

CRACKWISE 5 RELEASES – MOST RECENT FIRST

5.0.35112 22ND JANUARY 2018 CUSTOMER RELEASE

BUG

- [CWV-790] – devexpress pdf dll missing when trying to export as pdf.
- [CWV-794] – Rho should be 0 if KIP=0, V also always set to 1 if KIP=0
- [CWV-804] – Reference stress limit $0 \leq 2a/\pi r_i \leq 0.5$ was being applied to fatigue case
- [CWV-806] – Mismatch Option 1M fad wasn't being generated, it was always using Option 1
- [CWV-807] – Mismatch, if at interface corrigenda changes in P.39 and P.40 weren't applied (cases where $\psi > 1$)

5.0.32544 7TH JUNE 2017 CUSTOMER RELEASE

BUG

- [CWV-771] – New license attribute to block pdf download for full calculation trial licenses.
- [CWV-772] – For sensitive critical cases when checking inputs also check the lower sensitivity against critical start value + initial step to make sure some results will be generated rather than just an error.
- [CWV-782] – Results screen should show Lr/Kr if fracture or if fracture+fatigue cases and not differ if sensitive or critical have been turned on at some point (and not used for fracture/fatigue case).
- [CWV-784] – Intermediate results not correctly aligned if sensitive parameters affecting which branch of the V calculation was being used. Pad with 0's for the intermediate values which weren't calculated.
- [CWV-786] – Fracture Fatigue case not showing Fracture result on screen if the very first fatigue iteration failed.

5.0.29795 14TH OCTOBER 2016 CUSTOMER RELEASE

BUG

- [CWV-768] – Kia/KIc fatigue values wrong way round for the following flaw types (FATIGUE ONLY) Bolt Surface, Round Bar Semi-Elliptical Surface, Pipes Cylinders Axial Internal and External Surface flaws. These cases all use deepest/surface and whilst the Yo's were correct using these for the KI used the incorrect ones.

IMPROVEMENTS

- [CWV-762] – Unit converter toolkit: add extra unit conversion from MPa to psi and vice-versa
- [CWV-766] – Hardness/Yield/UTS toolkit: Calculate UTS along with yield from 7.1.3.4 eqs 2 and 3

5.0.29461 15TH SEPTEMBER 2016 CUSTOMER RELEASE

BUG

- [CWV-734] – Flat plate edge flaw middle image had 2a as a label rather than a, purely on the image all calculations were fine.
- [CWV-736] – Additional flaw validity check for Pipes/Cylinders with External fully circumferential surface flaws was introduced, $0.1 < B/R_i < 0.2$, it wasn't in the standard or original reference and has been removed.
- [CWV-742] – Switching from mismatch wouldn't recalculate unless the user went through the tensile properties screen.

- [CWV-743] – Trying to view intermediate results for specific mismatch case caused exception and wouldn't view. Error introduced with CWV-466, fix to alter names of intermediate variables which don't use theta to have [] rather than ().
- [CWV-755] – Entry of user defined R-Curve won't cause validation errors if entering the first row manually.
- [CWV-760] – User can use a rho where $\chi > 4$, however they will be advised to use V

IMPROVEMENTS

- [CWV-754] – Tensile properties screen, order of grid changed to be "strain" and "stress" as default.
- [CWV-763] – Updated BS 7910 now *Incorporating Corrigendum No. 2*.

5.0.27934 18TH APRIL 2016 CUSTOMER RELEASE

BUG

- [CWV-712] – If using secondary thermal stresses and SCFs (Mk primarily) together with a multiple position Mk the calculated KIS may be incorrect as it wasn't always using the correct Mk location multiplier for KIS at the required angle.
- [CWV-713] – Bending restraint options were shown where they wouldn't be used, they are now shown only for solutions using them (P.6.1, P.6.2, P.7.1, P.7.2 and P.7.3).
- [CWV-715] – Proof stress relaxation will now work for Curved shell circumferential through thickness flaws rather than throwing an exception.
- [CWV-721] – Clause O.2.1 wasn't implementing the lower bound limit of 0.4 for proof relaxation
- [CWV-722] – Include the reference stress correction factor in reports (only include if not equal to 1)
- [CWV-727] – Sort user defined Mk values before using to avoid warnings about not increasing.
- [CWV-728] – $0 \leq 2a/\pi R_i \leq 0.5$ limit (P.10.1) not being applied for circumferential through thickness pipes/cylinders.
- [CWV-729] – 3dMk with distinct a and c values is not always using the deepest point for z rather than previously 0 for $\theta=0$.
- [CWV-730] – Semi-elliptical bar/bolt solution was changed in corrigendum 1, now use this solution from Raju Newman rather than the previous one from Murakami.
- [CWV-731] – Cruciform joint data entry screen was showing an error for $2a > W$, it could be safely skipped and calculations were fine as W was being set by the solver. Now set $W=B+2h$ on the screen before validating.

IMPROVEMENTS

- [CWV-714] – Implement section R.3 for plasticity correction V when $KIS/(KIP/Lr) > 4$, this will mean the secondary stress screen is still visible if using user defined SIF's but only the plasticity correction portion is enabled.
- [CWV-723] – Limit the max order polynomial fit to 5 when trying to fit from a weight function screen as that is all the solution will handle.
- [CWV-725] – Don't include proof stress relaxation if the user chooses a user defined reference stress or limit load solution.
- [CWV-732] – Changed warning message for $\chi > 4$ to advise user to choose V route instead.

5.0.26636 DECEMBER 16TH 2015 CUSTOMER RELEASE

BUG

- [CWV-679] – If a Critical sensitivity case picked up an error trying to find a critical value (but eventually continued), the error was being held onto and reported.

[CWV-701] – Mk calculation for Weld toe, load carrying attachment cruciform joints not being called correctly and may have used the flat plate Mk solution instead.

[CWV-705] – User defined Reference stress and proof relaxation selected caused an error with no results being shown.

IMPROVEMENTS

[CWV-678] – Check for mutually exclusive sensitive critical parameters.

[CWV-681] – Can now select multiple rows by either CTRL+a or by dragging over them in the polynomial fitting grid.

[CWV-682] – Improved sensitive critical solver for c vs a for an internal surface flaw in circumferential pipes/cylinders by setting the initial critical value of a to be $0.1*c$ if not already greater than this. Also changed for Bar Semi-Elliptical Surface, Bolt Surface, Round Bar Semi-Elliptical Surface and Pipes/Cylinders Axial Internal Surface with appropriate lower bound a/c calculations.

[CWV-684] – Text/Message changed for Charpy toolkit to include reference to the individual equations and also to advise using J5/J6 as appropriate.

5.0.25653 OCTOBER 14TH 2015 CUSTOMER RELEASE

BUG

[CWV-675] – Warning about appropriate yield value for fatigue only case.

[CWV-680] – Appropriate yield at RT wasn't an option for PWHT but should be as it's used (this was introduced by CWV-662)

IMPROVEMENTS

[CWV-668] – Legends on graphs are now always separate from the graph shown to the left as in the reports.

[CWV-674] – Updated BS 7910 now *Incorporating Corrigendum No. 1*.

5.0.25078 AUGUST 14TH 2015 CUSTOMER RELEASE

BUG

[CWV-646] – CTOD conversion to K was incorrectly adding a division by $1000^{0.5}$ for US units.

[CWV-664] – Grid delete of multiple rows didn't always delete all of the selected rows, but typically only half of those selected.

IMPROVEMENTS

[CWV-642] – Remove flaw location option for external fully circumferential flaws in axial Pipes/Cylinders as internal is covered by the internal fully circumferential case. Table M.5. editorial issue M.7.2.5 in BS7910.

[CWV-647] – Legend included on graphs with > 1 line (NOT the FAD), specifically for the Crack Growth curves.

[CWV-655] – There were duplicate error messages for backcheck, now only one set of messages, the column label has also been changed to errors/warnings in the sensitive critical grid.

[CWV-658] – Don't include theta in the intermediate results if not used (pipe/cylinder containing axial external surface, pipe/cylinder circumferentially internal surface flaw).

[CWV-562] – Removed Fatigue plots showing KI as it was only the last cyclic stress from an increment.

[CWV-662] – Secondary stress relaxation only available if using As-Welded.

[CWV-661] – Link to the new version of the 7910 PDF (Amendment 1), licensed users will be informed of the link for downloading this.

5.0.24329 MAY 12TH 2015 CUSTOMER RELEASE

BUG

- [CWV-607] – For a semi elliptical bar fatigue case no results were calculated.
- [CWV-610] – Rho not included if weight function and flaw location not max used for surface flaws.
- [CWV-611] – Weight function used wrong surface/deepest f parameter (was using surface instead of deepest etc.) for surface flaws.
- [CWV-617] – Annex Q electrical input user input checks checking in wrong units (should check in J/mm but was checking in kJ/mm).
- [CWV-620] – Incorrect PSF Factor for Moderate/Non-Redundant Stress COV = 0.3, was showing and consequently using 4 instead of 1.4 for stress.
- [CWV-621] – Poissons ratio validation check was only checking for 0 not <0.
- [CWV-623] – Incorrect image for circumferential through thickness flaws (2c rather than 2a).
- [CWV-626] – Intermediate KIP/KIS didn't include the weight component.
- [CWV-627] – The file path/name in the footer was truncated if very long, it will now wrap.
- [CWV-628] – Pipe/Cylinder Embedded Axial flaw image incorrect (a rather than 2a shown as caption).
- [CWV-629] – If sensitive critical with all cases failing initial validity limits the user tried to view the intermediate results the software would throw an exception and exit.
- [CWV-630] – Typo in document section P.15.2.3.1 FeM(7)/FeP should be $\exp[(1-M)/0.108]$.
- [CWV-631] – V factor not currently possible if using weight function due to equation R.15, need to look at user specifying at least 2 polynomials to be able to implement this. Rho is unaffected.
- [CWV-633] – Show KIP/KIS in intermediate results for cases where there are single sets of values.
- [CWV-636] – Weight function causing exception if case didn't use theta 0,90 locations but used surface/deepest for pipe/cylinder circumferential internal surface case.
- [CWV-637] – User defined Mk was using 0.15 as a minimum x rather than 0, it also didn't allow distinct Mk's for a and c in Pipes/Cylinders circumferential internal surface flaws.
- [CWV-638] – Typo in FeM(8) in 7910 removed Psi3 from the equation.

IMPROVEMENTS

- [CWV-604] – Mouse scroll wheel should work consistently in all screens now.
- [CWV-605] – Inside/Outside label changed to be Inside Surface/Outside Surface with multiple fatigue location results.
- [CWV-606] – Intermediate results grid won't autosize the columns but will leave them readable leaving the user to scroll right, KIP/KIS have also been added to the SIF results.
- [CWV-608] – Crack growth graph includes units and different colour lines for a, c, and p now.
- [CWV-612] – Include weight function graph in report if used.
- [CWV-618] – Include units with user defined reference stress.
- [CWV-619] – Different stress strain images for Continuous/Discontinuous yielding.
- [CWV-622, CWV-624] – Annex Q options are section and flaw context sensitive now.
- [CWV-625] – Poissons ratio warning if <0.2 or > 0.4 (Only a warning so the user is still free to enter other values outside of this range).
- [CWV-635] – When choosing Fatigue+Fracture and a large number of increments plotting was trying to plot a Lr,Kr for each increment. The number of points plotted is now limited to 1000.

5.0.23681 FEBRUARY 3RD 2015 CUSTOMER RELEASE

BUG

- [CWV-593] – R Curve not showing toughness units.

[CWV-595] – Fracture results not shown on screen for Fracture+Fatigue cases where there were multiple locations (nor in printout).

[CWV-598] – Lr wasn't limited to being ≥ 0 , it is now set to 0 if calculated as being < 0 and a warning given to this effect.

[CWV-601] – Unit label on Fatigue Crack Growth screen for ΔK incorrect, should have been $N/mm^{3/2}$ rather than MPa. This was a label only, no calculations were affected.

[CWV-602] – Secondary Stresses, As welded case was using the wrong value. If use relaxation was off and one of Assessment Temperature \leftrightarrow Room Temperature were selected then it would use Appropriate Yield at assessment temp. It now uses the Room Temperature value in these cases. There was also an issue where the values weren't being checked prior to calculation (they were checked when entering them though) so you could perform a calculation with Appropriate Yield RT = 0.

[CWV-603] – Multiple instances of the user defined MK input panel appearing, adding an extra one every time the flaw dimensions screen was entered if user defined Mk had been selected.

IMPROVEMENTS

[CWV-596] – The version which was used to calculate a saved version is checked against the current version when reloaded and if earlier a re-calculation will be required.

5.0.23033 NOVEMBER 18TH 2014 CUSTOMER RELEASE

BUG

[CWV-581] – Fatigue Crack Growth parameter A not calculated correctly when Simplified-Air-Non-Ferrous/Aluminium and when Simplified-High Temperature.

[CWV-582] – Fatigue Crack Growth parameter m not correct when Recommended-Weld-R <0.5 -Mean-Marine-Free corrosion. Parameter A not correct when Recommended-NoWeld-Marine-Cathodic -850-Steel.

[CWV-585] – Depth only growth (RCurve) would cause certain cases to throw an exception and not run (Flat plate embedded, surface, Curved shell circ internal surface, Pipes/Cylinders axial/circ internal surface, Nozzle Symmetric Corner)

[CWV-587] – For pipes/cylinders axial and circumferential fatigue calculations, the Mk used for fracture calculations was always at 0 degrees, other parts of the SIF solution used the correct surface/deepest choice.

[CWV-590] – Tearing direction was being reset to the default value when entering a fresh case, loading the same case from file and then changing it was ok.

[CWV-592] – Image for Bar-Edge flaw has been changed to be more like the one in the document, there were also errors on the image for Pipes/Cylinders Circumferential internal surface flaws where the length was labelled as 2a rather than 2c

[CWV-594] – Kr wasn't limited to being ≥ 0 , it is now set to 0 if calculated as < 0 and a warning given to this effect.

IMPROVEMENT

[CWV-579] – Value of Qm used to calculate Kr will be included in report.

[CWV-580] – Warning of license expiry every time the software is started within 30 days of expiry.

[CWV-583] – If no damaging cycles the % blocks used are stated as 100% now.

[CWV-584] – Control+Shift clicking the column headers of the intermediate results grid will select the column.

[CWV-591] – Inclusion of extra check for P.10.2 so that $c/(\pi \cdot r_i) \leq 0.8$

5.0.22330 SEPTEMBER 15TH 2014 CUSTOMER RELEASE

BUG

- [CWV-570] – Include the user defined values in the report if user defined reference stress or user defined SIF.
- [CWV-571] – For pipes/cylinders axial and circumferential fatigue calculations, parametric depth (z) used for calculation was only for the deepest point rather than the appropriate surface/deepest point.
- [CWV-572] – Misalignment screen wasn't showing calculated overall factor after reloading a case, it was however being used so is purely cosmetic.

IMPROVEMENT

- [CWV-568] – Allow user to manually check for a new version.
- [CWV-574] – Don't show the secondary stress screen or report section if user defined SIF has been chosen, it is not used.
- [CWV-575] – Extra menu item on grids to allow select all items.
- [CWV-576] – Include $B2 \geq B1$ on misalignment image for Girth Welds.
- [CWV-577] – Context menu on grids to allow user to select all items in the grid for either deletion or copying with the Delete key or Ctrl+C respectively.
- [CWV-578] – Improve errors in results tables for Sensitive/Critical in the reports by having a separate error table below the results if necessary.

5.0.21875 AUGUST 5TH 2014 CUSTOMER RELEASE

BUG

- [CWV-384] – Level 2/3a FAD was missing the yield discontinuity option.
- [CWV-530] – Material specific FAD caused an error if there was no 0,0 point or the points weren't ascending, now sort and add 0,0 every time.
- [CWV-544] – Typo Semi-Elliptical bar (was Elliptical on the problem setup screen).
- [CWV-548] – Calculation of Max Kr was previously based on KI only, now also considers rho/V factors.
- [CWV-549] – Exception was thrown if with a fatigue case and 0% growth the plot button was pressed.
- [CWV-550] – Error checking on R-Ratio (fatigue crack growth) removed as it can be ≤ 0 .
- [CWV-554] – 3D Mk parameter incorrect in BS7910:2013, (Surface bending M.11.1.3 b) g12 has second term as 0.50338, should be 0.81526. The reference used [291] had a typo in its A16 term, the original reference [245] has the correct values.
- [CWV-557] – Lines wrapping in the report resulted in extra whitespace previously.
- [CWV-558] – Sensitive critical parameters not showing correctly if Pma etc. applicable.
- [CWV-565] – Validity check for Embedded flaw Mm ($2c/W < 0.5$) not being applied.
- [CWV-567] – Importing CW4 files wasn't importing user defined Lr Cutoff or sensitive critical cases, now do the best possible with sensitive critical cases but warn if they are no longer supported.

IMPROVEMENT

- [CWV-383] – Performance improvement for Fatigue cases (including fatigue and fracture).
- [CWV-411] – Report options, you can now turn on/off certain items in the reports (graphs/grids) by using the option button within the report screen toolbar (cog on the right hand end)
- [CWV-412] – There is now a comments box on the results screen which will be saved and feature in the report if filled in.
- [CWV-521] – When using a material specific stress strain curve and choosing the discontinuous yielding option, if data wasn't entered upto 9% strain it would fail.
- [CWV-531] – User defined Mk limits checked to make sure data is within $0 < x/B \leq 1$.
- [CWV-533] – DNV reference updated (calculations still the same).

[CWV-535] – Paste more forgiving of data shape (blank columns and cells are ok now and will be treated as 0).
[CWV-537] – More blatant warning if not all fatigue blocks are used (show the % of blocks used and red/green indicator).
[CWV-545] – Headers added to report for sensitive critical tables.
[CWV-546] – Flaw position option removed for fatigue only cases, except where it makes a difference, as it's not used in the calculations
[CWV-547] – Secondary stress relaxation options entry re-designed and error checking increased.
[CWV-551] – Enable weight function (implemented as in Annex Q) for appropriate solutions, both primary and secondary stress screens.
[CWV-553] – Release notes menu item in help ribbon to bring up release notes.
[CWV-559] – Incorrect reference stress reference, external surface flaw in cylinder referred to P.10.3 but should have been P.10.4 (calculations etc. fine, just text reference wrong).
[CWV-560] – Confusion was being caused by showing theta in intermediate results when wasn't used (Surface/Deepest choice case). SIF tab was showing correct option chosen.
[CWV-565] – Sensitive critical cases where the values were limited by solution limits weren't noted, they now have the violating attempt together with the limit being violated as an error message.

5.0.20366 MARCH 24TH 2014 CUSTOMER RELEASE

BUG

[CWV-511] - User wasn't able to edit Mk values in grid
[CWV-512] - Change intermediate header text from δ_{mat} to Kmat on results tab
[CWV-513] - Image for circumferential embedded flaws didn't show W, minor changes to some other flaw images for consistent look.
[CWV-515] –When a Mismatch case was chosen and then de-selected, there were warnings given on leaving the tensile properties screen
[CWV-516] - double clicking rapidly and repeatedly in outlook bar on left caused a red X
[CWV-518] - True stress strain FAD didn't agree with CW4, missing a division by 100
[CWV-519] - Tearing direction radio button choice was reverting to default if you'd previously visited to problem setup screen
[CWV-522] - Ok button on charpy KIC toolkit wasn't doing anything, added cancel and ok will now commit the value into the toughness screen.
[CWV-529] - Exception was being thrown when trying to view plots/intermediate results (Only for Block Independent solver where blocks reported > 1)

IMPROVEMENT

[CWV-510] - Scrollable main panel
[CWV-514] - BS7910 pdf inclusion/warning (if no pdf document warn, and if there is a correctly named pdf there open it)
[CWV-517] - User could previously close the outlook bar leaving no way to navigate between screens
[CWV-520] - Fatigue calculation was saying acceptable when not all blocks run

5.0.19770 JANUARY 16TH 2014 CUSTOMER RELEASE

Initial release