

TECHNICAL SPECIFICATION

This technical specification covers the use of the Fast Flow Siphonic System™, the Fast Flow Pressurised System™ and any combination thereof, whether designed separately or integrated into a 'Hybrid Solution'.

The **Fast Flow System of Siphonic Rainwater Drainage** is a designed and engineered system comprising of Fast Flow proprietary manufactured rainwater outlets connected to a network of pipes and fittings all of which are dimensioned using proprietary design software.

The **Fast Flow System of Pressurised Rainwater Drainage** is a patented technology which was specifically developed for rainwater drainage in 'Wind-Driven Rain Spaces' in buildings. The key proprietary component of the Pressurised System is the psVent™, which has been manufactured and sized to fit into a vertical psPipe™ System [psSTACK®] and which acts as an anti-back flow device.

1. Design

- 1.1. All **Fast Flow Siphonic System™** designs will be carried out by Fast Flow qualified personnel, using **FastFlowCalc®**, a proprietary software developed and validated by TUV SUD PSB. [Refer *Fast Flow Technical Manual*]
- 1.2. All **Fast Flow Pressurised System™** designs will be carried out by Fast Flow qualified personnel using **psCalc®** a proprietary software developed by Fast Flow incorporating- the unique features of the psVent® whose properties have been validated by TUV SUD PSB. [Refer *Fast Flow Technical Manual*]
- 1.3. Each and every System will be designed to:
 - 1.3.1. Customer/Specifiers requirements. [Customer/Specifier should ensure that their requirements are not in conflict with any legislation laid down in the jurisdiction where the system is to be used]
 - 1.3.2. Be able to drain the amount of water for each designated catchment under the design rainfall intensity as defined by the Customer/Specifier.
 - 1.3.3. Follow the general routing requirements of the Customer/Specifier, so long as such routing conforms to local codes or bye-laws where applicable.
 - 1.3.4. Ensure that all pipe materials and pipe system support structure as specified are capable of withstanding the forces and reactions so applied to them due to
 - 1.3.4.1. Changes in the dynamic flow of the system
 - 1.3.4.2. Thermal and Seismic effects
 - 1.3.4.3. Static Load [Bracket and Bracing System only]
 - 1.3.4.4. Hydrostatic Pressure [Pipe Material only]
 - 1.3.4.5. Deflections in the structural elements of the building directly supporting the pipework. [only upon request]

2. Design Development

- 2.1. During the design development phase of the overall design the following information should be verified and agreed.
 - 2.1.1. Extent of catchment area.
 - 2.1.1.1. 'Open to Sky' roof areas
 - 2.1.1.2. Vertical façade draining to roof areas
 - 2.1.1.3. Wind-Driven Rain' Spaces
 - 2.1.2. Positioning of outlets and outlet collection zone
 - 2.1.3. Routing of pipe systems
 - 2.1.4. Location of discharge point.
- 2.2. Design of Gutters
 - 2.2.1. Fast Flow will provide gutter sizing for each and every gutter being drained by its drainage system.
 - 2.2.2. The gutter will be sized based on
 - 2.2.2.1. Water depth around outlet
 - 2.2.2.2. Water depth due to prime time
 - 2.2.2.3. Outlet spacing relative to gutter length
 - 2.2.2.4. Free Board

3. Design Calculation Output

- 3.1. Fast Flow will provide the following design output documents
 - 3.1.1. Print out of hydraulic calculation showing frictional losses, local losses, head loss, flow rates, flow velocities and pressure profile together with resultant pipe sizing. [siphonic only]
 - 3.1.2. Print out of 3-D schematic indicating all pipe dimensioning and sizing. [siphonic only]
 - 3.1.3. Print out of 2-D schematic indicating all pipe dimensioning and sizing. [pressurised only]

4. Fast Flow Proprietary Products

- 4.1. Fast Flow Rainwater Outlets
 - 4.1.1. The Fast Flow System of Siphonic Rainwater Drainage consists of **roof outlets**, technical specifications and computer software to design the pipework for each installation.
 - 4.1.1.1. Primo™ Range
 - 4.1.1.2. Piccolo™ Range
 - 4.1.1.3. SLR™ Range
 - 4.1.1.4. Arteco™ Range

- 4.1.2. All Fast Flow Siphonic Rainwater Outlets have been tested and validated by TUV SUD PSB and SIRIM. Further information on all outlets is available in *Fast Flow Technical Data Sheets*.
- 4.1.3. All Fast Flow Siphonic Rainwater Outlets can be used in conjunction with any pressure rated pipe conveyance system which complies with the performance specification set down in the *Fast Flow Technical Manual*.
- 4.1.4. The following pipe conveyance systems materials can be used together with Fast Flow Siphonic Rainwater Outlets.
 - 4.1.4.1. UPVC, HDPE, Stainless Steel, Cast Iron, Galvanised Steel, Ductile Iron.
 - 4.1.4.2. Other materials upon request
- 4.1.5. Fast Flow Siphonic Rainwater Outlets are manufactured using high quality materials.
 - 4.1.5.1. Stainless Steel 304 (316 upon request) is used for baseplate, clamping ring, nuts and bolts.
 - 4.1.5.2. Cast Aluminum Alloy AR5 is used for the airbaffles and counterflanges
 - 4.1.5.3. EPDM is used for all seals.
- 4.2. Fast Flow Floor & Balcony Gratings
 - 4.2.1. Fast Flow Arteco™ Gratings have been developed, manufactured and tested by both TUV SUD PSB and SIRIM to provide guaranteed flow rates in balconies and other 'wind-driven spaces'.
 - 4.2.2. Further information on all Fast Flow Gratings is available in *Fast Flow Technical Data Sheets*.
5. **psPipe™ System**
 - 5.1. The psPipe™ system is a proprietary pipe system designed and manufactured by Fast Flow, specifically for use in Fast Flow Siphonic Systems™ and Fast Flow Pressurised Systems™.
 - 5.2. The key characteristics of the psPipe™ System are:
 - 5.2.1. psPipe™ - Positive Pressure rating of 12 bar & Negative Pressure Rating of 0.9 bar.
 - 5.2.2. psFittings™ - Positive Pressure rating of 6 bar & Negative Pressure Rating of 0.9 bar.
 - 5.2.3. Lead Free
 - 5.2.4. Full details are set out in Fast Flow Technical Data Sheets on psPipe™ and psFittings™.
 - 5.2.5. psPipe™ system meets the requirements of the performance specification set down in the *Fast Flow Technical Manual*.
 - 5.2.6. Unless otherwise requested Fast Flow psPipe™ System will be offered as the Fast Flow default system.
6. **Alternative Pipe Systems**
 - 6.1. The following pipe conveyance systems materials can be used together with Fast Flow Siphonic Rainwater Outlets, subject only to them meeting the performance specification set down in the *Fast Flow Technical Manual*.
 - 6.1.1. UPVC, HDPE, Stainless Steel, Cast Iron, Galvanised Steel, Ductile Iron.
 - 6.1.2. Other materials upon request.
7. **Hybrid Solutions**
 - 7.1. Fast Flow Hybrid Solutions are unique to Fast Flow as they comprise of the patented technology of Fast Flow Pressurised System™.
 - 7.2. Hybrid solutions are basically solutions using Siphonic and Pressurised technology within a single rainwater pipe conveyance system.
 - 7.3. All Hybrid Solutions will be designed by Fast Flow qualified personnel.
8. **psBracket&Bracing System™**
 - 8.1. The psBracket&Bracing System™ is a specialised bracketing and bracing system for siphonic rainwater drainage and is suitable for use with all pipe materials as specified in 6.1.1. above.
 - 8.2. The psBracket&Bracing System™ has been designed and developed to withstand the forces and reactions as set out in 1.3.4 above.
9. **Installation**
 - 9.1. All Fast Flow Siphonic Systems™ must be installed strictly in accordance to the design calculation outputs.
 - 9.2. The 3-D Schematic will take precedence over other design coordination drawings (Siphonic).
 - 9.3. The 2-D Schematic will take precedence over other design coordination drawings (Pressurised).
 - 9.4. All pipe conveyance systems for siphonic drainage should be installed in accordance to the *Fast Flow Siphonic System Installation Manual™*.
10. **Testing and Commissioning**
 - 10.1. Testing and Commissioning of all rainwater systems is recommended prior to formal handover to a Customer.
 - 10.2. The type and extent of testing should be established in the Customer/Specifier requirements.
 - 10.3. In the absence of any Customer/Specifier requirement Fast Flow recommends that the minimum testing requirements will be Leak Tests.
 - 10.4. Fast Flow reserves the right to vary the minimum testing regime based on the complexity of the design.