

## Release Notes...

GASWorkS 9.0 represents a continued evolution of the GASWorkS software - however, as with all evolutionary processes, things change. In this revision, the most noticeable change will be in the way that the data is managed. The previous versions of GASWorkS used a database style management system - open a data table, retrieve a record from the table, make a change, replace the record into the table. With this method the data is continuously saved to disk storage. GASWorkS 9.0 uses an open, edit, save method of file management, similar to the methods used in spreadsheet and wordprocessor applications. With this method the model files are opened and loaded into memory. When changes are made they are only saved to the data in memory, not the data in disk storage. When the work session is complete, the User may chose to save the data changes or discard them. Remember to save your changes.

Numerous other changes were made, additional commands and functions were added and inevitably some features were discontinued. A partial summary of the many feature changes is provided in the following tables.

<b>Data Management</b>
The most noticeable change to existing Users will be how the data files are managed. Good or bad - GASWorkS now uses the open, edit, save management scheme for handling its data files. Other data management changes include...
Support for facility identification is provided. Pipes and associated customers can be grouped by facility type, similar to layers in a CAD application. Individual facilities can be set to be reported, solved, displayed - or set to “active” to allow or disallow editing. The User can revise the facility list.
Customers- A Link ID data item was added to enhance sharing of data with other applications. A unit count item was added to allow a single customer feature to more easily represent multiple physical customers. Support is now provided for “branch” customers. This allows one customer to “feed” from another customer. Multi-segment service lines are now supported. For our UK customers, individual diversity handling is now supported.
Pipes- A Link ID data item was added to enhance sharing of data with other applications. An external database can now be attached to the pipe features in the model. A Facility Type data item has been added. Fittings (valves, elbows and tees) can be attached directly to a pipe segment. The equivalent length is automatically computed and used during calculation.
Nodes - Separate control for application of the Design Factor and status for base and external loads was added. Long node names - up to 40 characters - are now supported.
Property Tables- The various property tables (pipe, valve, regulator, compressor, well, fitting) are accessed using an improved spreadsheet style interface. Now has the Ability to save and retrieve specific tables. Now has the ability to setup color and linetype specifications for individual pipe sizes and types. Pipe sizes to include during pipe sizing (optimization) can now be more easily identified. See the Property



### Data Management

Tables section for notes on using old look-up tables.

File Handling- GASWorkS 7.0 files are automatically imported when opened. A graphic preview of the model is displayed in the file selection form. Implementation of open, edit, save style file handling. Automatic save at User specified time intervals is supported.

Linked Database - A “linked” database feature has been added to replace the GASBase database. Pipe and customer model data can be complimented by the use of linked database. The linked database is automatically managed by GASWorkS - as model features are added or deleted, the associated (linked) database feature is also updated. The fields in the linked database can be specified by the User based on a “seed” file. The contents of the linked database can be manipulated using Standard Query Language (SQL) manipulation commands.

Undo - An “undo” feature has been added to allow restoration of previous data or graphic changes. The undo feature can be turned on or off by the User. The “oops” (undelete) routine has been expanded to include Customer, User Graphic, and User Text features.

“Deleted” files are now automatically sent the Windows Recycle Bin instead of being permanently deleted.

### Customer Load Manipulation

Customer feature data. A multiple “unit” field has been added - a single customer feature can be used to represent multiple customers (units). A “link identification” field has been added to allow enhanced connection between the GASWorkS data model and an external database.

Diversity- For Users of the IGE diversity calculations, heating/construction type and annual usage can now be set for each individual customer. Calculation in “looped” systems is now supported.

### Graphic Data Interface

The graphical data interface was enhanced by the addition of many new commands and features. Listed here in no particular order, the new features include:

One click access to the pipe, node, and customer data. To access pipe data, click the left mouse button on a pipe feature. To access node data, SHIFT-click the left mouse button on a node feature. To access customer data, CTRL-click the left mouse button on a customer feature.

Multi-segment service lines are supported. Customer features may have polyline type service lines. The main tap location can be specified by the User.



## Graphic Data Interface

Support for User graphic lines and symbols is now provided. Graphic (non-model) lines and symbols can be included in the model graphics. Graphics are added by drawing or inserting the feature at User specified locations. A new GDI toolbar has been added to allow management of the Graphic features.

Automatic assignment of supply main on customer entry. A command is provided for one click entry of customer features - select a the customer location - the customer is automatically assigned to the nearest main.

Automated insertion and addition of regulator, compressor, and valve elements. A set of commands has been added which allows the addition and insertion of non- pipe elements. The insertion routine automatically updates pipe lengths when the device is inserted into an existing segment.

Enhanced command list. The command list includes the traditional alphabetic listing and a new grouped listing. The grouped listing groups commands by type in “toolboxes” for example the “add” commands are grouped in one toolbox, the edit commands in another, etc. The lists have been expanded to included all of the new and existing commands.

Plot preview. The plot image is displayed in a preview window before it is sent to plotter/printer when plotting.

Plot to User specified scale. Plots may be made to “fit” the specified page size, or to a User specified scale.

Enhanced arc handling. Arcs can now be adjusted after they have been entered. Pipe ends for arc type pipes can be moved.

Additional symbol and line styles. New node symbols and line styles have been added. Non-continuous line styles can be used with all line widths.

Improved flow arrow handling - style, size and display selection. Flow arrows can be displayed as the traditional arrow heads or as chevrons at mid-section.

Automated header tap on lateral pipe entry. Using a CTRL-click selection at the From Node and To Node prompt will automatically tap the pipe near the selected location.

Double the number of customer edit and entry commands. Numerous other commands have been added for editing and entering customer data. The Customer toolbar is now two-tiered.

Calculation of pressure drop between graphically selected points. The pressure drop between a pair of selected node points can be displayed based on a User selection.

Automated calculation of efficiency based on calibration values. The efficiency of the pipes along a route between two User selected points can be automatically computed based on User specified calibration values.



<b>Graphic Data Interface</b>
Calculation of item statistics for graphically selected data features. A summary of various data values can be displayed based on a User selected set of features.
Extract, copy, and move pipe, node, and customer features based on a graphically identified selection set. A portion of a system can be extracted from a model, based on a User specified set of features. Associated pipes, nodes, and customers are included in the extraction and deletion routines.
Match hydraulic and graphic properties. The properties of a selected feature can be applied to other user selected features.
Multi-segment measurement tool. Distance along a multi-segment route can be measured using the new tool.
Support of branch customers. A grouping of “trunk” and “branch” customers can be created, allowing one customer to be supplied from another.
Save and retrieve graphical views. A graphic view can be saved, then retrieved at a later time.
Multiple view tab (panels) are provided. The GDI supports three separate panels, each with the ability to display a different view of the model.
Multiple previous and next zooms. Each GDI panel allows up to ten views to be saved and accessed using the Previous and Next zoom commands.
Trace and update data values along a trace route. Pipe, node, and customer values can be changed along a trace route.
Set hydraulic symbols independent of pipe length. Pipe symbol size for compressors, regulators, valves and wells can be set independent of the actual element graphical length.
Save display to Windows Clipboard. The GDI display can be saved to the Windows clipboard and pasted into supporting applications.
Calculate XY's from latitude and longitude. Approximate planar coordinates can be calculated from geographic coordinates.
Automatically set text display limit. The text display limit can be set to the current view by simply double clicking the display limit data box.
Entry of pipe by length and User drawn angle. In addition to the previous entry methods, a pipe segment can be entered by entering a desired length, then graphical selecting the desired angle.
Display pipe length during manual graphic entry. The pipe length can optionally be displayed during entry.
Automatically reset colors - useful after traces and queries.
Automatically find and delete zero length pipes - useful for data imported from CAD & GIS sources.



### Graphic Data Interface

Pipe color and linetype can be set using values contained in the Pipe Properties table, based on size and type values, or based on facility type.

Improved background handling including: Support for “blocks” in DXF backgrounds. Ability to set scale and origin shift when attaching a DXF background. Turn display of individual background image off without unattaching the image. Support for Shape file background images is now supported.

Support for typed commands. Support is now provided for manual entry of typed commands. This may seem like a step backwards, but often it is quicker to type a command than to find and select it from the command list. Full or abbreviated commands may be entered, and the User may create a command alias list to use their known name for the GDI commands.

A routine to automatically identify and tap unbroken intersections has been added. This is especially useful for cleaning up imported CAD and GIS data.

Overall improvement of display speed.

Right clicking the mouse while working in GDI, displays a pop-up menu allowing a command to be repeated, the display to be panned or zoomed, or a feature edit command to be executed.

### Solution Routine

Capacity- Support for increased model capacity - the solution, reports, and graphical display have been tested and verified with models up to 250,000 nodes in size.

Optimization- A more robust pipe sizing routine now produces more accurate and consistent optimal pipe size sets. Ability to set limit pressures at multiple condition nodes. A maximum velocity limit may be imposed. The pipe table to use for new size selection can be specified independent of the model pipe table.

Flow Equations- Support for several additional pipe flow equations was added, including additional versions of the AGA partially and fully turbulent equation, and the high and low pressure versions of the IMC (Polyflo) equations.

Diversity- For Users of the IGE diversity calculations, heating/construction type and annual usage can now be set for each individual customer. Calculation in “looped” systems is now supported.



**Reports**

The various report features have been enhanced in a number of ways - which include:

Standard Reports- Enhanced in-report data editing. Enhanced query routine allows a query specification to be saved and retrieved. Improved print handling especially for wide reports. Inclusion of customer model and attribute data. Inclusion of pipe attribute data. Automatic sort by node name or id number. Ability to delete a feature from the report. Graphically find a feature from a record selected in a report.

Summary Report - Addition of a numerous items to the system summary option. The report is displayed in a User revisable text window. Selected contents can be copied, cut, and pasted into other applications.

Data Check - Additional items and options have been added to the check routines. The report is displayed in a User revisable text window. Selected contents can be copied, cut, and pasted into other applications.

Exclusion Report - Additional items and options have been added to the check routines. The report is displayed in a User revisable text window. Selected contents can be copied, cut, and pasted into other applications.

**Other Features**

Mass Update- Expanded item support including assignment and query of graphical properties. The ability to save and retrieve query specifications was added.

DXF Import- Now allows assignment of multiple pipe layers. Specification of arc resolution. Specification of length and coordinate units, and origin shift - allowing automatic scale and shift during import. Import of pipe, valve, customer, and User text features has been incorporated into a single routine. The ability to save and retrieve an import specification was added.

Utilities - An automated node reduction routine was added. This routine is especially useful when working with CAD and GIS data that needs a bit of massaging/cleanup after importing. A routine has been added to create a graphical model from a non-graphical model.

Quick Export - A set of quick export routines have been added to allow the export of data associated with the current model to be exported to number of formats with a single click. All pipe, node, and customer data is included in the export. Supported formats include, Microsoft Access database, Microsoft Excel workbook spreadsheets, ESRI Shape file, GASWorkS 7.0, dBASE and ASCII text files.



### Discontinued Features

Several features have been discontinued from the current GASWorkS release. Their exclusion was based on their perceived usefulness with respect to the latest software functionality. These features include...

**Model Edit Data Form** - The fill in the blanks style model edit data form is no longer supported. This routine was most useful for creating no graphical models. Non-graphical models are no longer supported.

**Relate Features** - The ability to relate separate models together has been discontinued. The main purpose of the relate feature was to help manage large models. GASWorkS now supports large models in both its report and analysis features, combined with the newly added Facility feature, combined models can now be efficiently managed.

**GASBase** - The predefined customer and pipe attribute database included in previous version of GASWorkS has been discontinued. Similar, and more robust features are provided by the new "Linked" database feature. When a GASWorkS 7.0 model with an associated GASBase database is imported, the GASBase database is converted to a Linked database. All of the data will be retained, however some of the automated load manipulation functionality of GASBase will be lost.

**Import/Export** - Some import and export routines have been discontinued including the GasTool and Data Dump formats, and some old versions of GASWorkS. If conversion from these formats is required, we can process them for you.

We hope that you will be pleased with the many improvements and enhancements we have made to GASWorkS. Please let us know if you have any comments, concerns, or questions regarding our latest release...

