

# FRET

## INNOVATION FOR PAPER - FORMATION RETENTION TESTER

The FRET is specifically designed for investigative testing of additive influences on pulp quality. The FRET (retention tester) is an ideal and unique tool for controlling and setting up new chemicals, testing new wires, identifying additive problems and developing new paper products.

This automated system offers a tight control on suspension shearing consistency, additive contact time optimization and drainage conditions. Because of this, the FRET produces sheets that have technical characteristics closely related to those of industrial paper.

A typical FRET test output yields a handsheet, the white water and the drainage vacuum curve for study.

### PRINCIPLE

The upper tank of the retention tester is designed for complete pulp shearing and offers an ideal point for manual or automatic additive injection and mixing under industrial conditions with regards to strength and time.

This upper tank, also known as the first stage, simulates the feed circuits of a typical paper machine :

- The suspension is then transferred in the formation tank.
- After a rapid homogenization of the suspension using air blown through the wire, a strong vacuum is introduced on the pulp to drain the sheet of excess water.
- A vacuum curve is calculated on the drainage time and pressure. This second stage simulates the head box, table and the drainage part of the paper machine.
- The lower tank can be opened to recover the sheet.
- White water is totally retained in a jar inside the Fret for analysis or recycling.



1	2	3	4	Outils							
<b>Agitateur</b>											
	0	●	500	+	+	✓					
<b>Ouverture Bole de Pâte</b>											
	0	●									
<b>Pompe à Vide</b>											
	0										
<b>Cycle Injection Automatique</b>											
	0	●	2	●	3	●					
<b>Monté/Descente Bol de Formation</b>											
	0	↑									
<b>Evacuation des eaux Blanches</b>											
	0	●			9						
<b>CYCLE AUTOMATIQUE</b>											
	0				CycleAuto						
<b>Clavier</b>											
0	1	2	3	4	5	6	7	8	9	.	☰



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# FRET



## OPERATION

The retention tester can be operated in fully automatic mode or in manual mode. In automatic mode after the introduction of the suspension, a simple push-button starts the cycle. The system takes care of the timing and all other functions automatically with very high repeatability. The versatility of manual mode allows the operator to adapt the functions to meet any set of specific requirements, with the following features :

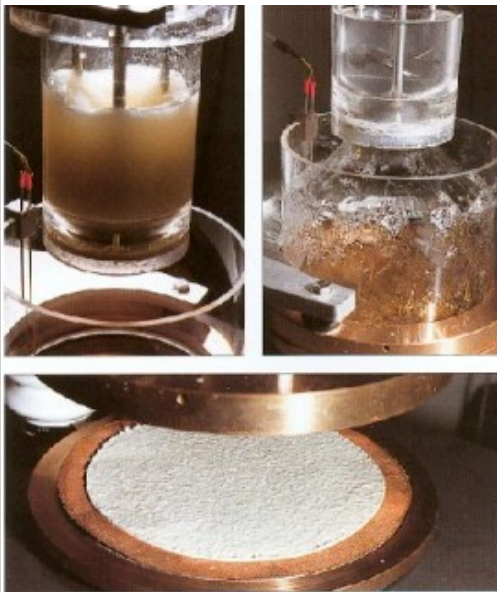
- The duration of each sequence is easily programmable with 0.1 second accuracy.
- The shearing is adjustable for RPM with a digital display and for shear time.
- There are 3 programmable output points for the automatic injection of additives or chemicals.
- The vacuum is adjustable up to 600 mm Hg. A large vacuum tank ensures an appropriate drainage, even with highly beaten pulps.
- There are individual controls on front of the unit for each of the operational steps.
- In option : 3 piloted injectors for injected different chemical products with a delay between the different injections.

## RESULTS

The Retention Tester allows the operator to make handsheets with a diameter of 7.5" (19cm), with a basis weight from 20 to 250 g/m<sup>2</sup>. The handsheet formation and chemicals retention are the same as what is found in typical production, even across the total width of the handsheet.

## APPLICATION

The combination of the handsheet, white water and drainage curve allows the operator to easily test pulps, forming wires, new-finished products and the influence of any kind of chemicals. The FRET is an ideal tool for chemical and paper laboratories. It can also be used on industrial sites for trials or surveys. The FRET is also very effective when working with dyes and it can distinguish wire side and felt side on the sheet.



## TECHNICAL DESCRIPTION

### Sheet

Diameter	19 cm
Basis weight	20 to 250 g / m <sup>2</sup>
Formation tank vol.	1 to 3 L
Vacuum	0 - 600 mm Hg

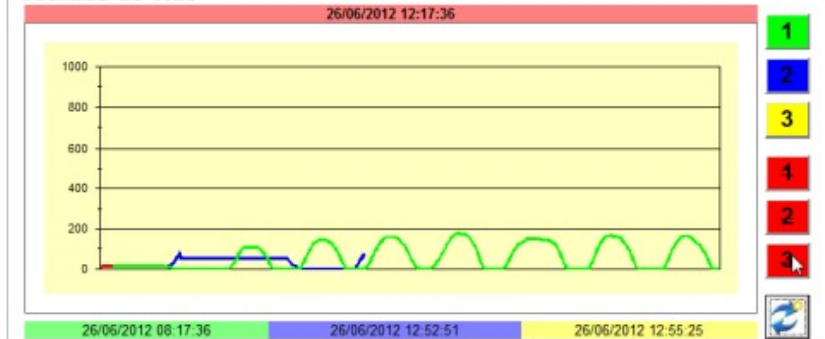
### Mechanics

Width	27.56" (70 cm)
Depth	24.4" (62 cm)
Board height	39.37" (100 cm)
Total height	70.87" (180 cm)
Weight	51.11" (130 kg)

### Proposed Options

Automatic measurement of drainage time
Piloted injector
Larger upper tank capacity

## Courbes de Vide



## DYNAMIC DRAINAGE MEASUREMENT OPTION

The option to automatically record the drainage vacuum curve will give useful data such as :

- the vacuum during drainage,
- drainage behavior and duration,
- vacuum level after drainage (porosity of the sheet).

It is also a way to compare drainage of handsheets. Because of the very short drainage time (< 1 second) all data is memorized electronically, and stored after each drainage as an ASCII file. This software can be installed on any PC Computer which can be connected to the FRET.