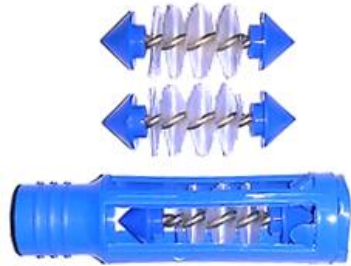
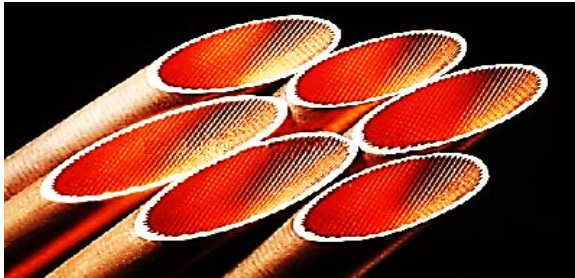


Comparison of Brush and Ball System

- Brush Type



Designed for Enhanced Groove Tube



Brush Life

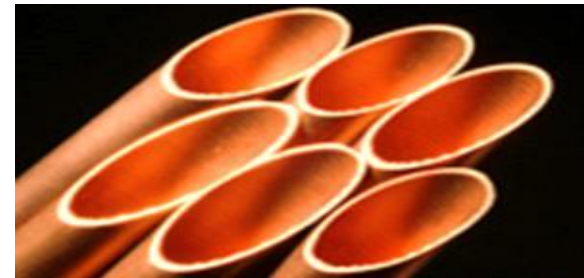


*5-years
Guaranteed*

- Ball Type



Best for Plain Tube



Ball Life



1-month

Components & Piping

TYPICAL PARTS



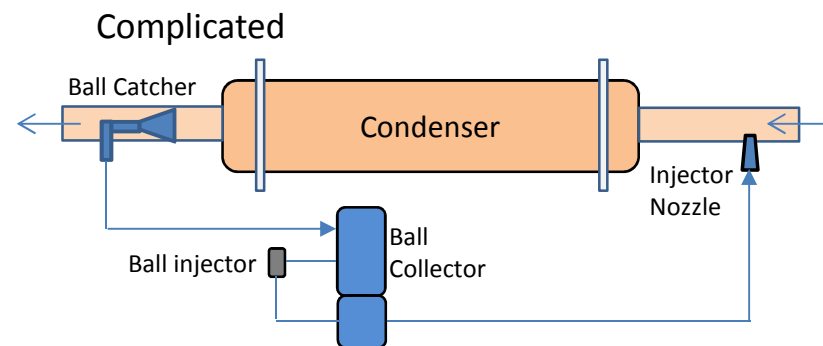
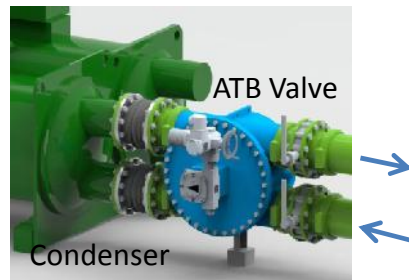
- Brushes & Baskets
- 4-Way Valve

- Balls
- Collector
- Catcher
- Injector
- Valves



PIPING CONNECTION

Simple



Tabulated Characteristics 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 years	Average 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

CHILLER CONDENSER TUBES



New condenser tubes



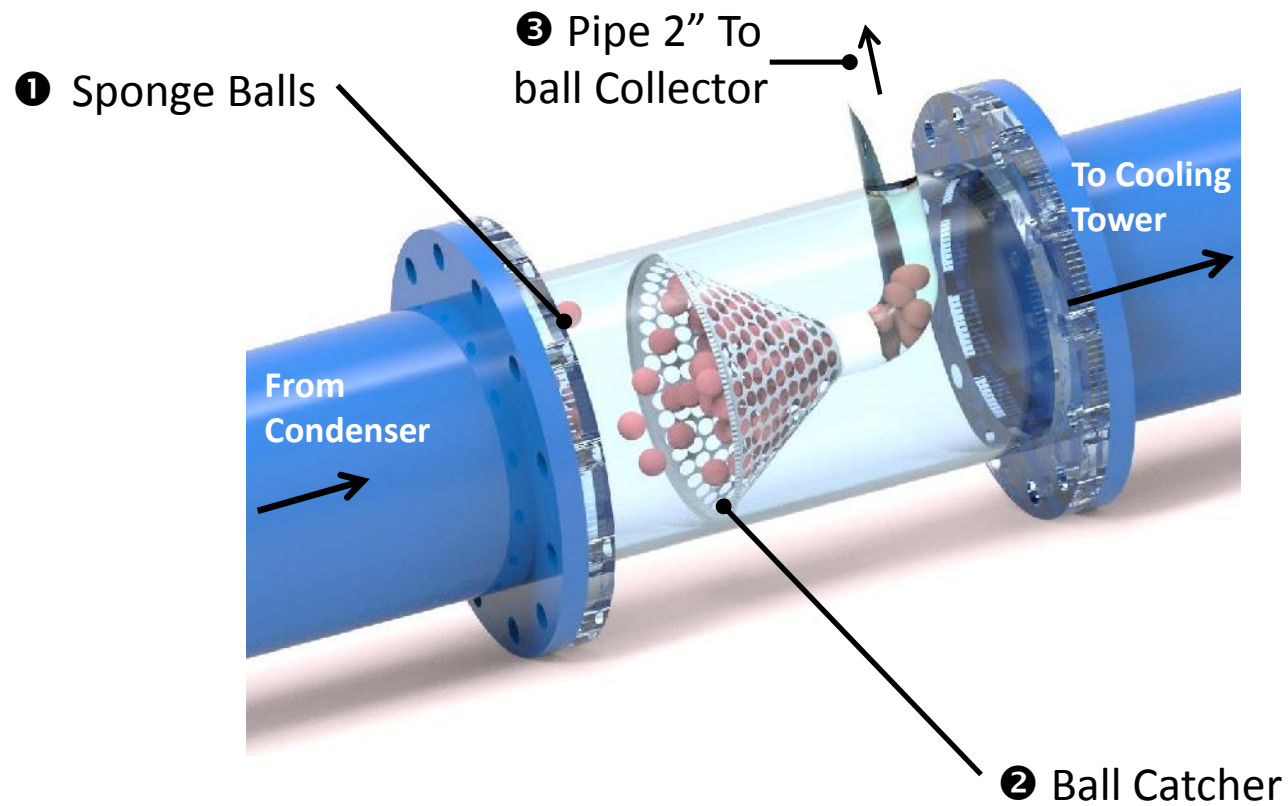
Fouled Condenser tubes (manual cleaning, no ATCS installed)



New cleaned tubing

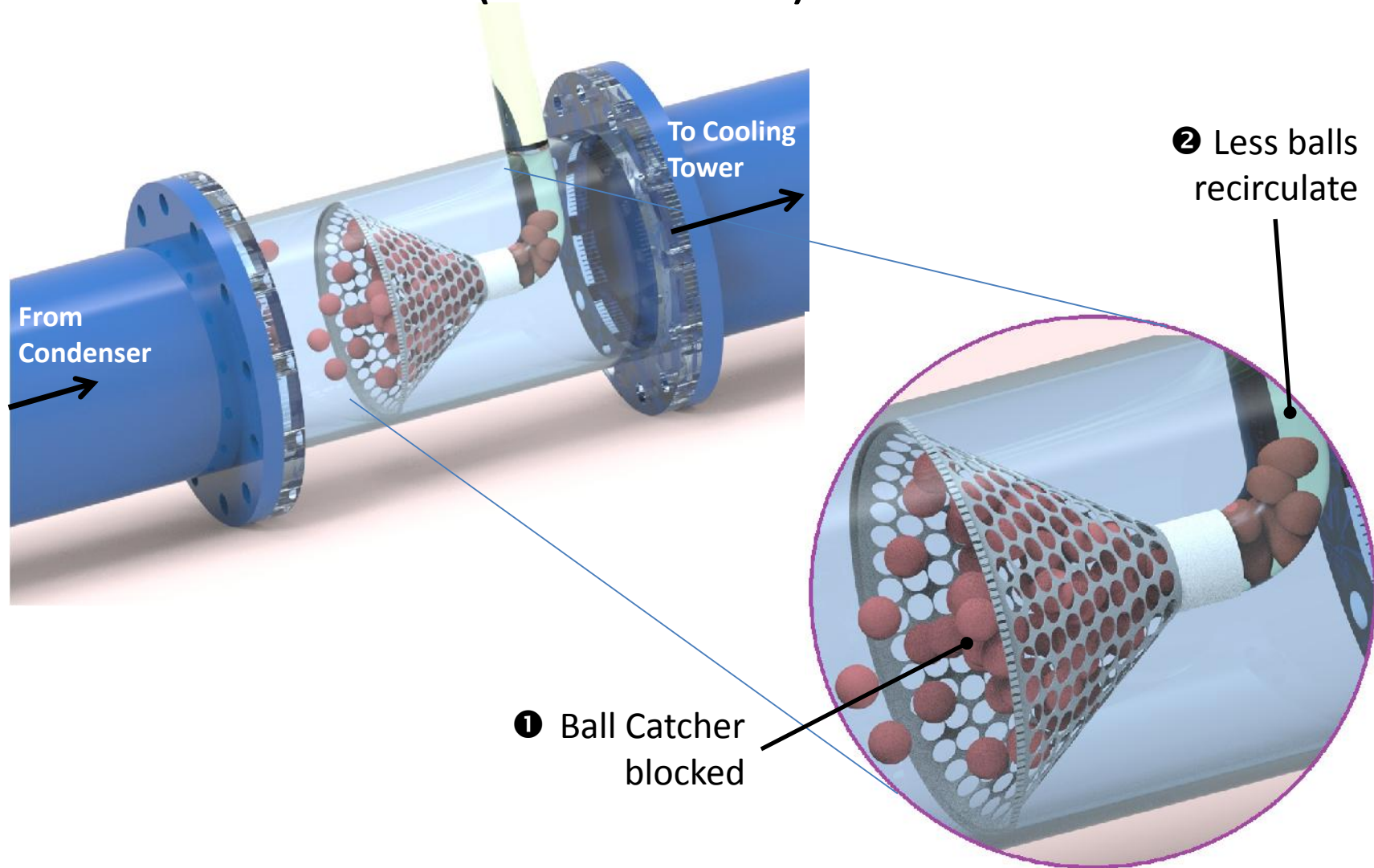
BALL TYPE AUTOMATIC TUBE CLEANING SYSTEM

FIG. – 1 : NORMAL OPERATION (BALL CATCHER)



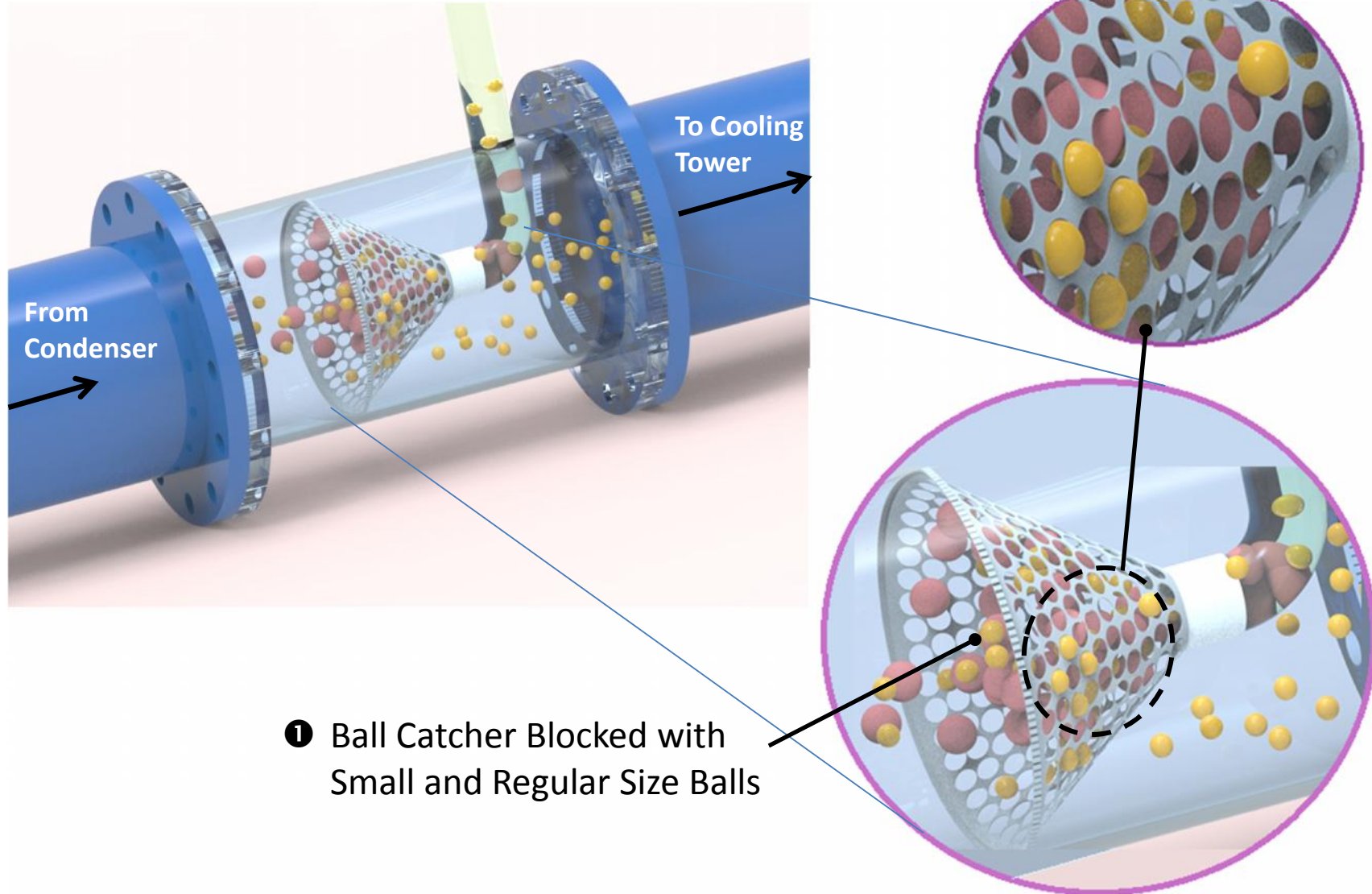
SPONGE-BALL TYPE AUTOMATIC TUBE CLEANING SYSTEM

FIG. - 2 : CATCHER BLOCKAGE (INHERENT PROBLEM)



SPONGE-BALL TYPE AUTOMATIC TUBE CLEANING SYSTEM

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



INHERENT PROBLEMS OF SPONGE-BALLS TYPE AUTOMATIC TUBE CLEANING SYSTEM

FIG. – 4 : BALLS - BLOCKED TUBES

