PLE-micro-CAD version 3.05

A corrected and extended version 3.05 of PLE-micro-CAD has become available for distribution on March 1, 1993. Apart from adaptation and extension of the basic modules, three new modules have been developed:

. C-module: soil curve module enabling to take into account both a free space around (part of) the pipeline (e.g. at jacket tubes or horizontal drilling) and other than bilinear curves (e.g. TANH).

. R-module: stress redistribution module.
                The mutual support of successive rings of the pipeline to withstand local soil loads are taken into account for determination of the cross-section stresses.

. F-module: phase module, enabling the analysis of a pipeline under a suite of loading conditions.

With regard to version 3.04 the following modifications and/ or additions have been made. See also USER MANUALS Vol. 1 and 2, being made available in a complete new version.

SN006.1   *General functions:*
            The COPY function at Main menu has been extended to enable, next to a complete design database, copying of all tables existing on another database to the current database.
            These tables will be tested as is the case when copying at Function level.

SN006.2   *Tabel functions:*
            Up to now only maxima and minima for table columns with E-format ('value'columns) could be obtained. This has been extended to columns with F-format (f-value columns).

SN006.3   *Functie 2: Compose pipeline configuration:*
            - Henceforward the X-coordinates along the pipeline axis may decrease. However, it is recommended to be careful because the path of several input data (e.g. soil parameters) is related to the X-axis. For constant data there can be no problems.
            - The restriction that no vertical pipeline (element) is allowed has been abandoned. For a vertical pipeline element the local coordinate system is defined differently, see description of table NODES and ELEMNTS in the USER MANUALS.
            - If extension elements are specified for an ELAStic bend, a linearly decreasing curvature from bend to straight pipe is automatically assigned to both the extension elements and as many adjacent bend elements.

SN006.4   *Function 3.2: Compose soil data model:*
- Vertical soil springs upward and downward may be different now. Therefore table KLV has been replaced bij table KLS (soil springs for displacement downward) and table KLT (soil springs for displacement upward).
  In the absence of table KLT it is assumed that both springs are equal (to KLS).   **Extension to Kernel Module**.
- The influence of the pipe deadweight on the pipe/ soil friction and the horizontal soil reaction can be taken into account. See descriptions of tables F and RH.

                                                               Extension to Kernel Module.
- The soil reaction/ displacements curves to be specified are:
  . BILIN   (bilinear)
  . TGH   (tangent hyperbolic)
  . BGC   (weaker soil curve)

  In case of no specification (in table SLCURVE) the bilinear curve is applied.   **In new C-module only**.
- In table SLACK a free space around the pipe may be specified: Soil reactions occur for larger displacements only. **In new C-module only**.
- The existing 3 results tables SOILSPR, SOILFR and SOILRL have been replaced by 2 new tables AXSOIL and LATSOIL for axial and lateral soil data respectively.

SN006.5   *Function 5: Calculate pipeline behaviour:*
- The names for the geometry-iteration control values in table GEOMCTL have been changed, but the content stays the same. The default values have been lowered in order to obtain a higher accuracy, needed for some cases. In result table ITMON the geometry iteration results are now the same as appear on the monitor screen during processing of function 5.
- Design Function screen 5 contains a number of added keys for calculation options, to be used within the F- or D-module only. See the FUNCTION DESCRIPTIONS voor function 5 in USER MANUAL Vol. 1 (salmon pages).
- In case of geometrically non-linear calculations the stiffening or weakening influence of the axial force on the element stiffness is taken into account henceforward (stress-stiffening).

SN006.6   *Function 6.1: Compose cross-section data model:*
- Due to the new stress redistribution module the TTT-key has been moved from function 6.2 to function 6.1.
- A new option enables to obtain deformation and stress redistribution - and reduction - by soil load transfer to adjacent cross-sections. Especially effective in case of peak soil reactions. The new tables W-REDIS and T-REDIS contain an overview of the deformation redistribution of the cross-sections.   **In new R-module only**.

SN006.7 *Function 6.2: Stress check according to TTT/ NEN 3650:*
- For the TRESCA check an error in calculating the stress check values has been corrected. The erroneous values were too high by 15%.
- The T-module, though developed for stress checking according to the TTT-rules, may be used for checking according to the new dutch standard NEN 3650 too.