

## MecaStack Revision History

<u>Version</u>	<u>Date</u>	<u>Revision Description</u>
5.2.5.0	4/1/2014	Additional responses spectrum corrections, load combinations weren't rolling up correctly.
5.2.5.1	4/11/2014	Corrections to ASME STS-1 Vzcr values displayed when metric units selected.
5.2.5.2	4/27/2014	Cone stiffening rings were not pulling the correct stiffener.
5.2.5.3	5/1/2014	Response spectrum foundation reactions not working, fix in 5250 created a secondary problem.
5.2.5.4	5/6/2014	Forgot to remove a stop point for debugging before compiling, created windows error.
5.2.5.5	5/30/2014	Adjusted wire fope areas to match those in Wire Rope Users Manual. In Fix K in ASME STS-1 allowable
5.2.5.6	8/15/2014	Struc Flg wt included gussets, even when no gussets applicable. Fix PT for 4 guy wires, and variable dia
5.2.5.7	9/12/2014	Fix bug with Ext Att Conc when Dead and non-Dead loads exist, and increase # entries from 15 to 50
5.2.5.8	9/12/2014	Fix bug with Ext Att Conc when Dead and non-Dead loads exist, and increase # entries from 15 to 50
5.2.5.9	9/25/2014	Fix unit displayed on Cylinder wt, fix units on Manual wt, fix Att Conc Wt bug to consider 25+ entries.
5.2.6.0	10/28/2014	Revise IBC references to be 2009 or 2012 as applicable, Adjust Double guy lug calculation for Hs/2, Expand ext attachments concentrated limits for arrays.
5.2.6.1	11/7/2014	Fixed Sccs which was too high by a factor of 10. The error was only in the value being displayed, internally it was ok. Reworked the response spectrum analysis, it had some problems with support reactions not matching Simplified it and fixed some problems. Fixed but with Operating loads being applied at 30 deg dir for self stacks.
5.2.6.2	11/19/2014	Revamped the Response Spectrum Analysis again, corrected the way responses combined using SRSS
5.2.6.3	11/21/2014	Fixed BS6399 problem where Altitude and Base Elevation was being interchanged.
5.2.6.4	11/24/2014	Fixed some flawed logic for ovaling ring check, it finds Smax required, but didn't check Vco<Vzm
5.2.6.5	12/11/2014	Added manual entry for damping pad value so user can send file to Meca to get appropriate value.
5.2.6.6	1/6/2015	Address problem when security server is down that single user will still work.
5.2.6.7	1/19/2015	Fix problem with OD determination when ID specified, correct unit conversion problem with EN 1991-1-4
5.2.6.8	2/5/2015	Fix problem with diameters sequence when attachment on a cone.
5.2.6.9	2/18/2015	Fix problem with diameter sequence for ID. Also fixed DeadMan Elevation in reactions when non-zero.
5.2.7.0	3/2/2015	In CICIND code, fix fk to utilize Stress Factor entered for each load case, rather than using 1.1 always
5.2.7.1	3/13/2015	Correct A/D for STS variable Dia stack, correct he for BS and Indian codes, fix Cfo for EN Piping
5.2.7.2	3/30/2015	Increase number of external load entries to 50.
5.2.7.3	5/28/2015	Fix ability to enter stiffener properties manually, Fix damping menu when CICIND and None is selected.
5.2.7.4	6/30/2015	Update NBC to 2010, Chg Baseplate w/ gusset to use 0.6*Fy for bending allowable
5.2.7.5	7/1/2015	Revise ASME STS-1 stiff rings to use qz rather than total wind load. Correct custom material for Rings.
5.2.7.6	7/8/2015	Added ability to do lift per API-560 ASD, Fixed bug where Large cyl for cone was using Cone Thk
5.2.7.7	7/16/2015	For ASME STS-1 stiff rings if no Qz is entered (Such as manual press) use wind pressure entered instead
5.2.7.8	7/28/2015	Fix single guy lug for intl use of comma instead of decimal, fix weld Fw for metric lookup in StrucFlg.
5.2.7.9	8/18/2015	Fix cone results sometimes not displaying red when fail, and fix turnbuckle changing to 2.75x24
5.2.8.0	8/30/2015	Allow user to enter Euro Piping Cf manually or calculate manual
5.2.8.1	9/2/2015	Corrections to ovaling ring check.

5.2.8.2	9/24/2015	Correct Structural Flange to print ratio for local shell stress
5.2.8.3	10/27/2015	Fix Ovaling Vibraton 'Lined' criteria, fix L&P's for larger qty on graphics
5.2.8.4	11/6/2015	Baseplate settings get lost when you leave the form.
5.2.8.5	12/9/2015	Baseplate standard button not working.
5.2.8.6	12/17/2015	Fix NBCC wind for rigid struc use $C_g = 2$ rather than 1. Dynamic criteria $0.25 < NF < 1$ , $H > 120m$ , $H/D > 4$
5.2.8.7	12/29/2015	Set vertical seismic load to zero for UBC, Fixe metric Mx/My value in Baseplate bottom plate.
5.2.8.8	1/14/2016	Fix error in graphics with damping pad washer and steel washer showing incorrectly.
5.2.8.9	1/14/2016	Auto add nodes directly above and below guy wire attach when no guylug entered to capture worst case SR
5.2.9.0	2/24/2016	Correct units on Vzcr ft/s and m/s for ASME STS-1, also add a $V_{upr} = 1.2 * V_{zcr}$ for reference.
		Fix some bugs with ASCE 7-10 with notation, and the total wind load for ASCE 7-10 and Aerodynamic Damping for 7-10
		Correct major problem where 2nd set of deadman was taken as the same location as the first set of deadmen.
5.2.9.1	3/1/2016	Fix bug with cone elevations being incorrect, fix elev units for response spectrum for metric option, use ambient properties when lift analysis performed.
5.2.9.2	3/8/2016	Adjust defl for IS 6533 to remove dynamic component (Works only for self sup right now)
5.2.9.3	3/11/2016	Fix bug with guy wire attachment top elevation not always working correctly for single lug.
5.2.9.4	3/23/2016	NBC 2010: Was convinced that dynamic should only apply to $> 60$ m struc and $N_f < 1Hz$ (Not $H/D > 4$ )
5.2.9.5	4/11/2016	Fix BS 6399 Shape Factor Cpe, which should have been doubled when $D > 1m$ .
5.2.9.6	7/7/2016	Issue a major release of the software:
		1) Revise the structure of the input files to be more stable
		2) Add CICIND 2010 to software (Along Wind, Across Wind and Ovalling
		3) Revise way in which stiffening rings are entered and handled within the software, and added int'l shapes
		4) Allows user to move dimensions on drawing and those changes are retained when file is saved.
		5) Allow user to delete or modify text by right clicking, and those changes are retained with saved file.
		6) Allow user to enter different damping values for each mode of vibration under consideration.
		7) Allow user to manually specify natural frequency for all modes of vibration being considered.
		8) Fixed a bug that didn't consider all concentrated weights in the natural frequency calcualtion.
		9) Remove the option to pick what is output displayed, everything is displayed then you can select what's printed
		10) Add option on NBC 2010 to allow user to select which criteria is followed for flexible structures.
		Correct problem with graphics not working in 5296, and consolidated StackHt, Diameters, Thick and Cor screens.
5.3.0.2	9/14/2016	Release the Beta version to a wider audience.
5.3.0.3	9/15/2016	Fix bug with Metric units and using Stack Geometry Screen.
5.3.0.4	9/16/2016	Fix CICIND10 Fat Cat, Adj Breech if tilt entered
5.3.0.5	9/16/2016	Fix bugs with CICIND2010 stiffening ring checks.
5.3.0.6	9/23/2016	Cleaned up graphics to print only important elevation changes, more bug fixes and clean-up.
5.3.0.7	9/26/2016	Fix some graphics issues and other bug fixes.
5.3.0.8	10/4/2016	More bug fixes, fix guy wires, add MaterialProperties, API Nozzle Loads
5.3.0.9	10/30/2016	Integrated MaterialProperties tool, and fixed bugs. Performed rigorous testing.
5.3.1.0	11/2/2016	Corrections to vortex shedding per BS4076 for Industrial area.

5.3.1.1	11/3/2016	Correction to enclosed elevation bug, where results sometimes blow up.
5.3.1.2	11/4/2016	Fix bug in lifting analysis, removed BS6399 from main code access thru customized.
5.3.1.3	4/17/2017	Continue to develop, test and debug. Internal version, never released
5.3.1.4	4/25/2017	Continue to develop, test and debug. Internal version, never released
5.3.1.5	4/30/2017	First release of beta version.
5.3.1.6	5/11/2017	More bug fixes and development, working toward full release.
5.3.1.7	5/14/2017	Continue with bug fixes, and started working on implementing Eurocode stress
5.3.1.8	5/16/2017	Corrections to Metric units problem for baseplates, and remove A-36 material designation in output.
5.3.1.9	5/19/2017	Added consideration for section properties for nozles, breech, stiffeners, etc.. Also added the shell properties option that allows the section properties to be visually examined at any elevation along the stack. Added stiffening ring material designation, and added ability to select shackle size on guy lug attachments.
5.3.2.0	6/18/2017	Debugging on CICIND 2010, relaxed ring Ir to use po rather than w5sec, cleaned up Wt & COG to use new ElevAdj calculation and make corrections on stiffening rings.
5.3.2.1	6/20/2017	Bug fixes, Working on Eurocode
5.3.2.2	6/21/2017	Bug Fixes, working on Eurocode
5.3.2.3	6/22/2017	Bug Fixes, working on Eurocode
5.3.2.4	7/4/2017	Fix Shape factor for strakes, enclosed and ver stiff's. Added Eurocode.
5.3.2.5	7/5/2017	Load Combo's Manual were not sticking, and bug with stiffening ring dropdown being disabled
5.3.2.6	7/11/2017	Fixed unit bugs in Strucflg and Baseplate for metric units, baseplate vertical load always negative.
5.3.2.7	7/12/2017	Fix graphics controls on main menu, Print guy wire hardware hidden when no guys, add print drawing to button.
5.3.2.8	7/13/2017	Fix NBCC wind pressures generating all elements, removed design code custom option, fix font scale
5.3.2.9	7/19/2017	Struc Flange was showing wrong details for worst case, and added detailed Mmax formula
5.3.3.0	7/20/2017	Corrected AISC allowables to use RisElem.Leff, Fix Flare tip wt to be lbs, fix Load Num on Baseplate worst case
5.3.3.1	7/21/2017	Recompiled because the AISC allowable strsses were not calculating correctly for some unknown reason.
5.3.3.2	7/25/2017	Fix bugs related to the Guy Wire Pretension being added multiple times
5.3.3.3	7/26/2017	Fixed some weight bugs for Refrac and Jacket, Corrected riser loads when Guides are added, and fixed UBC97 EQ Loads
5.3.3.4	8/1/2017	Made Beta version the main version on website. Fixed problem with guyed stacks having negative vertical load
5.3.3.5	8/3/2017	Added warning if no strake data entered but strakes selected, swapped HL and HS on dimensions displayed on Guy Lug Double, added note for CICIND Full if Kao_z line is off chart, and corrected deflection limits displaying wrong values when metric selected.
5.3.3.6	8/4/2017	Correct location of Save file as default, and fix problem with Double Guy lug as a stiffening ring.
5.3.3.7	8/9/2017	Switch max reaction vertical/uplift, fix shape factor wrong on first pass and fix NBC Aero Damping value.
5.3.3.8	8/10/2017	Fix problem with single user activation not retaining license info.
5.3.3.9	8/14/2017	Fix GuyWire Hardware printing infinite loop, fix some probs with CICIND 10 br calculation for stiff rings
5.3.4.0	8/15/2017	Corrections to br for CICIND10, stiffening rings weren't retaining the country setting, and ring dim's not shown in metric
5.3.4.1	8/17/2017	Fix some problems with multiple sets of guy wires, and adjusted Struc Flg elevations to include Elev_Adj
5.3.4.2	8/17/2017	Fix some import issues and TLD drawn in wrong location
5.3.4.3	8/29/2017	Adjust Euro Vortex to be able to specify how many modes are investigated, and revised strake logic for Euro.

5.3.4.4	8/29/2017	Fix arraylist_clone when item was nothing, correct problems with STS stiff rings
5.3.4.5	8/31/2017	Fix metric conversion problem with AISC fatigue for elevation checks
5.3.4.6	9/6/2017	Fix problems with lifting analysis reactions being wrong, BC elev wrong. Sect Prop's being off a level due to elev match
5.3.4.7	9/6/2017	Internal unit problem with member mass uniform load, seismic loads too high. Enclosed building criteria broke.
5.3.4.8	9/7/2017	Fix problem with BaseDist = 30 ft, added doc to breech screen, fixed dimension problem with angles in database,
5.3.4.9	9/8/2017	Modified some documentation on frmBreech, added pdf save option to MecaStack.
5.3.5.0	9/11/2017	Correct problem with Shape fac for L&P's being zero.
5.3.5.1	9/14/2017	Fix single gusset graphic error for chair, add error checking for load combo form launch.
5.3.5.2	9/15/2017	Corrections to Guy wire analysis
5.3.5.3	9/20/2017	Correct shape factor override on piping, wrong units for qz metric (A05), Support duplicate TOC, Matl metric temp
5.3.5.4	9/26/2017	Corrected the refractory weight determination
5.3.5.5	9/26/2017	Adjustments to Weight, and fix title on NBCC 10 for seismic
5.3.5.6	9/28/2017	Fix bugs in lifting analysis, import of ASCE 7-10 corrected, other minor bug fixes.
5.3.5.7	10/3/2017	Euro fatigue values not being retained, and other minor bugs.
5.3.5.8	10/4/2017	Correct manual override of shape factor
5.3.5.9	10/5/2017	Add Calt calculate for Euro Wind to address special requirement in NA for British
5.3.6.0	10/10/2017	Corrections to external loads applied to model, fix struc flange graphic and dim's.
5.3.6.1	10/11/2017	Correct sign for vertical load, and custom load combo screen was crashing
5.3.6.2	10/11/2017	Resolve some sign problems with primary loads, retained strake info after strakes turn off.
5.3.6.3	10/14/2017	Fix worst case summary, lift lwr radial offset allowed to be 0, add manual seismic, add ver to IBC 2012
5.3.6.4	10/16/2017	UBC 97 couldn't change source/dist, minor corrections to CICIND.
5.3.6.5	10/17/2017	Corrections to units and various items in CICIND wind/vortex, Indian vortex bug, Guy Wire Hardware.
5.3.6.6	10/17/2017	Fix graphics issues with baseplate
5.3.6.7	10/18/2017	Baseplate skirt corrosion note, fix some baseplate graphics issues, add vertical accel to response spectrum