5.3.4	12/9/2020	Add new methods for checking Anchor Bolt Tension (ACI 318, CSA A23.3, AISC 15th Ed, CSA S16, British) Add check for shear acting on baseplate, and check bolts for shear when necessary Remote Cold Ambient properties on Baseplate, since we were only using hot Require Yield stress for bolt material be entered, since it is used for some of the Tension checks Allow user to use # of anchor bolts that is not a multiple of 4 Add option to enter pretension for anchor bolts, which is used to increase shear resistance due to friction In Baseplate design the modulus of the skirt was being used instead of the modulus for the baseplate The top 1/3 weight calculation had some problems, and wasn't always correct. Guy wire diameter was not being retained when changed Problem with A-36 at 350 Deg F, due to a type the Modulus was too high.
5.5.3.5	1/7/2020	Air density not updating to user entered value for NBCC 15 wind calculations, which impacted Aero damping & V_{zmean} NBCC 15 Fig I-1 makes it more clear that dynamic procedure applies if $(0.25 \leq NF \leq 1 \text{ Hz})$ OR $H > 60\text{m}$ OR $H/w > 4$, so we revised it to be dynamic if any of these three are met by default. Stiffening ring properties considered uncorroded shell thickness, and so we revised to corroded shell thickness Ovalling ring check for STS revised note to show proper S_a calc depending upon whether ASD or LRFD being used Nozzle loads had some problems where Local coordinate option not retained, also Loads Applied not always retained Fix Problem when specifying "User Strand" that spelter was pulling size for rope rather than strand Fix bug with Single and Double guylug standard dim's not pulling correct Check to make sure Nozzle data entered before analysis performed Remove need to enter a restraint at bottom when just performing a lifting analysis
5.5.3.6	1/14/2021	Fix issue with Breach stiffener check always considering design LRFD, even when ASD was applicable Fix some issues with Indian 2016 Wind output values incorrect with BaseElev entered, and Load combo screen Resize some forms where buttons were pushed off form when text size set to 150% Fix issue where tip weight entry missing for single flare tip
5.5.3.7	1/19/2021	Fix Project Info where Client Name was missing Attempt to fix LinearDim graphical issue with scaling Fix Bolt Lookup to use consistent units with Baseplate and Structural Flange calls Security menu updates Change Cone criteria to not check cone thickness if cone is stiffened (Both ends) Correction to Flare form which always reverted to English units
5.5.3.8	1/20/2021	Remove requirement for anchor bolt spacing check when foundation is not used New Analysis Output Form added, it is designed to fit on screen better and auto-fit to width of page

		Found problem where when attachment doesn't fall exactly on joint, that it defaulted to the top of structure. Fixed to assign the mass to the closest joint. This seems to be most problematic with the new breach and nozzle inputs.
5.5.3.9	1/22/2021	Fix issue with ASCE 7 wind, when stack above grade the BaseDist was added twice making Kz values too high
		Attempt to resolve issue with screen resolution
		Resolve problem with capturing screen resolution in MecaLog
5.5.4.0	1/25/2021	Add new report bug form, and some corrections to WPFOutput.
		Guy wire maximum tensile for guy lug design and summary based only upon combo loads (Not primary)
		Fix issue when duplicate TOC entries
5.5.4.1	1/26/2021	v5537 correction to Member Uniform load, didn't address correct length vector for the lifting case
		Fix Output so that all check boxes not checked when Print/Save Closed.
		Redesign TLD window and some drawing windows (Nozzle, Lift and Tail Help) to use new Image window
5.5.4.2	1/28/2021	Eurocode Corrections and Improvements:
		Orthography calculation wasn't being included in final print out when selected
		Set minimum # of fatigue cycles to 10 ⁴
		Buckling check was not considering stiffening rings, added rings and considered l as length between rings
		Circumferential check was using case 4 instead of case 3
		Breach flat bar for circumferential stiffener was using lx instead of ly
		New forms created for LimitedDemo and CustomDesignCodes
v5543	1/31/2021	Fix memory issue with regard to AISC fatigue
		Fix units inconsistencies in moments of breach analysis
		Fix lift extraction not working
v5544	2/2/2021	Resolve the Save As error
		Corrections to Breach analysis for Vertical Stiffener AISC check
		Fix Piping issues due to transition to new input window
v5545	2/18/2021	Fix unit conversion problem with Nozzle Loads and nozzle loads operating were not being applied to overall stack
		Correct formulas being displayed in ASCE 7 when metric selected, but doesn't affect results.
		New forms for Refractory, Piping, Manual Wind,
v5546	2/22/2021	Fix serializable errors
		When lifting has no support at base threw error for Ls calculation
v5547	2/25/2021	Fix Various bugs
		Added "Live Validator" Feature to application; providing realtime feedback on forms.
		Fixed File IO issues
v5548	2/26/2021	Fix loading error
v5549	3/1/2021	Fix Metric Selection Error
v5550	3/7/2021	Change to new entry form for Euro Orography Factor input
v5551	3/22/2021	Fixed issue with calculating Kz (ASCE 7) for buildings with Base Elevations above grade
		Added logic to consider European code for strake usages, where it reduces vortex shedding loads
		Added some better error handling logic for exporting MecaLug files

		Add error handling when Breach Projection and Thickness were entered as zero.
		Fix bugs with Nozzle and Breach weight calculations
		New form for Shape Factor
		EQ Response Spectrum was sorting spectral values in descending rather than ascending order
v5552	4/1/2021	Updates and improvements to Guy Lug entry form
		New Settings form and Progress update during analysis
		Fix issue with entering 3 pilots on flare tip form
		Wind Conversion tool didn't allow entry of values
		Lift extraction messed up dia when at the bottom of the stack
v5553	5/5/2021	Re-designed many input forms to be more user friendly and give instant feedback: Guy Wire, Guy Lug, Guy Hardware, Jacket, Strakes, Lift Extract, External Loads, Fatigue Categories, General Attachments, Field Welds, Ladders and Platforms, Nozzles, Material, Supports, Breach, Structural Flanges, EQ Response Spectrum, Stack Dimensions.
		Add weight calculation to Support lug option, Fix to show Aero Damping of Euro when Euro code selected, fix dead+impact deflection for lifting.
v5554	5/15/2021	Fix some issues with Guy Wires form, Nozzle graphic being incorrect, validation, create backup file when new version detected, shape factor manual corrected, new Damping Criteria menu.
v5555	5/23/2021	Fix error left from testing Flare Form, fix Indian Z factor Lookup, allow Ext Loads Negative Vertical Load, add Strake validation, Fix WPF DampingMenu retaining values when cancelled, All negative forces for Nozzle Loads, fix misc bugs
v5556	5/25/2021	Indian code 2016 Vortex was using old Indian code wind basis. Wind basis was converted incorrectly, as well as other codes using metric wind speeds. Vertical Stiffener menu was throwing error. When large # of vertical stiffeners, the format of output report was messed up.
v5557	5/31/2021	Fix issue with custom pipe, fix validation of flange and fix problem with pretension of guys.
v5558	6/3/2021	Fix validation error with guy lug hole, remove guy lug and guy hardware options from details menu, new Stiffening Ring Menu
v5559	6/7/2021	Structural damping values not being used in analysis when overridden, correct baseplate bolt look up.
v5560	6/18/2021	Fix bug with NBCC wind pressure being converted, remove breach stiffener from ring entry summary, baseplate bolt material importing incorrectly when metric units
v5561	6/21/2021	Fix bug with Guy Lug hold diameter being tied to turnbuckle pin dia on max side, fix breach stiff ring elevation including dist above and below opening, fix bug with desc being exactly 45 char's.
v5562	6/23/2021	Fix issue with TMD data not saving/retrieving correctly, structural damping not coming correctly from TMD screen, stiffener elevation for some breach not adjusted correctly for dist above/below, couldn't enter a negative elevation for deadman.
v5563	6/29/2021	Fix bug with Mode shape when guy DM below bottom of stack, STS vortex when Guy DM below bottom of stack, Pipe data entry on Stack Dim screen, misc other bugs
v5564	7/6/2021	Fix bug with TMD wind area not updating, update properties for Gr 8.8 and 4.9 to match Euro standard, remove duplicate testing material.

v5565	7/19/2021	LoadCombos Form Improvements, Fixed issue with TMD not returning correct values, Fixed DrawPart Dimensions movable, fixed Drawpart damping pad drawing, Fixed Breach Shell hole size error, Added Additional Validations.
v5566	7/21/2021	Fix bug with incorrect Cone output for Large Fh, fix bus guywire analysis on Demo, fix calc_a dimension min. issue
v5567	8/3/2021	Added Seismic per IBC 2021/2018/ASCE 7-16, Fix bug with gusset spacing on baseplate to include t2 when 2 gussets per bolt, fix some issues with response spectrum entry screen.
v5568	8/24/2021	Fix sizing of Guy Lug and Stack Dimensions windows for hires, Guy Lug Single not saving Rt, Nozzle schedule reverting to Std, revision to breach for classic buckling.
v5569	9/13/2021	Fix issue with Euro Seismic periods getting messed up, copy backup file for version to archive folder
v5570	9/17/2021	Fix metric conversion issues with guy wire cable entry (override) and deadman dimensions. Remove ring analysis when no ring entered in guy lug single.