

Overview

MDCAD provides an interactive AutoCAD® or Civil 3D® interface to enable you to create and edit drainage layouts within the AutoCAD environment. The designs can then be exported for detailed design and Simulation in WinDes before being imported back into AutoCAD.

Note: A full AutoCAD version is required. For AutoCAD LT see DrawNet.

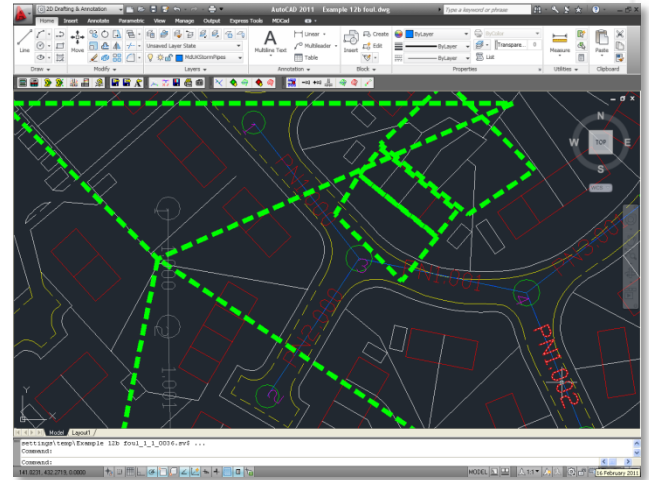
Description

Design networks

- Allows a full Storm and Foul (Sanitary) drainage design to be drafted using AutoCAD or Civil 3D
- Auto numbering of pipes, including branch lines
- The manhole positions are taken from the drawing, and MDCAD calculates the pipe lengths
- Apply impermeable areas entering the network by plotting them on the drawing. A pipe can either have single or multiple areas associated with it

Pipe Number	PAF Name	PAF	Gross Area (ha)	Imp Area (ha)	User Imp Area (ha)	Calc Total (ha)	User Total (ha)
1.001	Roof	0.900	0.017	0.015	0.015	0.015	0.015
	Road	0.800	0.025	0.020	0.020	0.035	0.035
	Grass	0.250	0.051	0.013	0.013	0.048	0.048
Average			0.031	0.016	0.016	0.033	0.033

- Apply a range of paved area factors e.g. for roads, roofs and grassed surfaces
- Within AutoCAD if you select an element with a cover level when drawing a pipe this will be recognised and used as the cover level for the manhole
- Insert or delete a pipe or manhole, and MDCAD will also reconnect the downstream pipes as well as automatically renumbering the network



Visualisation

- Generate longsections between pipes specified and display simulated water levels
- Specify a vertical scale for the longsection
- Configure to display annotations relating to each pipe or manhole on the drawing
- Display Pipeline details as well as the results from Simulation, such as OK, Surcharged and Flooded
- Check for pipe crossings and clashes
- Automatic production of pipeline schedule, manhole schedule and longsections
- Selecting the Pipeline details from the Examine Network menu will display the current coordinates and levels for the selected pipe

PIPELINE NO	1.000	1.001	1.002	1.003
DIAMETER (mm)	150	225	225	225
SLOPE (1/x)	83.6	167.7	167.7	167.7
GROUND LEVEL (m)	20.959	20.785	20.624	20.234
INVERT LEVEL (m)	19.409	19.146	18.841	18.458
LENGTH (m)	38.699	38.538	35.708	46.852

Civil 3D

- With Civil 3D, cover levels can be read from a surface as the network is defined
- Levels from surface can be exported into WinDes as a .pwf

Export to WinDes

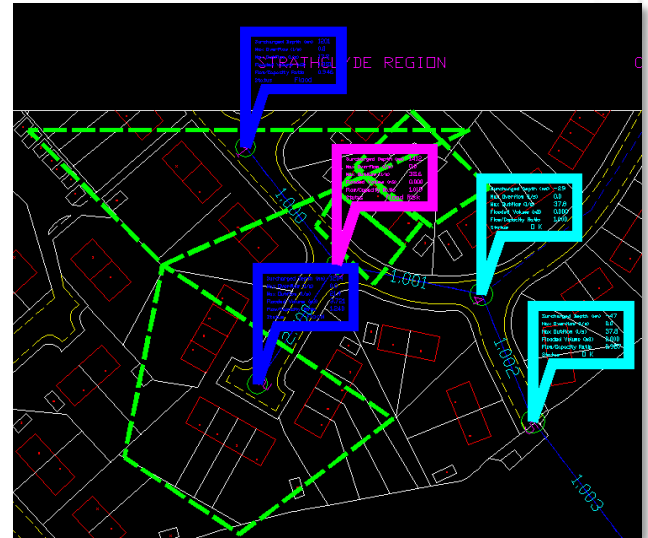
Data defined in MDCAD is a starting point for the WinDes workflow process and saves substantial amounts of time compared to traditional spreadsheet data entry.

Once the network is designed in MDCAD it can be exported to System 1 which;

- Applies either the Rational or Modified Rational methods for storm systems or the Main Drainage or Fixture Unit methods (BS8301 and EN752) for foul to the MDCAD design
- Takes into account friction losses
- Calculates pipe capacity using either Colebrook-White or Manning's equations
- Size pipes using a pre-defined library of available diameters or open ditches, culverts and non-standard sections
- Specify slope, fall or auto design to give self cleansing velocity
- Optimise the network to minimum cover depth
- Tie-in to fixed levels at the outfall
- Automatically removes the backdrop based on pre-defined range
- Size manholes using a pre-defined library of available chambers, based on diameters and depths of connecting pipes
- Produce pipeline and manhole schedules

The network can then be analysed in the Simulation module against various storm duration, seasons, and return periods.

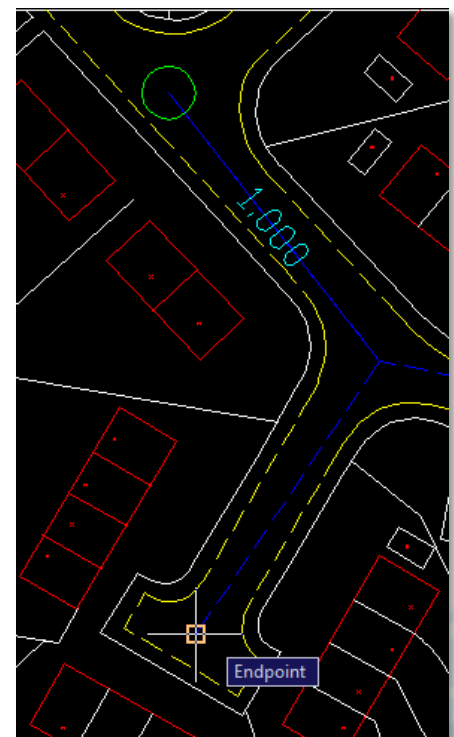
Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.201	1.381	0.94		17.8	FLOOD
1.204	3.721	1.24		21.4	FLOOD
1.412	0.000	1.02		38.6	FLOOD RISK
-0.029	0.000	1.00		37.8	OK
-0.047	0.000	0.99		37.8	OK



- The results can be exported and displayed on the MDCAD drawing. The status of each manhole is shown by the different coloured flags
- Using the examine network details option MDCAD will display the Simulation details, such as flooded volume and the water level
- Coordinates & Levels, Pipeline and Simulation Details can all be accessed and shown on the drawing

Additional Features in WinDes W.12.6

MDCAD is compatible with AutoCAD® 2012.



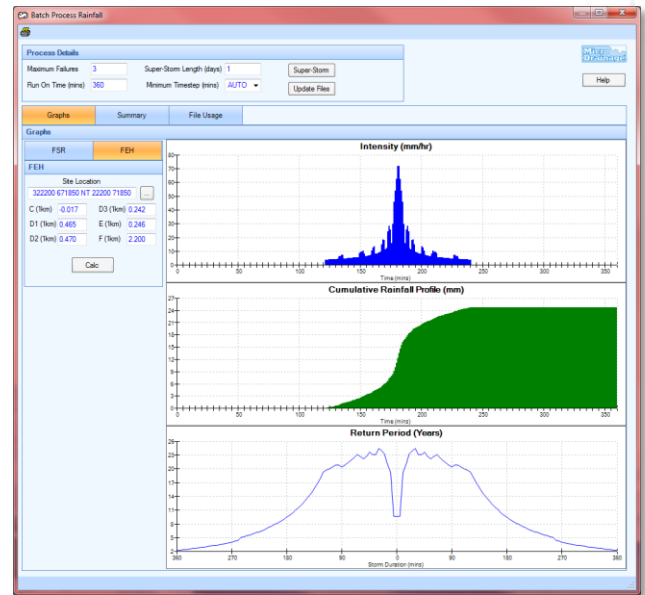
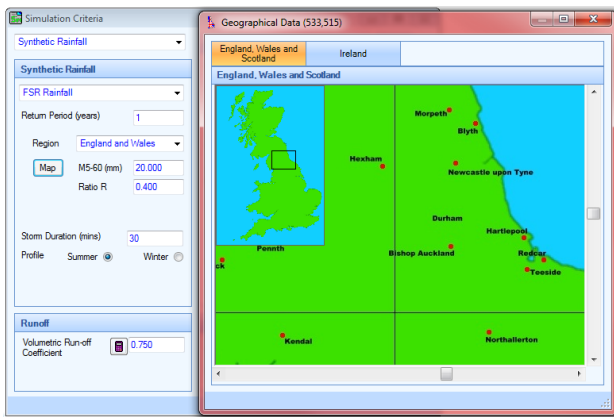
Additional Features in WinDes W.12.6 (cont'd)

The Easi-Base Manhole from FPMcCann can now be automatically scheduled.

Speed increases will help larger models, most notably with Plan, 3D WorldView and large spreadsheets.

Printing and graphs have improved speed and reliability.

MAP buttons are now provided in the DrawNet, System 1, Simulation and Source Control modules.



WinDes can now support larger pipe numbers, from 1.000 to 9999.999 in a single network.

WinDes will now detect if a file is already in use, to prevent file locking issues and avoid any errors when saving.

Copy and Paste into spreadsheets for easier data input such as;

- ⊕ Manhole coordinates
- ⊕ Utility forms
- ⊕ CRP, IDF & rainfall profiles
- ⊕ Depth flow relationship

Update MH Cover from the TIN. When importing a drainage network with a TIN it will not force updated cover levels for manholes outside the TIN extents.

Compress Rainfall/Hydrographs allows the user to load in large sets of data and break them up into individual files in order to remove any values below a set threshold e.g. X mm of rainfall or X l/s of flow.

Super-Storm creates a single all encompassing 'Super-Storm' from a set of rainfall files so that the key criteria of both Peak Intensity and Total Volume are preserved. It is possible to view the resulting storm to see which aspects were taken from each file and compare this with either Flood Studies Report (FSR) or Flood Estimation Handbook (FEH) rainfall data to view the equivalent Return Period.

Batch Process Rainfall enables the user to automatically set a batch of rainfall files.

Support Material

WinDes is supplied with a hard-copy manual which includes worked examples. All the modules benefit from extensive online help including 'How Do I' tutorials for frequently asked questions.

All Micro Drainage software is backed up by a comprehensive support and maintenance programme.

Contact Details

For further information about WinDes, training and workshops, visit www.microdrainage.co.uk, email info@microdrainage.co.uk or call +44 (0)1635 582555.

If you have been struggling to keep abreast of the latest guidance, rules and regulations visit the Micro Drainage Blog at <http://pipedup.wordpress.com>



WinDes W.12.6, keeping you up to date and industry compliant.