

TZVALVE™

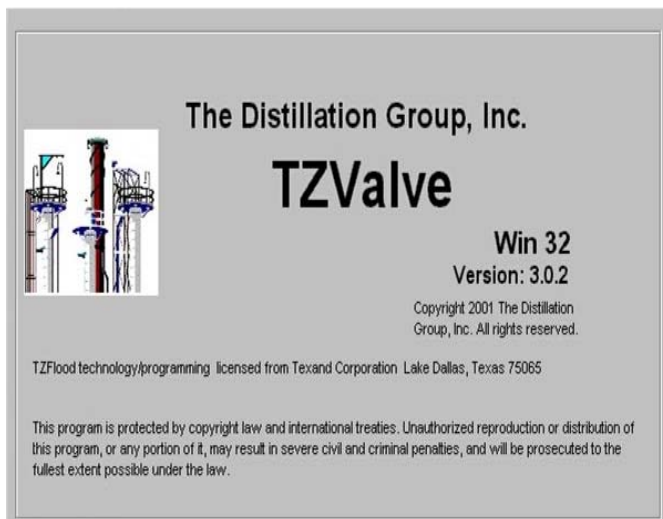
Advanced Technology for Tray Rating & Design



The Distillation Group, Inc. is pleased to present TZValve 3.0.2 for Windows – The most accurate and easy-to-use valve tray rating and design tool available in the industry. TZValve features include:

- Tray Zone Flooding (TZF™) Technology
- Koch, Glitsch, and Sulzer (Nutter) published flooding correlations for quick comparison
- User-friendly Interface
- Complex designs easily configured
- Hundreds of vendor valve styles
- Automated design mode
- Full, Standard, and Demo versions

TZValve will rigorously evaluate valve trays manufactured by Koch, Glitsch, Sulzer (Nutter), Norpro, Jaeger, and ACS.



Operating System Required:

Windows 95/98, Me, XP Home, XP Pro
Windows NT, 2000

DOS Version available upon request

Version 3.0.2 Features

- Full
- Standard
- Demo

Screen Shots

TZF Entrainment and Downcomer Flooding Correlation

TZValve™ 3.0.2 - Full Version

Features	Valve Unit Types
<ul style="list-style-type: none"> ➤ One, two, three, and four pass trays ➤ Rating and Design modes ➤ Equal active area, equal flow path length or user specified design for multi pass trays ➤ Automatic hydraulic balancing of flow passes in design mode ➤ Straight, sloped, envelope, pipe, and multi-chordal downcomers ➤ Selectable bend point for sloped downcomers ➤ Automatic tower and downcomer sizer ➤ Inlet, swept-back, picket weirs ➤ Inlet sump options ➤ Transport property estimator ➤ Fully documented with on-line help system ➤ Easy file creation and saving system ➤ Full comparison with published Glitsch, Koch, and Nutter jet flood and downcomer flood correlations ➤ Runs up to six parallel cases for rapid evaluation ➤ Automatic flow rate multiplier for rapid evaluation of over/under design conditions ➤ English and metric units ➤ Warning features for non-standard and out-of-recommended range operating conditions ➤ Output formatted as a text file into Windows® Notepad®, Wordpad® or other text editor of the users choice ➤ Multiple printout options 	<ul style="list-style-type: none"> ➤ Standard Round <ul style="list-style-type: none"> ▪ Koch, Glitsch, and Norton valve units ▪ Single piece moveable units ▪ Caged units ▪ Square-edge or venturi deck holes ▪ Dimpled or flush-seated units ▪ Variable valve lift ▪ Variable valve weights ▪ Glitsch “V-0” style fixed valve unit w/ variable rise ➤ Large Rectangular <ul style="list-style-type: none"> ▪ Sulzer (<i>Nutter</i>) “BDP” large single piece moveable unit ▪ Variable valve lift ▪ Variable valve weights ▪ Sulzer (<i>Nutter</i>) “LVG” large V-Grid fixed valve with variable lift ➤ Small Rectangular <ul style="list-style-type: none"> ▪ Sulzer (<i>Nutter</i>) “BDH” half-sized single piece moveable units ▪ Variable valve lift ▪ Variable valve weights ▪ Sulzer (<i>Nutter</i>) “SVG” small V-Grid fixed valve with variable lift ➤ Mini Rectangular <ul style="list-style-type: none"> ▪ Sulzer (<i>Nutter</i>) “MVG” mini V-Grid fixed valve with variable lift

*Windows Notepad and Wordpad are registered trademarks of Microsoft Corporation.

TZValve™ 3.0.2 - Standard Version

Features	Valve Unit Types
<ul style="list-style-type: none"> ➤ One and two pass trays ➤ Rating and Design modes ➤ Straight, sloped, envelope, pipe, and multi-chordal downcomers ➤ Selectable bend point for sloped downcomers ➤ Automatic tower and downcomer sizer ➤ Inlet, swept-back, picket weirs ➤ Inlet sump options ➤ Transport property estimator ➤ Fully documented with on-line help system ➤ Easy file creation and saving system ➤ Full comparison with published Glitsch, Koch, and Nutter jet flood and downcomer flood correlations ➤ Runs up to six parallel cases for rapid evaluation ➤ Automatic flow rate multiplier for rapid evaluation of over/under design conditions ➤ English and metric units ➤ Warning features for non-standard and out-of-recommended range operating conditions ➤ Output formatted as a text file into Windows® Notepad®, Wordpad® or other text editor of the users choice ➤ Multiple printout options 	<ul style="list-style-type: none"> ➤ Standard Round <ul style="list-style-type: none"> ▪ Koch, Glitsch, and Norton valve units ▪ Single piece moveable units ▪ Caged units ▪ Square-edge or venturi deck holes ▪ Dimpled or flush-seated units ▪ Variable valve lift ▪ Variable valve weights ▪ Glitsch “V-0” style fixed valve unit w/ variable rise ➤ Large Rectangular <ul style="list-style-type: none"> ▪ Sulzer (<i>Nutter</i>) “BDP” large single piece moveable unit ▪ Variable valve lift ▪ Variable valve weights ▪ Sulzer (<i>Nutter</i>) “LVG” large V-Grid fixed valve with variable lift ➤ Small Rectangular <ul style="list-style-type: none"> ▪ Sulzer (<i>Nutter</i>) “BDH” half-sized single piece moveable units ▪ Variable valve lift ▪ Variable valve weights ▪ Sulzer (<i>Nutter</i>) “SVG” small V-Grid fixed valve with variable lift ➤ Mini Rectangular <ul style="list-style-type: none"> ▪ Sulzer (<i>Nutter</i>) “MVG” mini V-Grid fixed valve with variable lift

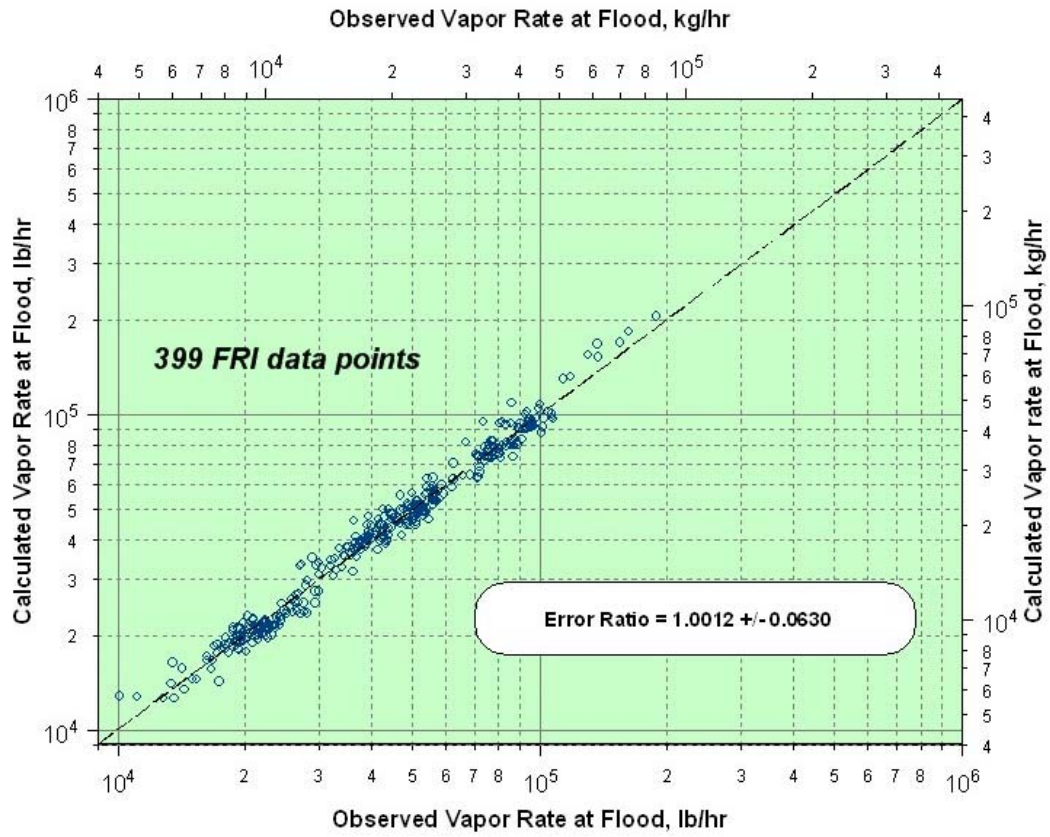
*Windows Notepad and Wordpad are registered trademarks of Microsoft Corporation.

TZValve™ 3.0.2 - Demo Version

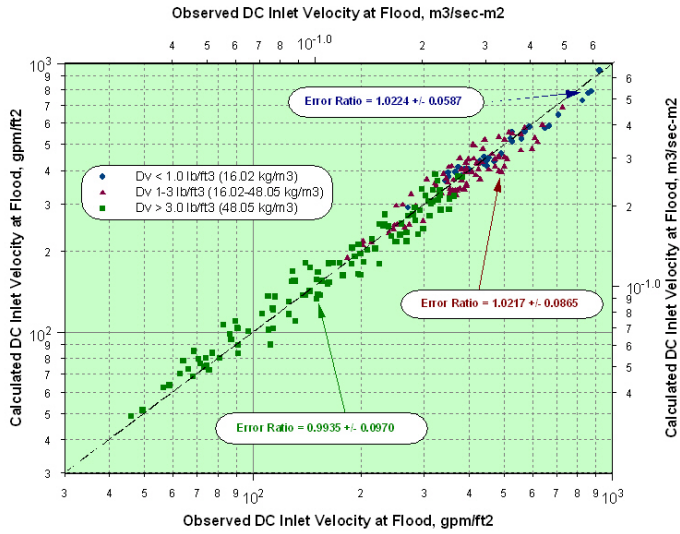
Features	Valve Unit Types
<ul style="list-style-type: none">➤ One pass trays – 48” diameter➤ Rating and Design modes➤ Straight, sloped, envelope, pipe, and multi-chordal downcomers➤ Selectable bend point for sloped downcomers➤ Automatic tower and downcomer sizer➤ Inlet, swept-back, picket weirs➤ Inlet sump options➤ Transport property estimator➤ Fully documented with on-line help system➤ Easy file creation and saving system➤ Full comparison with published Glitsch, Koch, and Nutter jet flood and downcomer flood correlations➤ Runs up to six parallel cases for rapid evaluation➤ Automatic flow rate multiplier for rapid evaluation of over/under design conditions➤ English and metric units➤ Warning features for non-standard and out-of-recommended range operating conditions➤ Output formatted as a text file into Windows® Notepad®, Wordpad® or other text editor of the users choice➤ Multiple printout options	<ul style="list-style-type: none">➤ Standard Round<ul style="list-style-type: none">▪ Koch, Glitsch, and Norton valve units▪ Single piece moveable units▪ Caged units▪ Square-edge or venturi deck holes▪ Dimpled or flush-seated units▪ Variable valve lift▪ Variable valve weights▪ Glitsch “V-0” style fixed valve unit w/ variable rise

*Windows Notepad and Wordpad are registered trademarks of Microsoft Corporation.

TZF Entrainment Flooding Accuracy

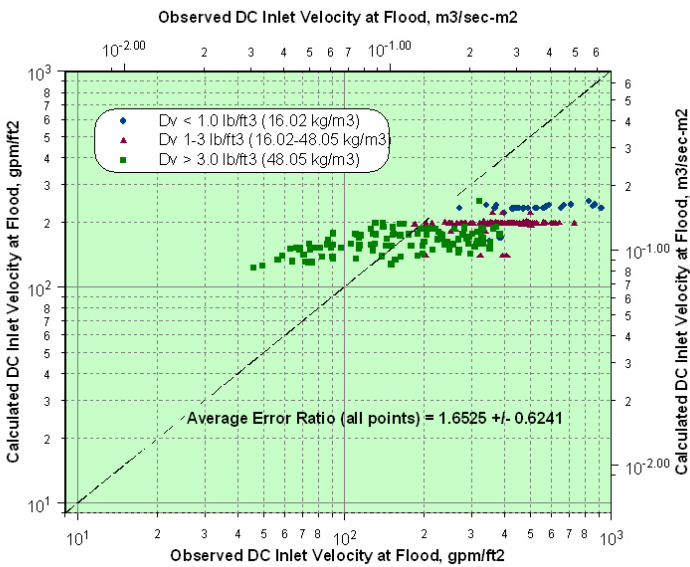


TZF Downcomer Flooding Accuracy



TZF Model

- Most accurate downcomer capacity model available
- Accuracy not diminished in high pressure systems
- Not conservative in low pressure systems
- Downcomers are sized/rated correctly



Typical Tray Vendor Model

- Does not accurately predict the conditions which the downcomer will reach a capacity limit.
- Conservative for low pressure systems
- Optimistic for high pressure systems
- Downcomers are not sized/rated correctly