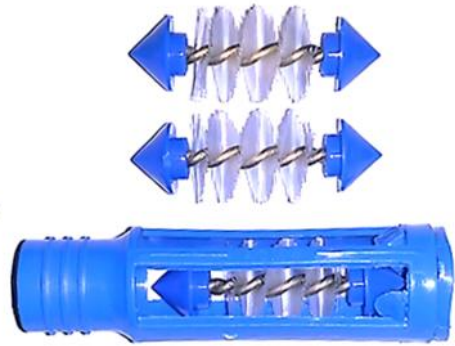


- **Brush System**

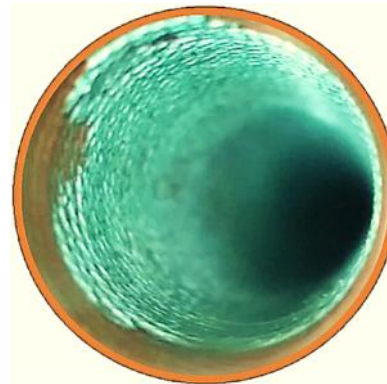


- **Ball System**



Which System do a better job to clean Dirt Fouled Condenser Tubes?

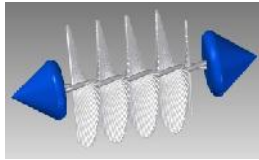
Internal Surfaces Fouled  
Hinders Heat Transfer



## Tabulated Comparison of Brush and Ball Type

Descriptions	Automatic Tube Cleaning System		
	Brush Type	Ball-Type	Remarks
Effectiveness of cleaning	Very high	Low – cleaning by probability	See Fig. - 4
Brush or Ball Life time	5 years warranty	1 Month for 24-hours operation	
No. of brush or ball /tube	1	12 or more (Approximate)	
Motive of Cleaning	Spins with water flow even with lower velocity	Highly Dependent of high water velocity.	
Application			
Grooved Tube	Excellent	Average to Poor	See Fig. - 4
Plain Tube	Excellent	Fair	
Type of Tube in Application			
Seam less	Excellent	Fair	
ERW	Excellent	Fair	
Wear and Tear			
Grooved Tube	Normal, long life	Very short life (1 Month)	See Fig. - 4
Plain Tube	Very long life, 5-7 years	Long life	
Problem for Cooling Tower	Brush may end up at the tower if improperly installed	Damaged balls ends at the tower's sump, in-fills, nozzles which is very hard to retrieve.	See Fig. - 1 to 3

## TYPICAL PARTS



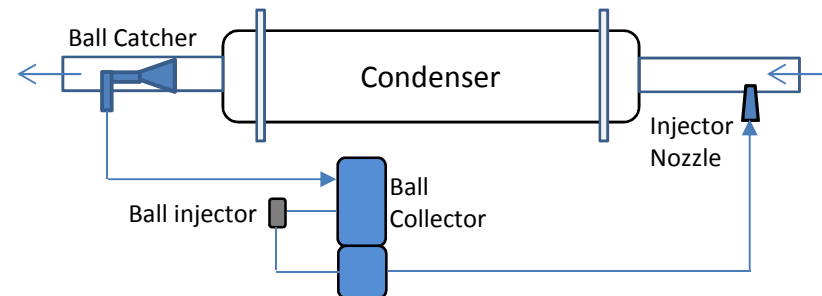
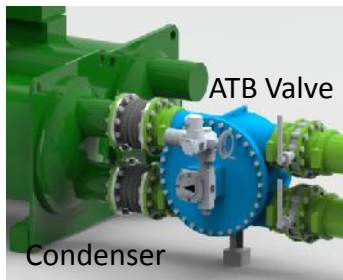
- Brushes
- 4-Way Valve



- Balls
- Collector
- Trap Units
- Injector
- Valves



## PIPING CONNECTION



# CHILLER CONDENSER TUBES



New condenser tubes

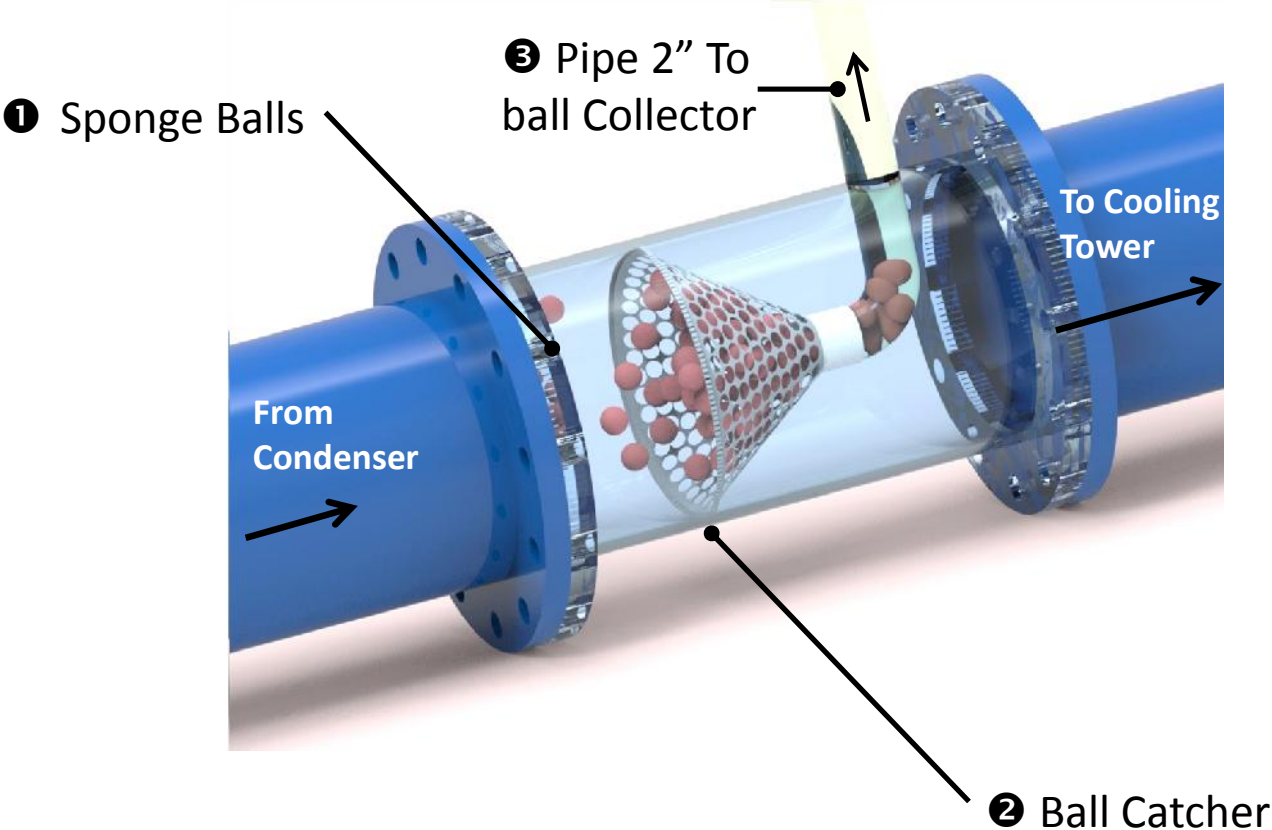


Fouled Condenser tubes (manual cleaning, no ATCS installed)

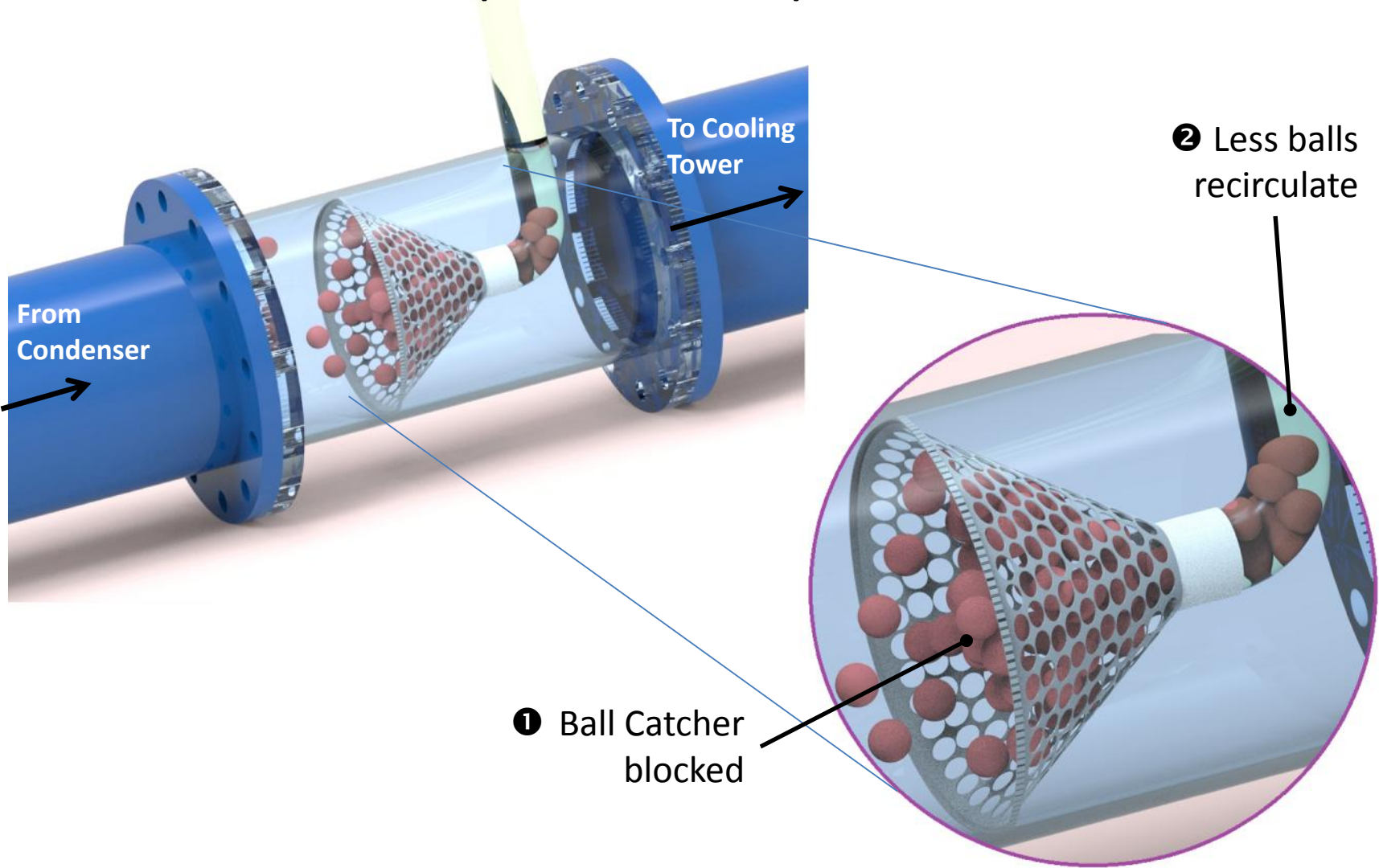


New cleaned tubing

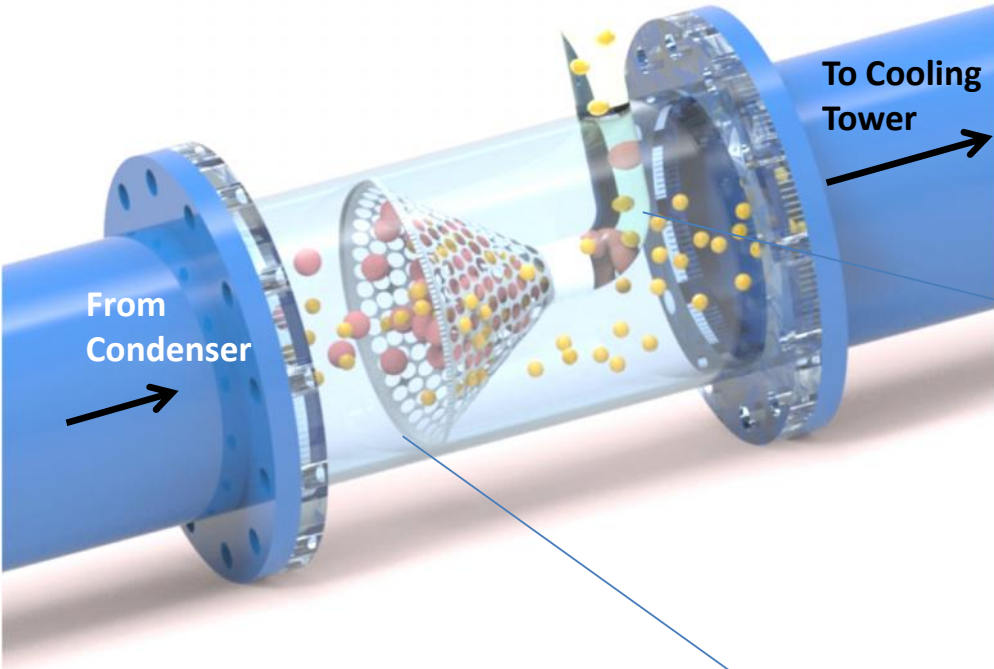
**FIG. – 1 : NORMAL OPERATION (BALL CATCHER)**



**FIG. - 2 : CATCHER BLOCKAGE (INHERENT PROBLEM)**

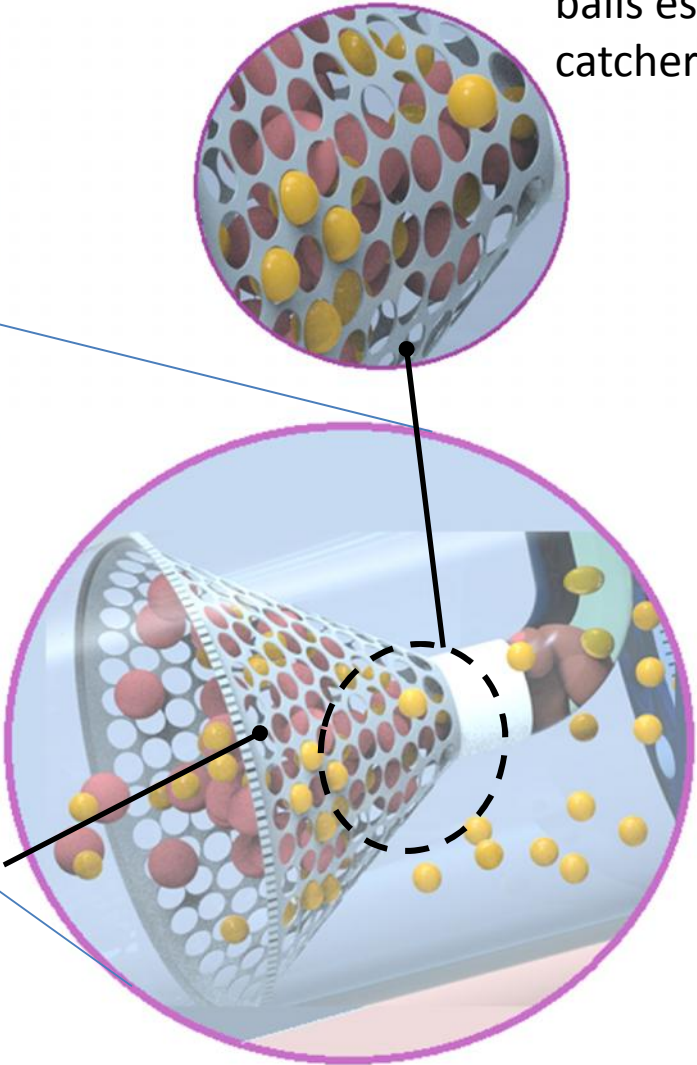


**FIG. -3 : BALLS ESCAPE TO COOLING TOWER (INHERENT PROBLEM)**



② Reduced size balls escape the catcher

① Ball Catcher Blocked by Reduced Size and Regular Size Balls



# INHERENT PROBLEMS OF SPONGE-BALLS TYPE AUTOMATIC TUBE CLEANING SYSTEM

FIG. – 4 : BALLS - BLOCKED TUBES

