V-CALC
VALVE DESIGN CALCULATION SOFTWARE

BROCHURE

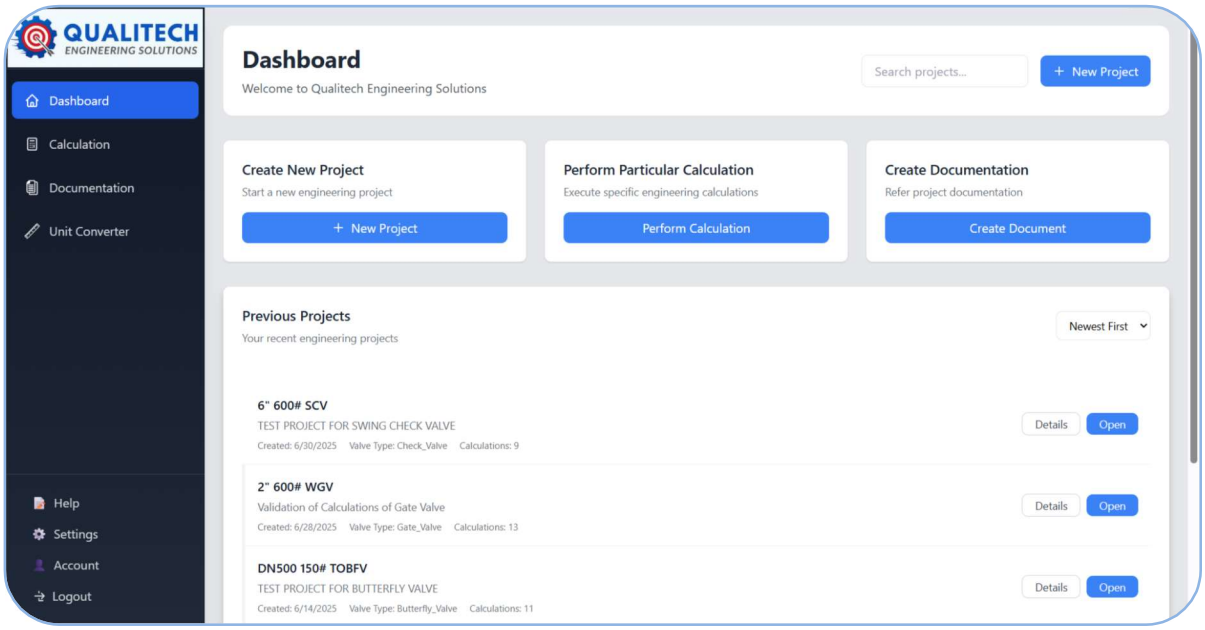
About V-Calc

V-Calc is a proprietary Valve Design Calculation Software developed by Qualitech Engineering Solutions to simplify and automate the complex process of valve design.

It integrates calculations based on ASME, API, and ISO standards to provide reliable results for different types of valves including ball, gate, butterfly, plug, and check valves.

By using V-Calc, engineers can minimize manual effort, ensure compliance with international standards, and generate ready-to-use design documentation.

With this unique combination of **domain expertise and software innovation**, Qualitech Engineering Solutions continues to empower the engineering community with **robust, intelligent, and practical design tools** that uphold the highest standards of quality, safety, and reliability.



Salient Features of V-Calc

1. Comprehensive Valve Design Calculations

- Performs detailed **design and sizing calculations** for multiple valve types.
- Based on **API, ASME, ISO, and AWWA** standards.
- Includes calculations for wall thickness, torque, stem diameter, bolting, flange design, and flow coefficient.

2. Standard-Based Accuracy

- Ensures compliance with the **latest international design codes**.
- Auto-applies **design factors, safety margins, and pressure-temperature ratings** as per the selected standard.

3. Smart Calculation Engine

- Performs real-time computations with error checking and auto-unit conversions.
- Handles **inter-linked parameter updates** — changing one input automatically updates all dependent results.

4. Intuitive Graphical Interface

- Clean, user-friendly **desktop GUI**.
- Organized input fields and results for each module.
- Visual indicators and Sidebar to assist with design entry.

5. Automated Report Generation

- Generates detailed **calculation reports in Word(.docx) format**, including formulas, intermediate steps, and results.
- Customizable headers with **company logo and project details**.
- Ideal for submission with engineering documentation packages.

6. Project Data Management

- Allows saving and re-opening of **project files** for future revisions.
- Built-in data storage for **material properties and Stud/Bolt data**(editable via Settings).

Compliance of Standards

BALL VALVE

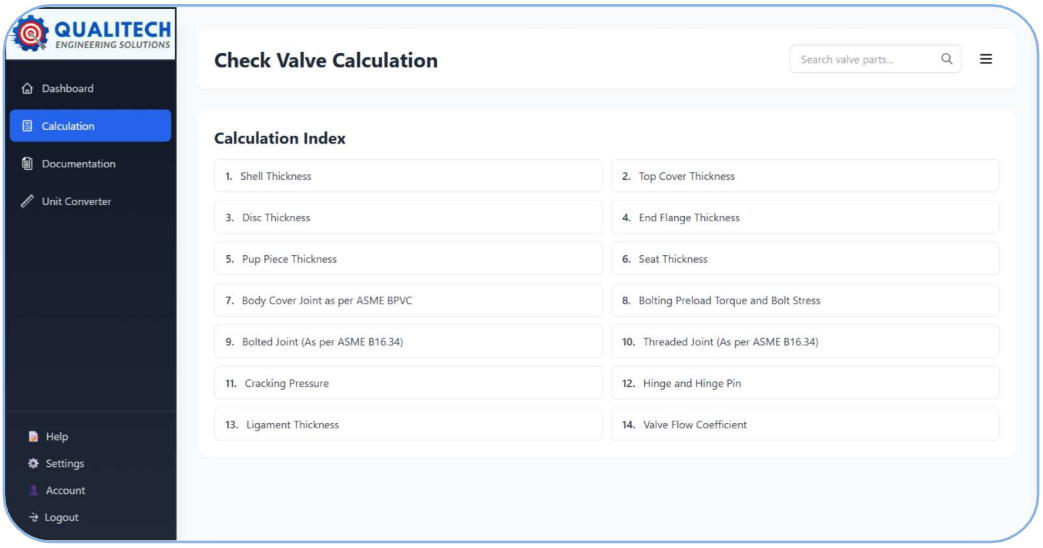
API 6D BALL VALVE CALCULATION LIST

Sr. No.	Name of Calculation	Reference Clause
1	Body Thickness	5.1.2
2	Side Piece Thickness	5.1.2
3	Pup Piece Thickness	5.1.2
4	Top Cover Thickness	5.1.2
5	End Flange Thickness	5.1.2
6	Seat Thickness	5.1.3
7	Gasket Joint (As Per ASME BPVC)	5.1.4
8	Bolting Preload Torque and Bolting Stress	5.1.4
9	Bolted Joint (As Per ASME B16.34)	-
10	Threaded Joint (As Per ASME B16.34)	-
11	Maximum Allowable Stem Torque (MAST)	5.3.1
12	Valve Torque	-
13	Drive Train Deflection	5.3.4
14	Handwheel Diameter	5.4.2.1, 5.4.2.2
15	Lever Design	5.4.2.1, 5.4.2.2
16	Closure Member Position	5.4.3.2
17	Cavity Relief Pressure	5.5
18	Stem Collar Thickness	5.7
19	Stem Key	-
20	Stem Bearing	-
21	Trunnion Bearing	-
22	Spring Design	-
23	Dowel Pin Diameter	-
24	Top Thrust Washer	-
25	Gland Flange Thickness	-
26	Ligament Thickness	-
27	Valve Flow Coefficient	-

SWING CHECK VALVE

API 6D SWING CHECK VALVE CALCULATION LIST

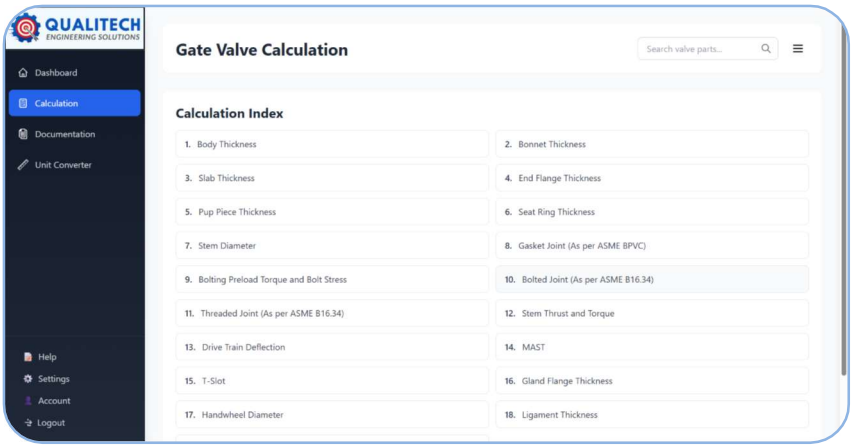
Sr. No.	Name of Calculation	Reference Clause
1	Body Thickness	5.1.2
2	Top Cover Thickness	5.1.2
3	Disc Thickness	5.1.3
4	End Flange Thickness	5.1.2
5	Pup Piece Thickness	5.1.2
6	Seat Thickness	5.1.3
7	Body Cover Joint as Per ASME BPVC	5.1.4
8	Bolting Preload Torque and Bolt Stress	5.1.4
9	Bolted Joint (As Per ASME B16.34)	-
10	Threaded Joint (As Per ASME B16.34)	-
11	Cracking Pressure	-
12	Hinge And Hinge Pin	-
13	Ligament Thickness	-
14	Valve Flow Coefficient	-



GATE VALVE

API 6D GATE VALVE CALCULATION LIST

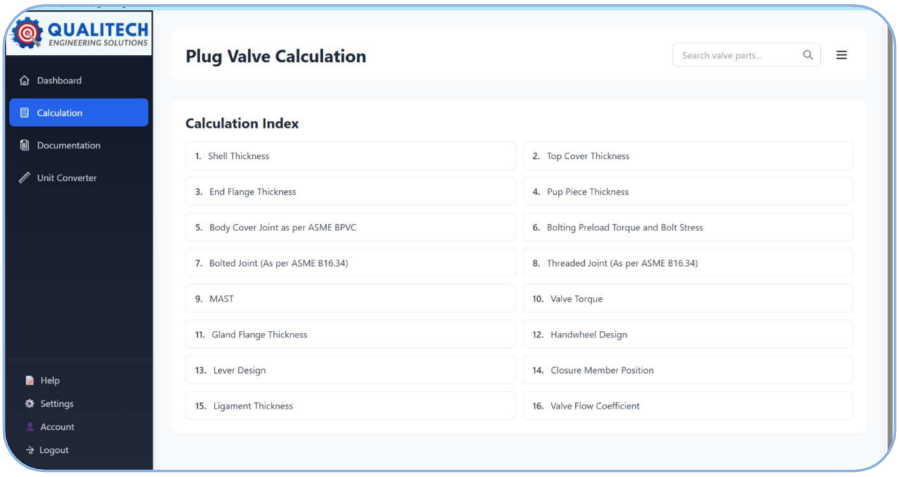
Sr. No.	Name of Calculation	Reference Clause
1	Body Thickness	5.1.2
2	Bonnet Thickness	5.1.2
3	Slab Thickness	5.1.3
4	End Flange Thickness	5.1.2
5	Pup Piece Thickness	5.1.2
6	Seat Ring Thickness	5.1.3
7	Stem Diameter	-
8	Gasket Joint (As Per ASME BPVC)	5.1.4
9	Bolting Preload Torque and Bolting Stress	5.1.4
10	Bolted Joint (As Per ASME B16.34)	-
11	Threaded Joint (As Per ASME B16.34)	-
12	Stem Thrust and Torque	5.3.1
13	Maximum Allowable Stem Torque (MAST)	
14	T-Slot	
15	Gland Flange Thickness	-
16	Handwheel Diameter	5.4.2.1 5.4.2.2
17	Ligament Thickness	-
18	Valve Flow Coefficient	-



PLUG VALVE

API 6D PLUG VALVE CALCULATION LIST

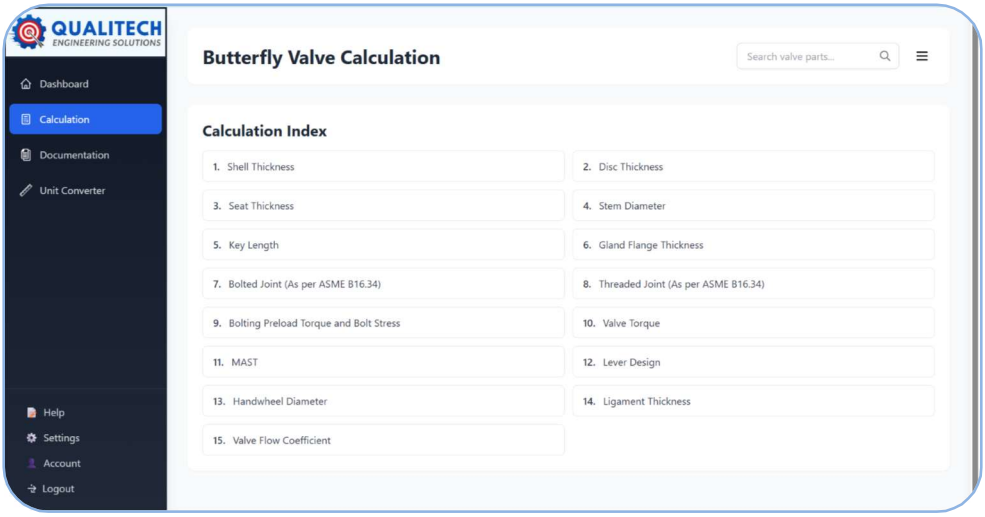
Sr. No.	Name of Calculation	Reference Clause
1	Shell Thickness	5.1.2
2	Top Cover Thickness	5.1.2
3	End Flange Thickness	5.1.2
4	Pup Piece Thickness	5.1.2
5	Body Cover Joint as Per ASME BPVC	5.1.4
6	Bolting Preload Torque and Bolting Stress	5.1.4
7	Bolted Joint (As Per ASME B16.34)	-
8	Threaded Joint (As Per ASME B16.34)	-
9	Maximum Allowable Stem Torque (MAST)	5.3.1
10	Valve Torque	-
11	Gland Flange Thickness	-
12	Handwheel Design	5.4.2.1 5.4.2.2
13	Lever Design	5.4.2.1 5.4.2.2
14	Closure Member Position	5.4.3.2
15	Ligament Thickness	-
16	Valve Flow Coefficient	-



BUTTERFLY VALVE

API 609 BUTTERFLY VALVE CALCULATION LIST

Sr. No.	Name of Calculation	Reference Clause
1	Shell Thickness	5.2.1
2	Disc Thickness	-
3	Seat Thickness	-
4	Stem Diameter	-
5	Key Length	-
6	Gland Flange	5.6.3
7	Bolted Joint (As Per ASME B16.34)	-
8	Threaded Joint (As Per ASME B16.34)	-
9	Bolting Preload Torque and Bolt Stress	-
10	Valve Torque	-
11	Mast	5.6.1
12	Lever Design	5.9.3
13	Handwheel Diameter	5.9.3
14	Ligament Thickness	-
15	Valve Flow Coefficient	-



Experience Precision Engineering — With V-Calc

Designed for mechanical engineers.

Built on global standards.

Trusted for accuracy.

QUALITECH
ENGINEERING SOLUTIONS

Simplify Complexity, Optimize Performance.

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