

## SPIL'S MPS PERFORMANCE IN DE-INKING APPLICATION

This article presents the efforts made by Sharad Projects India Limited towards the reduction of fresh water requirement in the Pulp & Paper Mill by using SPIL'S Micro Plate Settler (MPS). The MPS helps in recovery of fibre from water and the clarified water of less than 100 ppm is achieved. Analysing the results of MPS in the Paper Industry, demand for MPS has been increased in the various industries to reuse process water as well as to make their plants as Zero Liquid Discharge plants for sustainable development.

### ABOUT SHARAD PROJECTS INDIA LIMITED (SPIL)

**Sharad Projects India Limited** is leading Consultant / Designer in the country in the field of Pulp & Paper, Environmental solutions dealing in ETP, STP. Raw/Canal Water Treatment. The company is managed by a team of Professionals & Technocrats with an idea to provide turn-key services to various Industries.

The Company's strength lies in designing & erection of major projects providing services, competitiveness and ability to manage multi discipline work force. The commitment to provide customized service according to client's requirement and to suit local conditions has resulted in successful business relationship with clients.

### SPIL'S MICRO PLATE SETTLER (MPS)

**SPIL'S Micro Plate Settler (MPS)** separates settle-able solids particles from liquids and is used for the treatment of process water and waste water. Basically all solids that are settle-able in a given time, can be separated easily and economically with the

MPS, depending upon the density those are usually solids larger than approximately 50  $\mu\text{m}$  in diameter. For separating smaller particles and turbid substances, flocculants are used in order to create settle-able flocs.

MPS concept is based on hazen's law i.e. the settling of suspended solids is the function of settling area. Development of Micro Plate Settlers find its design from the roots of hazen's law only. MPS are intended to improve the settling efficiency of fine grain particles by decreasing settling distance.

Micro plate settler designed by **Sharad Projects India Limited** find its vast application in Pulp & Paper Industry, Water Industry, Textile Industry, Pharmaceutical industry and many more, where large streams of effluents are generated from different processes, operations with high suspended loads.

### MPS Design & Features:

- Micro Plate Settler is designed on the basis of latest lamella sedimentation & gravity Technique.
- A cross flow passage is designed for the liquid & solid Flow.
- The Inclined Plate are installed at a specific angle subject to the application
- The Plates are made up of SS-304 Material.
- SPIL provides large entry plane for the fluid to enter in the MPS.
- MOC of the MPS is designed according to the fluid characteristics
- SPIL's MPS requires lesser space as compared to other systems.

- SPIL provides an economical MPS as compared to DAF, Poly Disc Filter, Saveall & Clarifier etc.

#### Advantages:

- Low Hydraulic Retention times of only 30 min makes the unit very compact, lightweight with high specific clarification. Volumetrically less than 1/5th size of conventional Sedimentation Clarifier.
- Low space requirement.
- SPIL'S MPS works on 90-97% efficiency.
- Low Retention time eliminates chances of septicity of the fibre.
- Very low maintenance cost since there are no moving parts except Flocculation Chamber Agitator.
- Handles shock loads of flow without affecting outlet required result.
- Continuous operation without major down time.
- Individual plate sections can be easily removed.

#### MPS Applications:

- Paper Machine Backwater.
- Deinking Foam/Sludge Water.
- Canal/Raw Water Treatment.
- Black Liquor Clarification.
- Wet Washing System.
- Replacement of Conventional Clarifier.
- Effluent Treatment Plant/ Sewage Treatment Plant.
- For Fibre Recovery Purpose in Pulp & Paper Industry.

#### KHANNA PAPER MILL, AMRITSAR (Pb.)

##### 1. Introduction:

Khanna Paper Mills (KPM) is an Amritsar, India based business, which manufactures

and supplies writing and printing papers, newsprint papers, and paperboards, and is the largest plant in the country using paper waste. It is the first paper mill in India to produce writing and printing paper from de-inked pulp. The paper is exported to SAARC countries, Africa, and the Middle East. Khanna Paper Mills annually produces 10000 million tons of writing printing paper, news print and paper board using approximately 15000 million tons of recycled fibre.

##### 2. Problem:

At Khanna Paper Mill, deinking foam water was going directly to ETP. Foam was increasing load at ETP inlet and disturbing the smooth operation of ETP.

##### 3. Solution:

SPIL has installed **Micro Plate Settler (MPS)** at the source of **Deinking Foam Water**. Again the results were amazing at this application. After analysing the results, it has been found that the overall TSS was reduced at source and the foam was directly sent to sludge tank. Thus reducing the load on ETP. The deinking foam water trail readings are as follows.

S. No.	INLET			OUTLET		
	pH	TSS (mg/l)	COD (mg/l)	pH	TSS (mg/l)	COD (mg/l)
1	7.2	22852	15680	6.8	348	3680
2	7.3	23524	23712	6.93	338	3200
3	6.9	21544	23116	6.65	396	3600
4	7.11	27245	25600	7.21	348	3904
5	7.0	29780	23360	7.04	108	3520
6	7.36	27522	18280	7.36	248	2560
7	7.16	24658	19480	7.08	356	3040
8	7.36	23580	27840	7.28	211	3328
9	7.12	24644	20475	7.09	355	3680
10	-	21274	-	-	350	-

The below image is inlet and outlet samples of deinking foam water.



#### **MPS INSTALLED AT KHANNA PAPER MILLS, AMRITSAR**

##### **4. Conclusion:**

After doing trial, it has been concluded that

- a. TSS removal efficiency is 98.7 % with minor antifoam dosing of 1-3ppm.
- b. COD removal efficiency is 84.5 % with minor antifoam dosing of 1-3ppm.
- c. At source reduction of TSS and Foam.
- d. Overall load (TSS, COD) reduced on ETP.