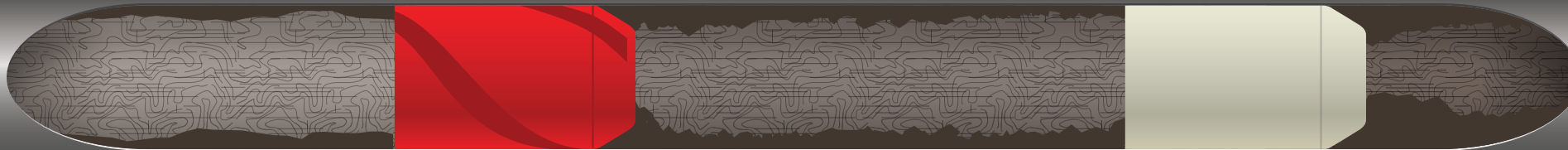


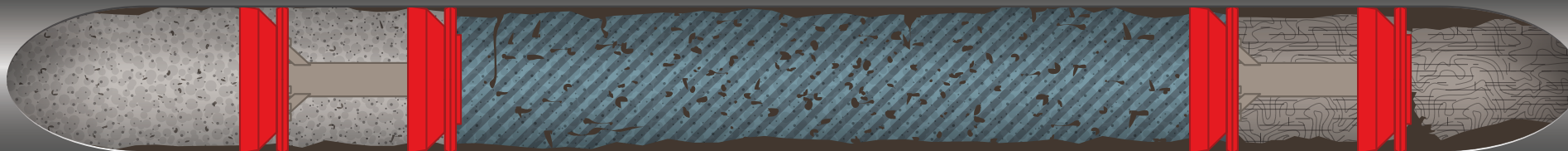


# Four Steps of PROGRESSIVE PIGGING

**1 FOAM** Foam pigs are inexpensive and indispensable, providing operators with valuable information regarding the condition and piggability of their line. Collapsible and resilient, a visual inspection of a foam pig at the end of the run will often determine the next step in the progressive process.



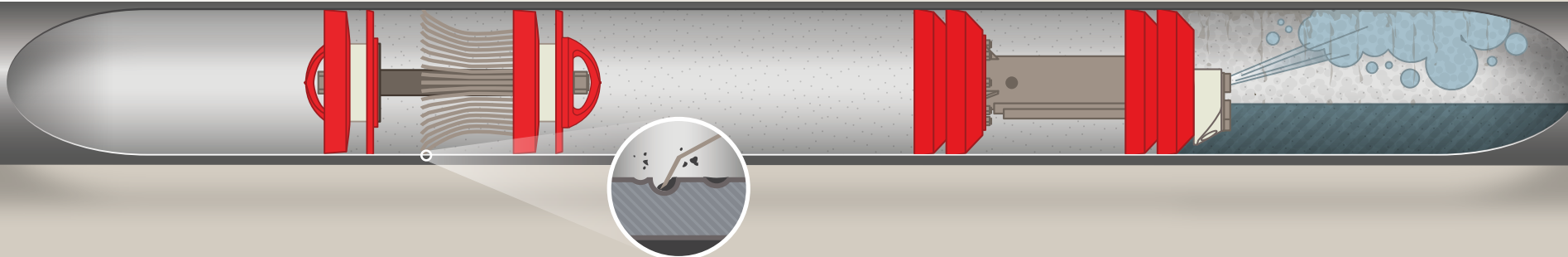
**2 CHEMICAL** Chemical batching is achieved by injecting a chemical slug between two urethane pigs, intended to lessen the cohesion of any contaminants or debris that have become attached to the pipe wall. The discs of the batching pigs will also help disrupt the debris before and after the chemical slug.



**3 URETHANE** Urethane pigs are where “progressive” really comes into play. These pigs can range from simple molded urethane with cups and then discs, to very aggressive, steel-bodied pigs with an array of molded urethane cups and discs, and hundreds or even thousands of steel pencil brushes.



**4 SPECIALTY** The unique challenges of pipeline operators often require a unique solution, such as ultra-aggressive steel-bodied pigs with spring-loaded steel mandrels (for removing corrosion deposits within internal pitting), and jet or spray pigs (for debris suspension and removal).



## REDUCED FLOW AND INCREASED COMPRESSION

means pipeline operators are losing profit and increasing operational risk. To mitigate these unnecessary losses and maximize pipeline throughput, the industry relies on progressive pigging.

Due to the variety of complex factors unique to each pipeline, development and implementation of a progressive program can be challenging. To help simplify the process, the program can be divided into four basic steps: Foam, Chemical, Urethane, and Specialty. Inclusion and order of the steps and specific pigs will vary depending on the particular line conditions.



**5% ROUGH DEBRIS**  
>30% Flow Reduction  
>100% More Pressure



**5% SMOOTH DEBRIS**  
10% Flow Reduction  
30% More Pressure



**CLEAN PIPE**  
No Flow Reduction  
Standard Pressure