Energy Optimization Through the Accurate Injection of Drag Reducing Agent into Pipelines

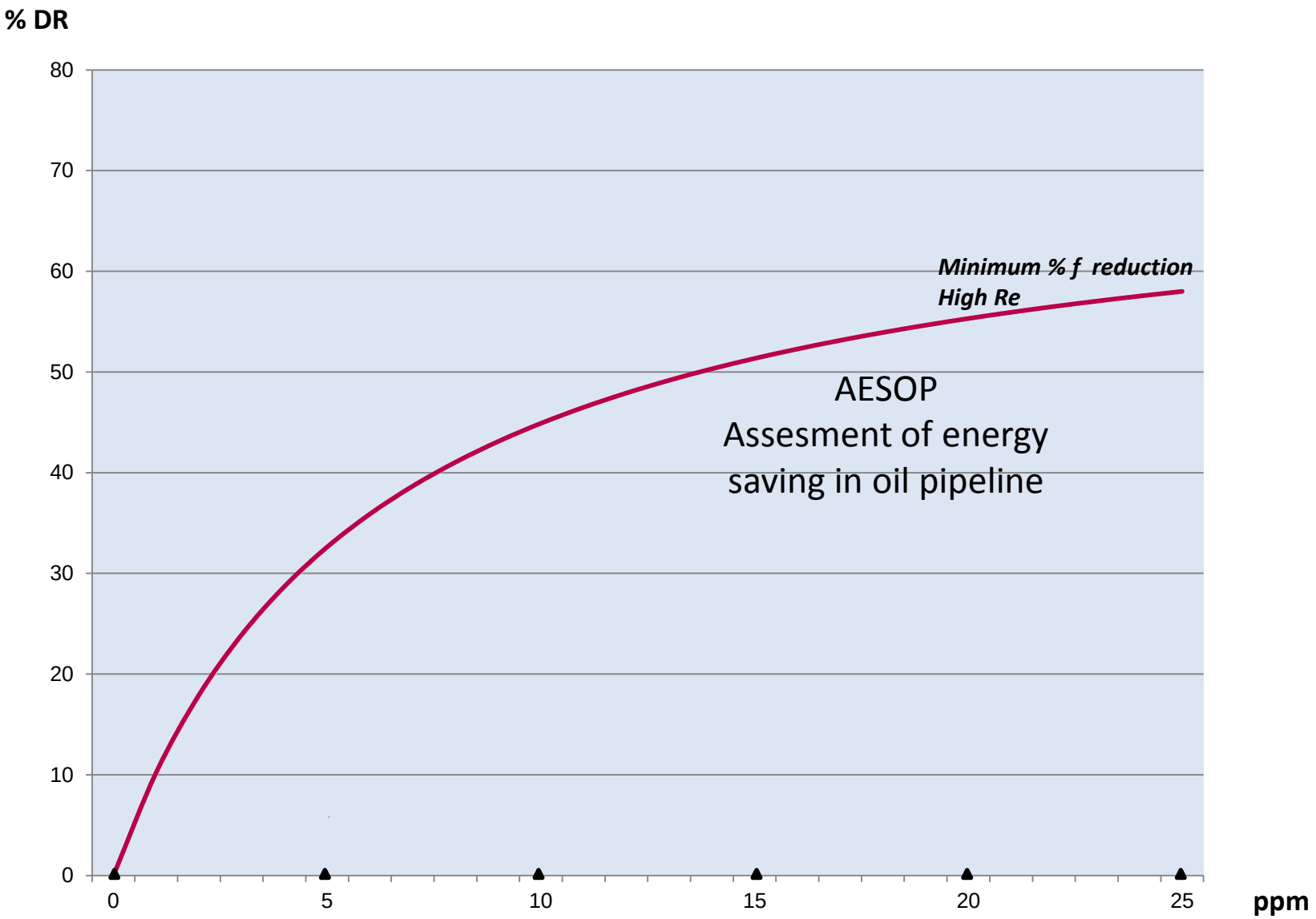
Ignacio Huidobro

03/04/2014

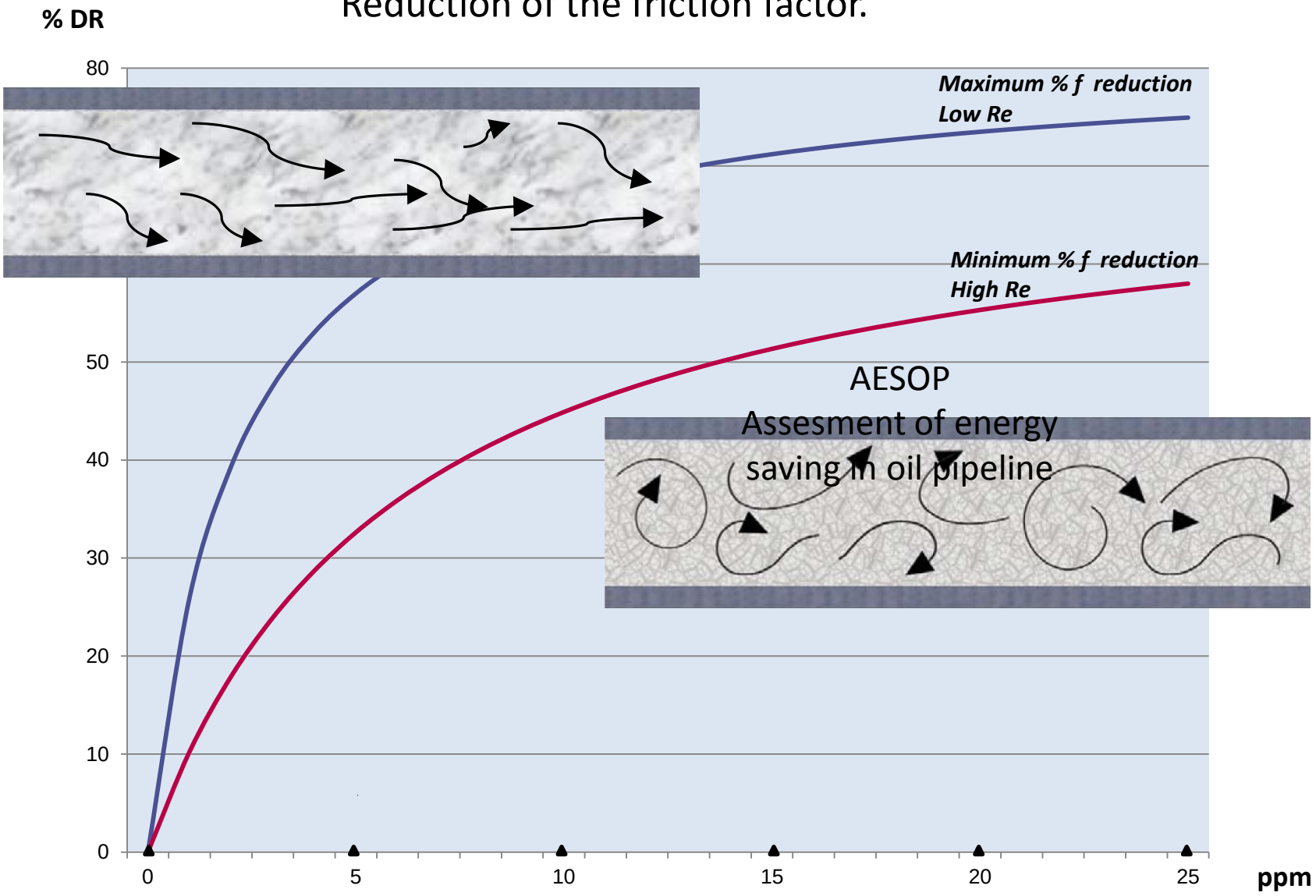
- CLH has been using drag reducing agents (DRA) since 1989.
- Gel-type flow improver was the first used, before moving onto water-based additive in 1997. From 2004, alcohol-based DRA has been used.
- The DRA is a polymer that reduces the friction into pipeline, thereby increasing the flow rates and saving costs.

- Reduction of the friction factor.

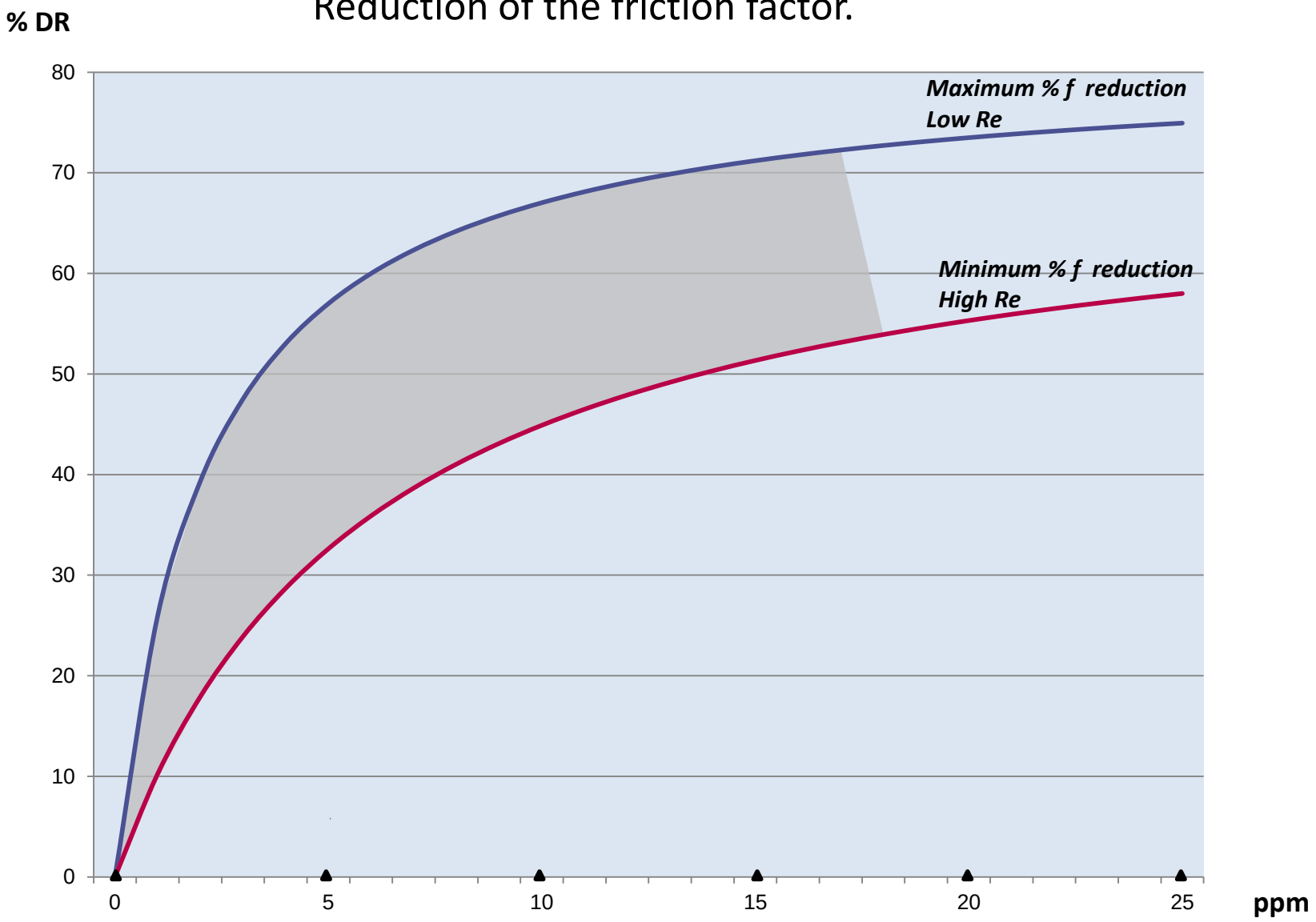
$$h_f = f \cdot \frac{L}{D} \cdot \frac{V^2}{2g}$$


% DR
80
70
60
50
40
30
20
10
0
0
5
10
15
20
25
ppm
Minimum % f reduction
High Re
AESOP
Assesment of energy
saving in oil pipeline

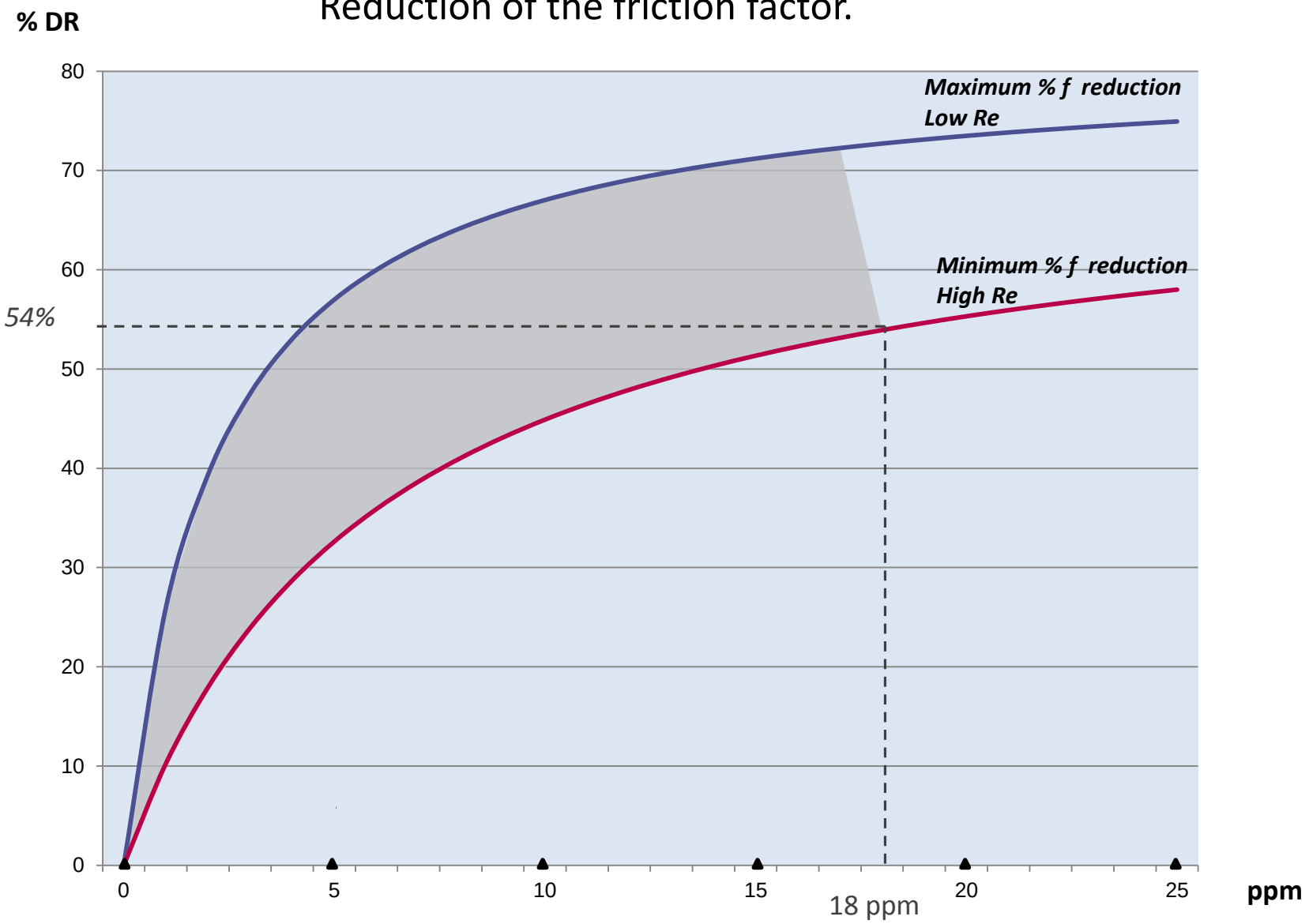
Reduction of the friction factor.



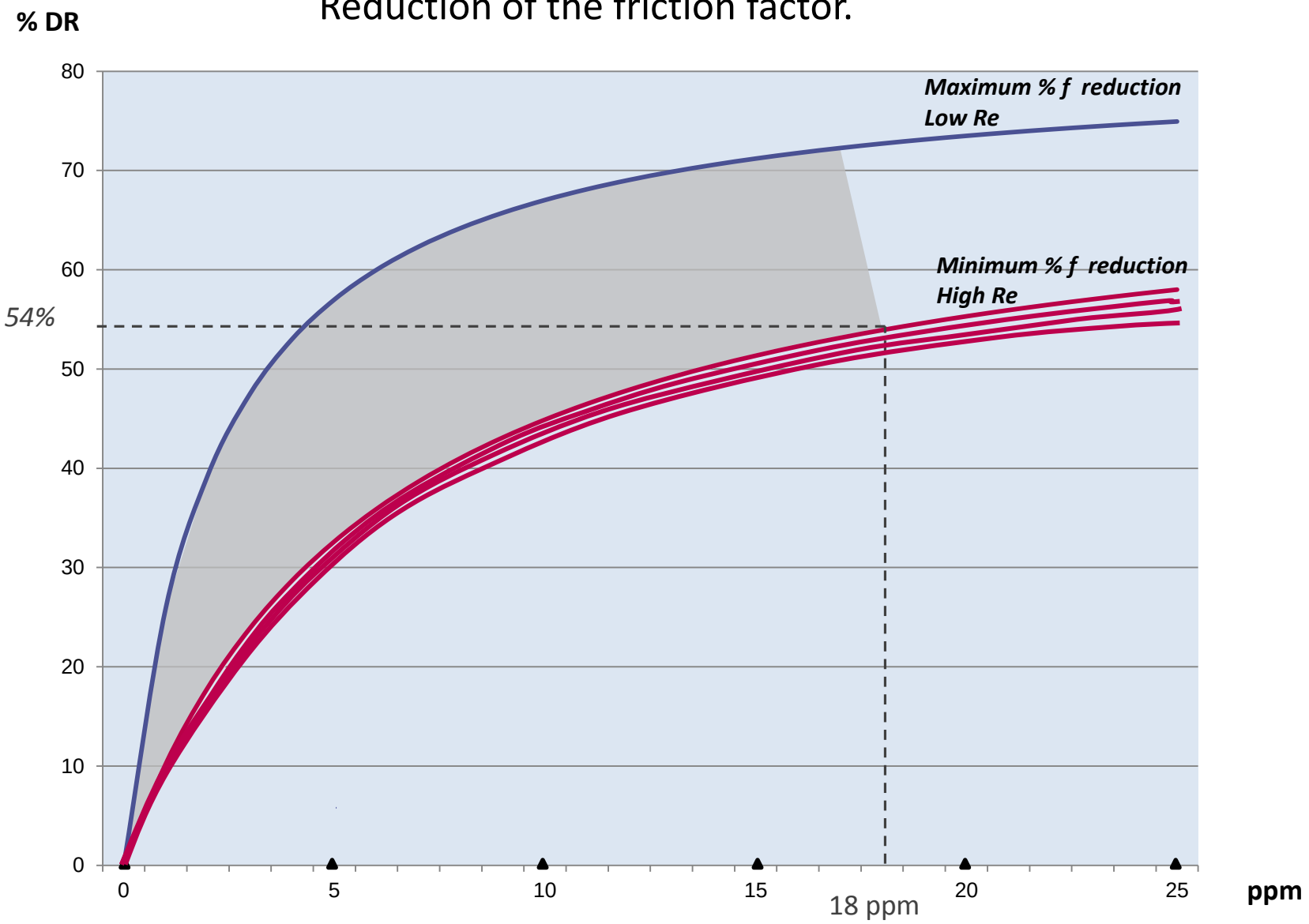
Reduction of the friction factor.



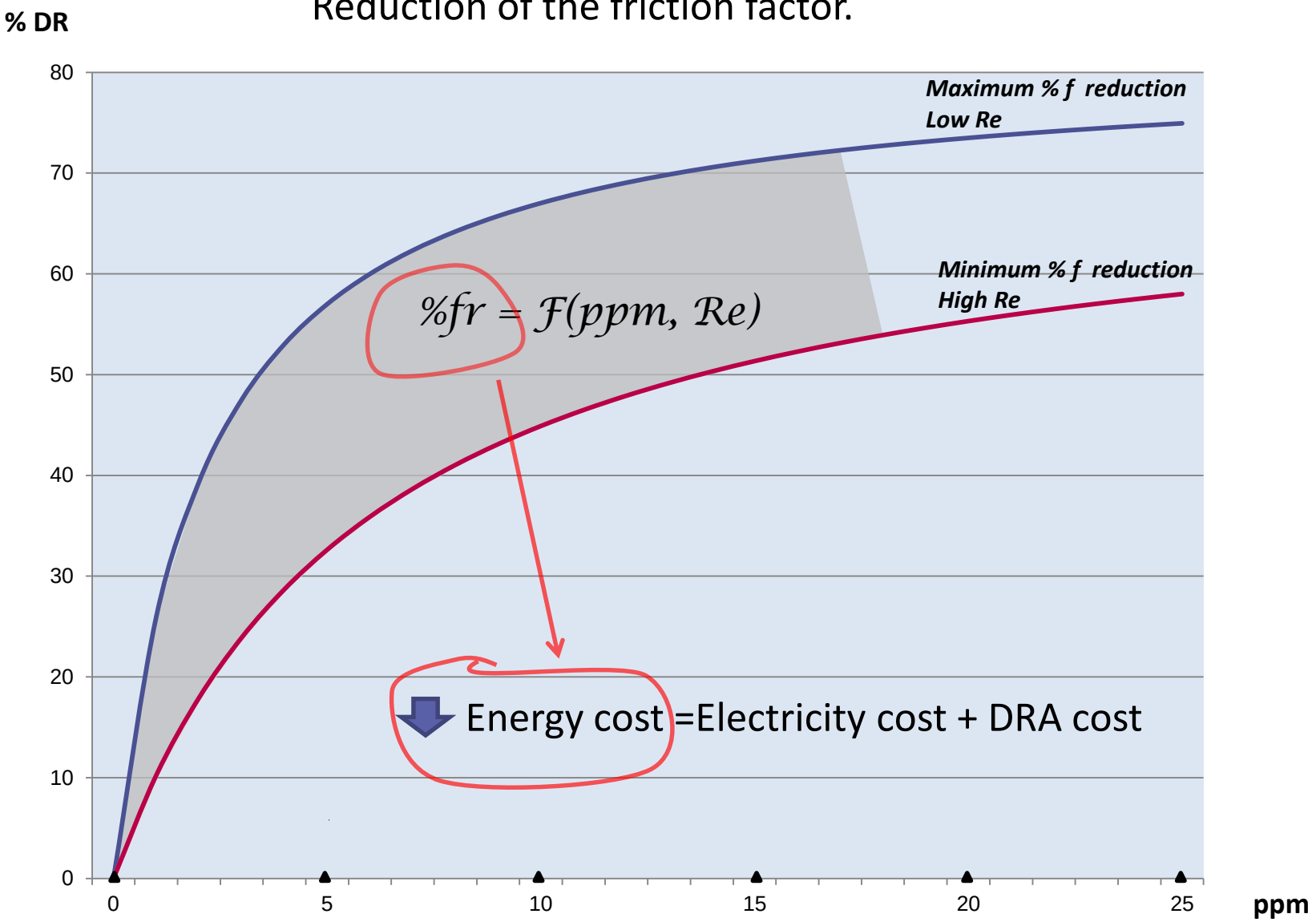
Reduction of the friction factor.

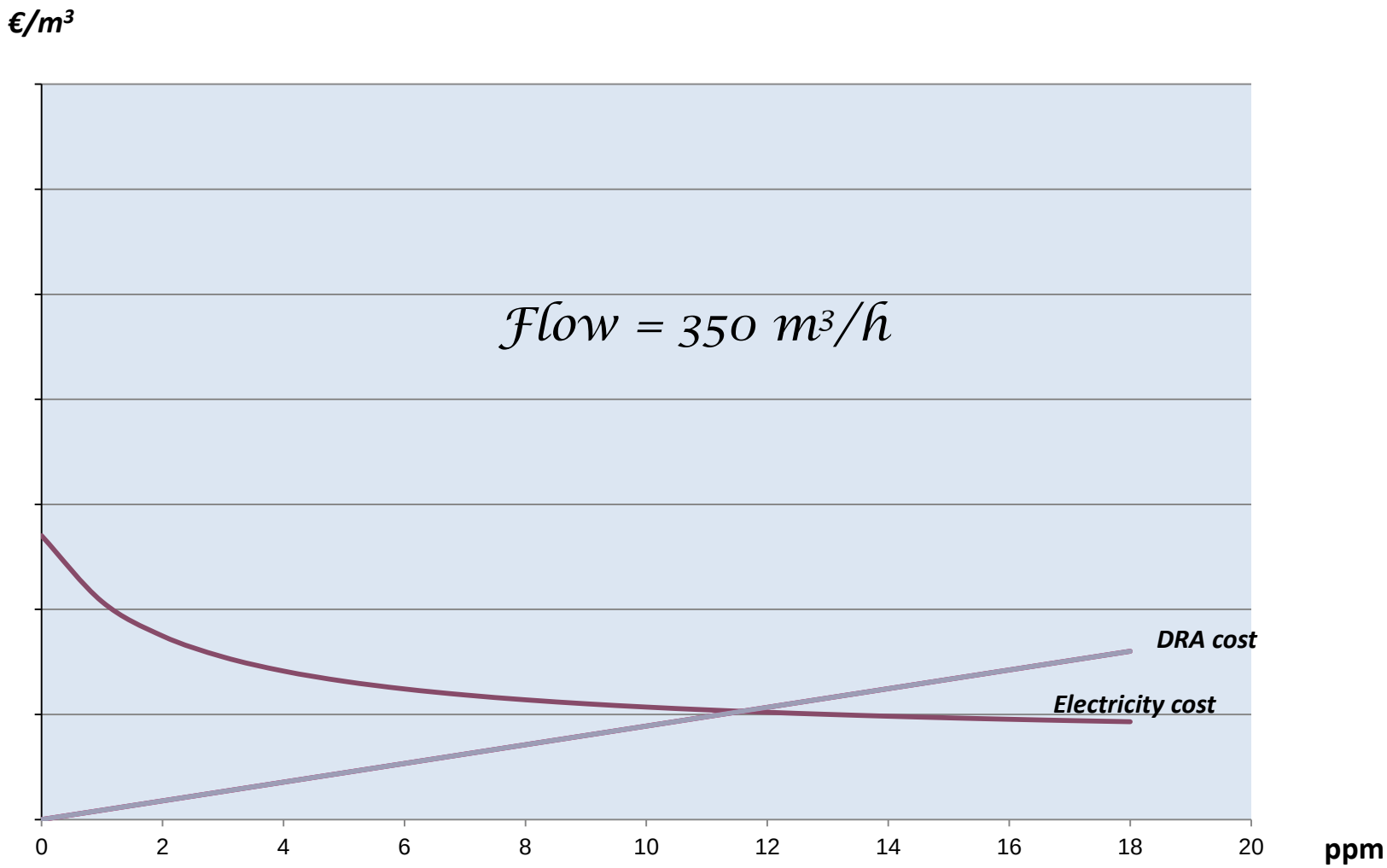


Reduction of the friction factor.

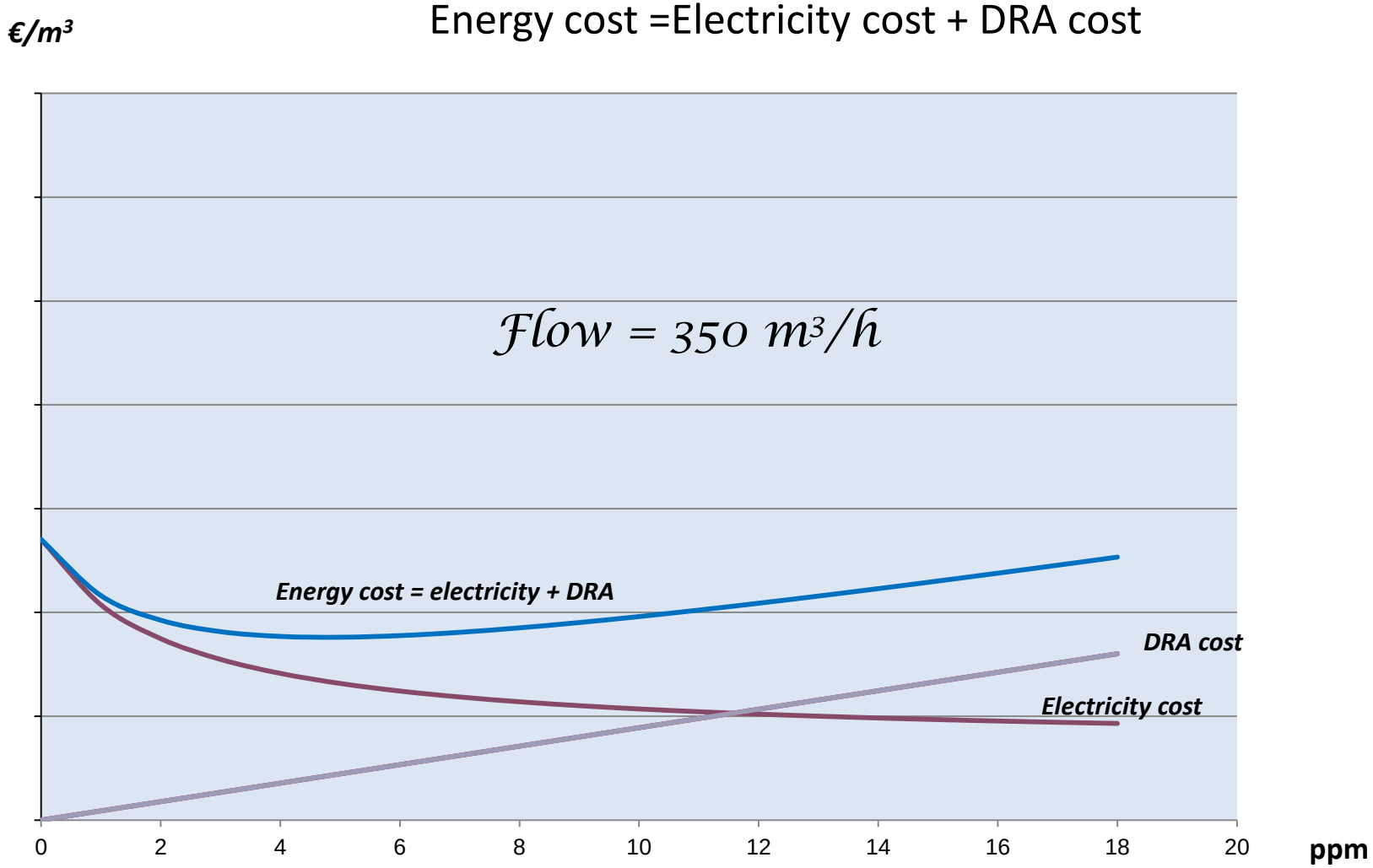


Reduction of the friction factor.

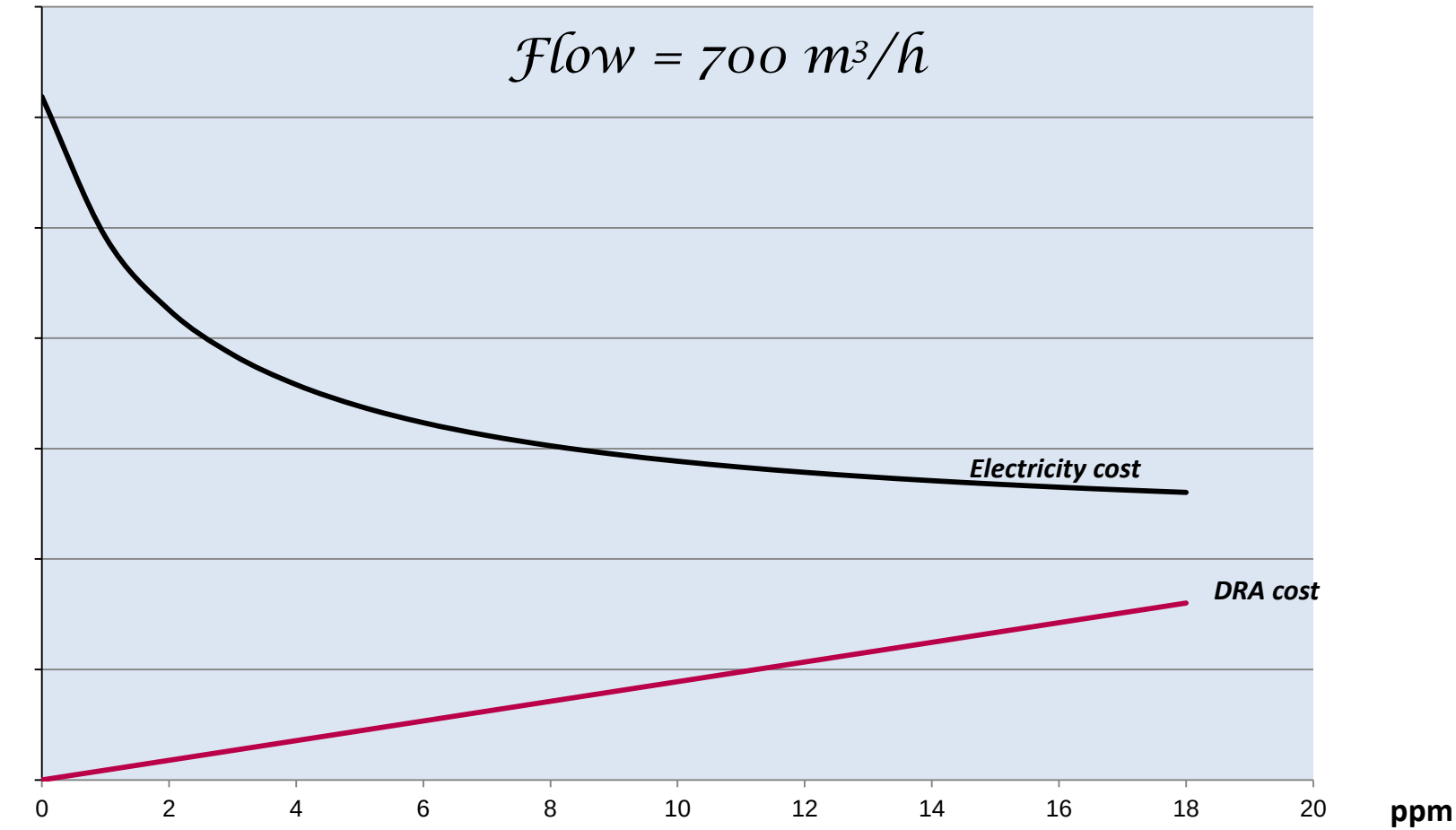



€/m³
Flow = 350 m³/h
DRA cost
Electricity cost
0
2
4
6
8
10
12
14
16
18
20
ppm

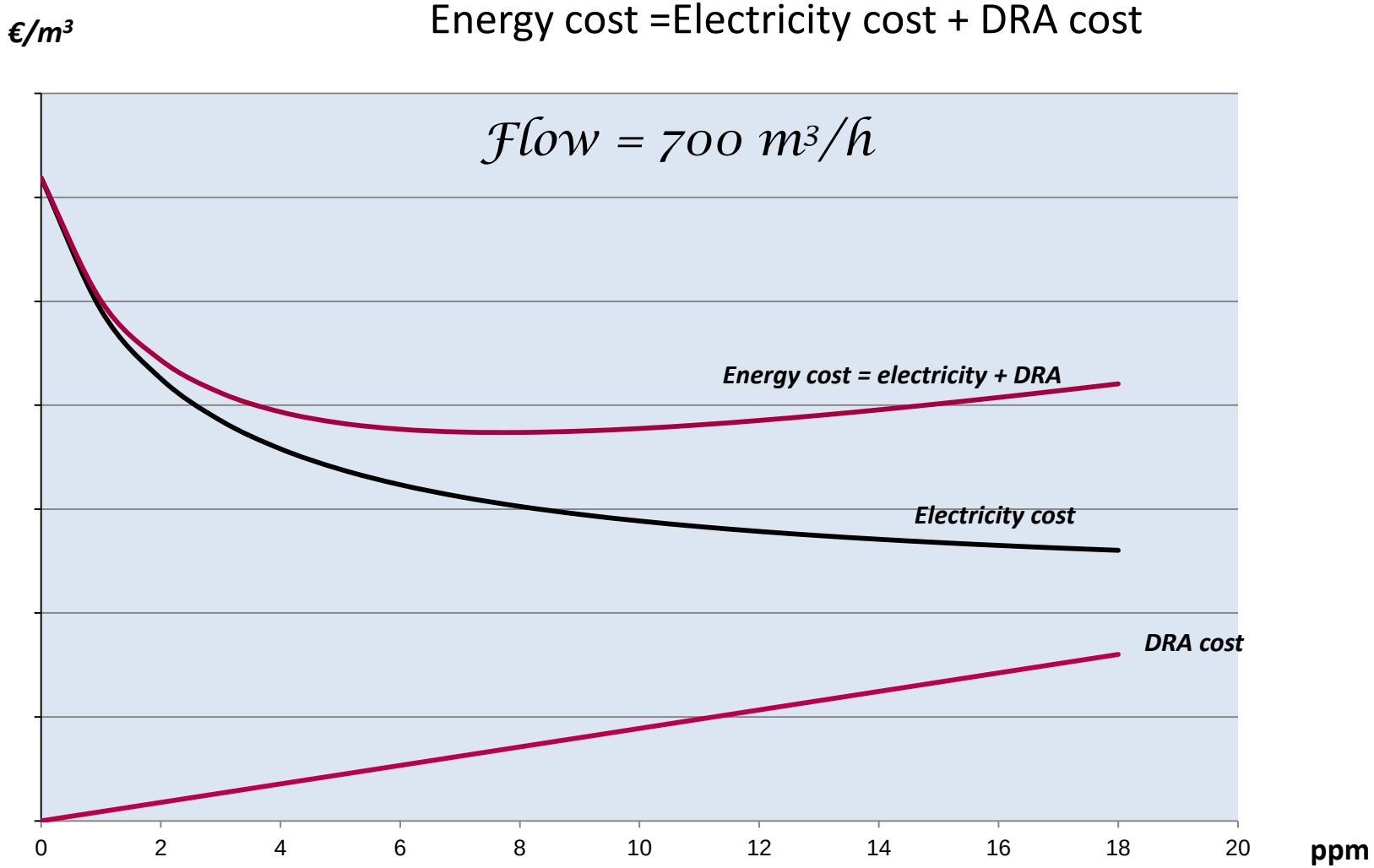
Energy cost =Electricity cost + DRA cost



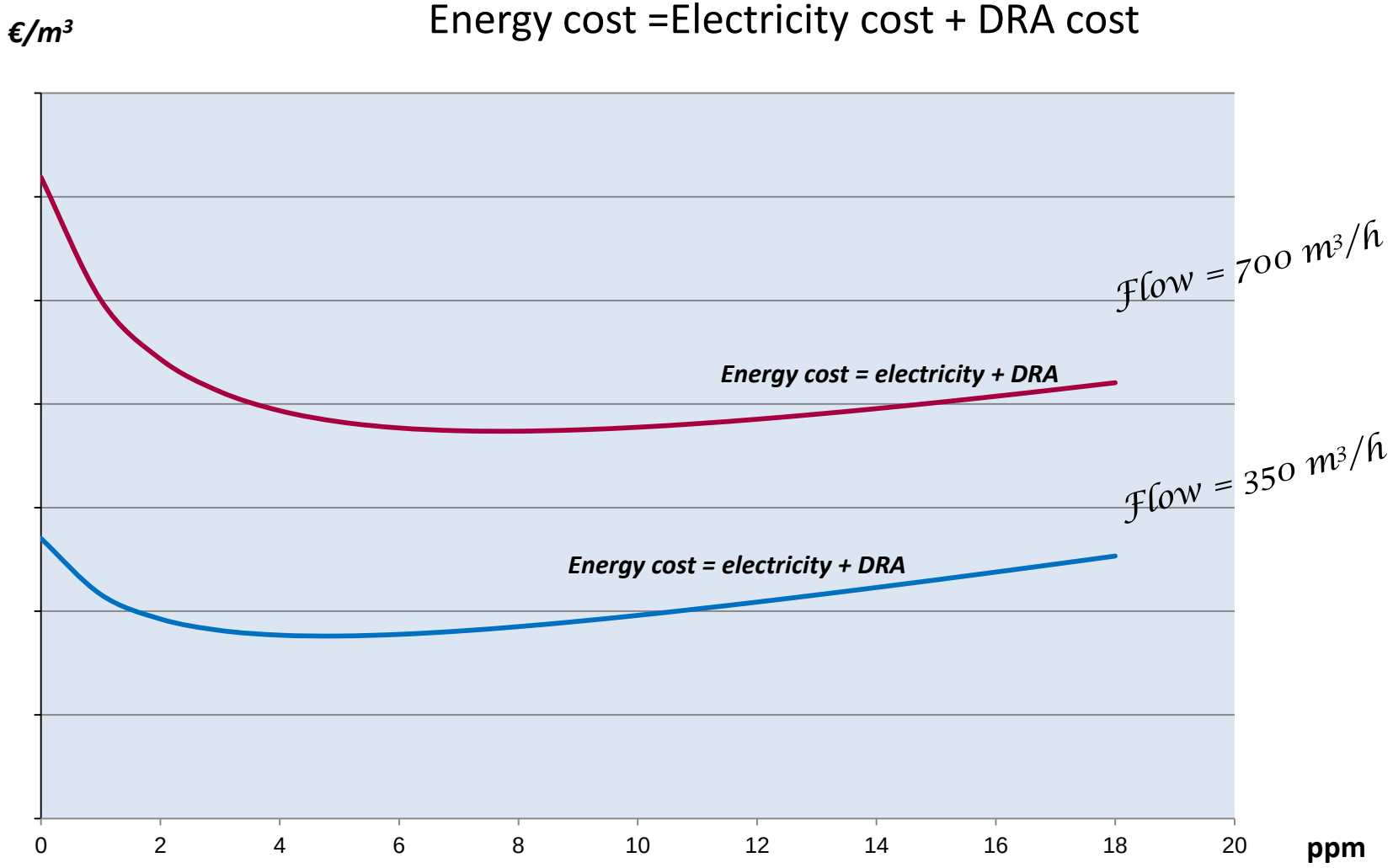
Energy cost =Electricity cost + DRA cost



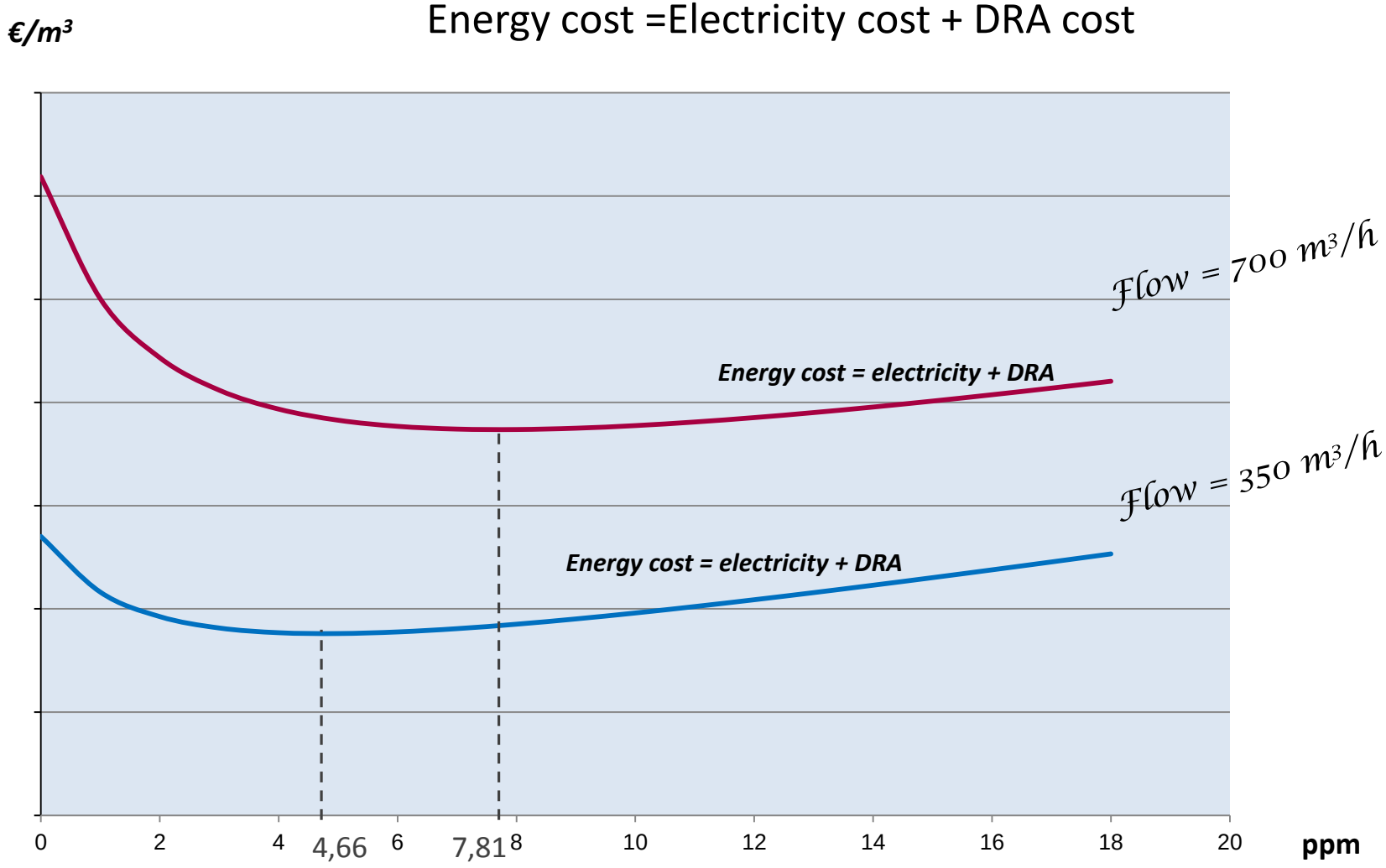
Energy cost =Electricity cost + DRA cost



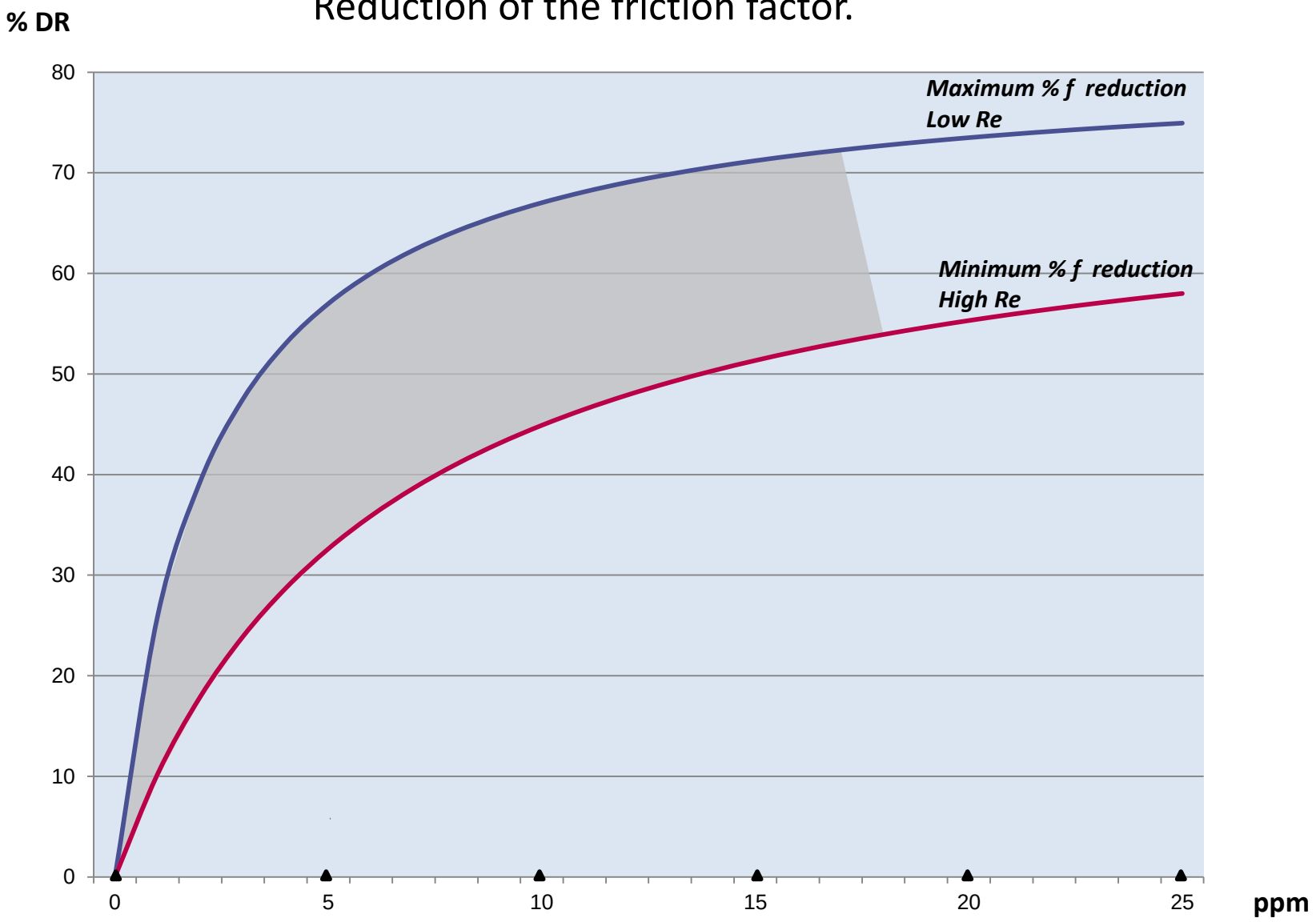
Energy cost =Electricity cost + DRA cost



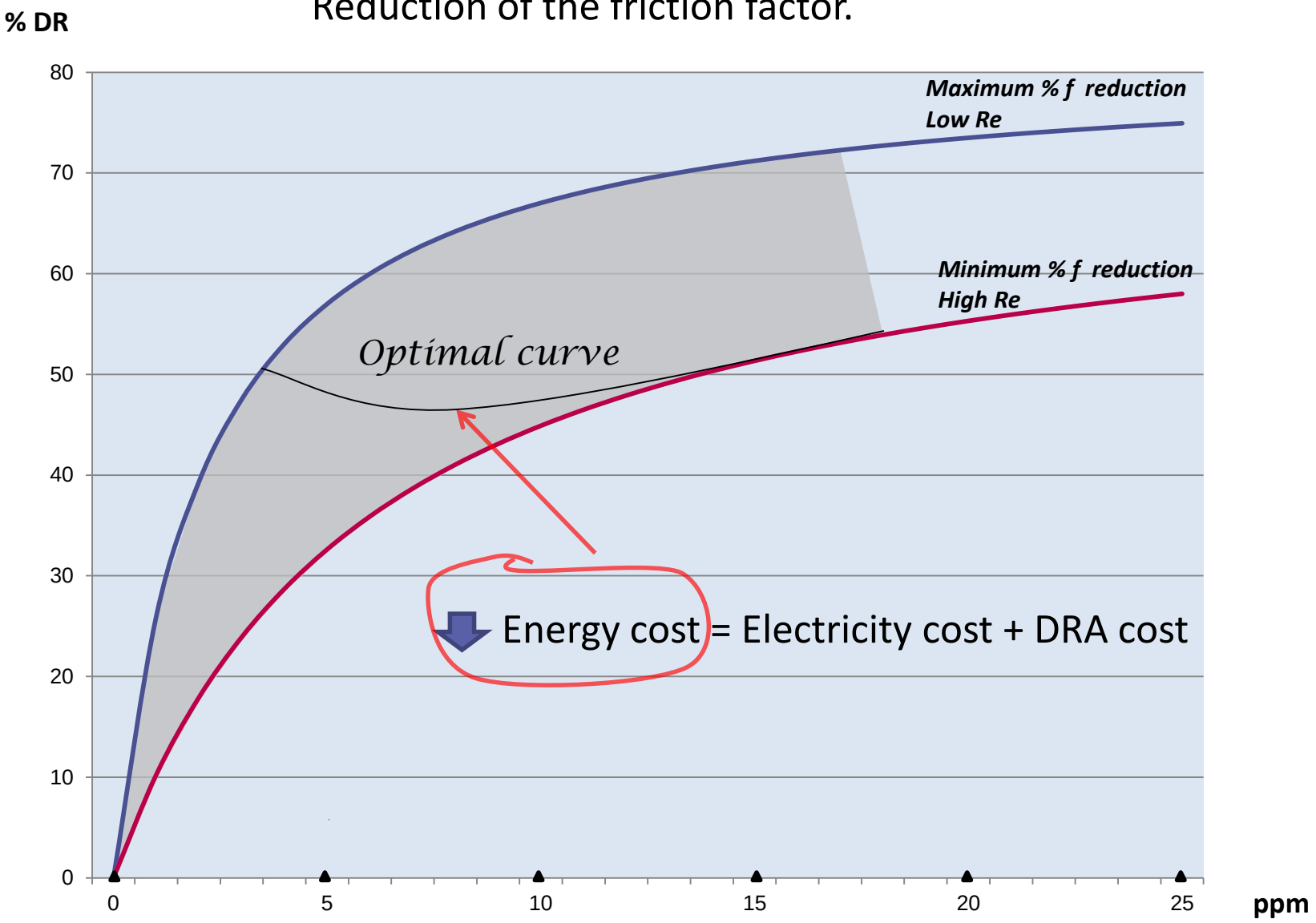
Energy cost =Electricity cost + DRA cost



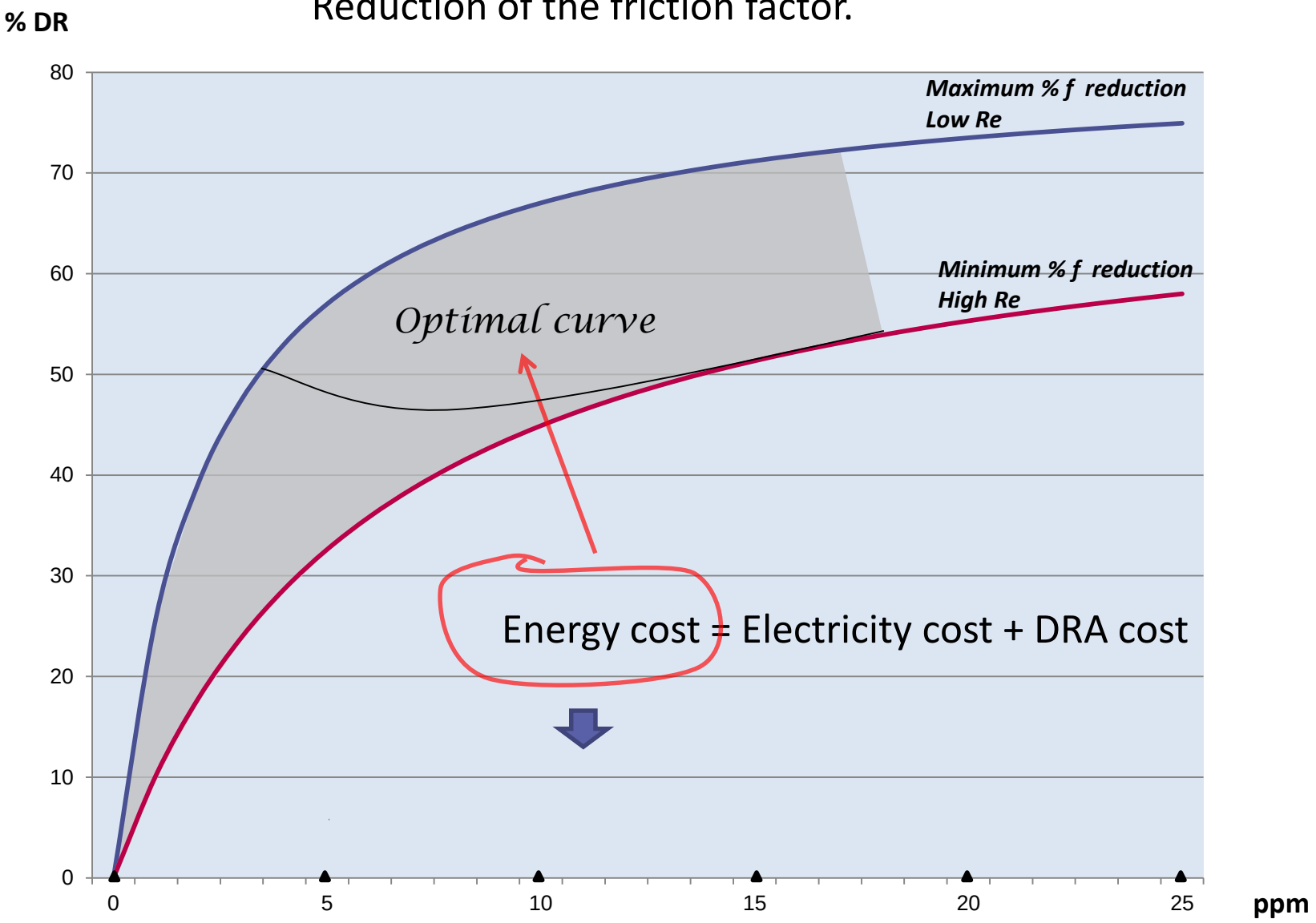
Reduction of the friction factor.



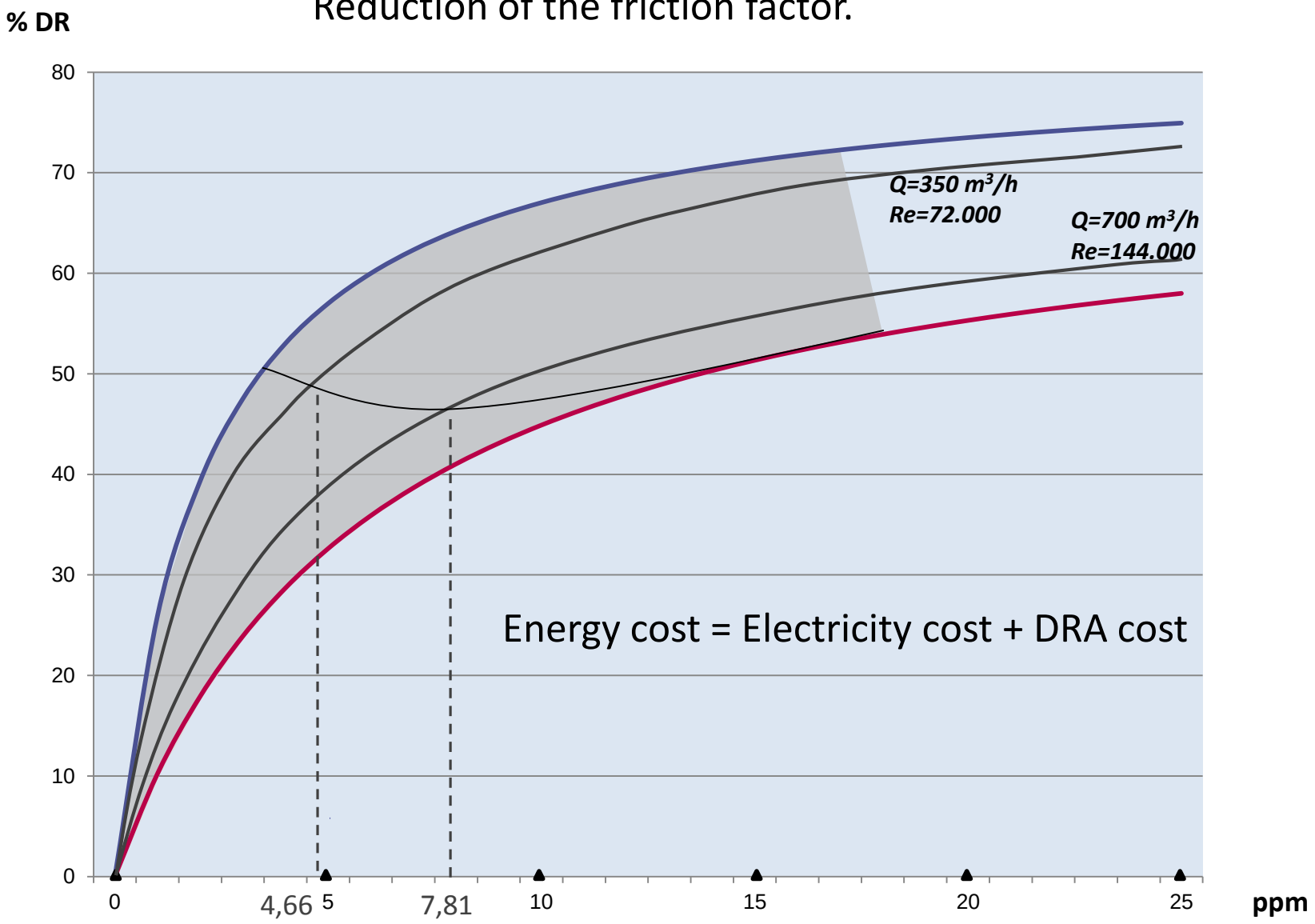
Reduction of the friction factor.



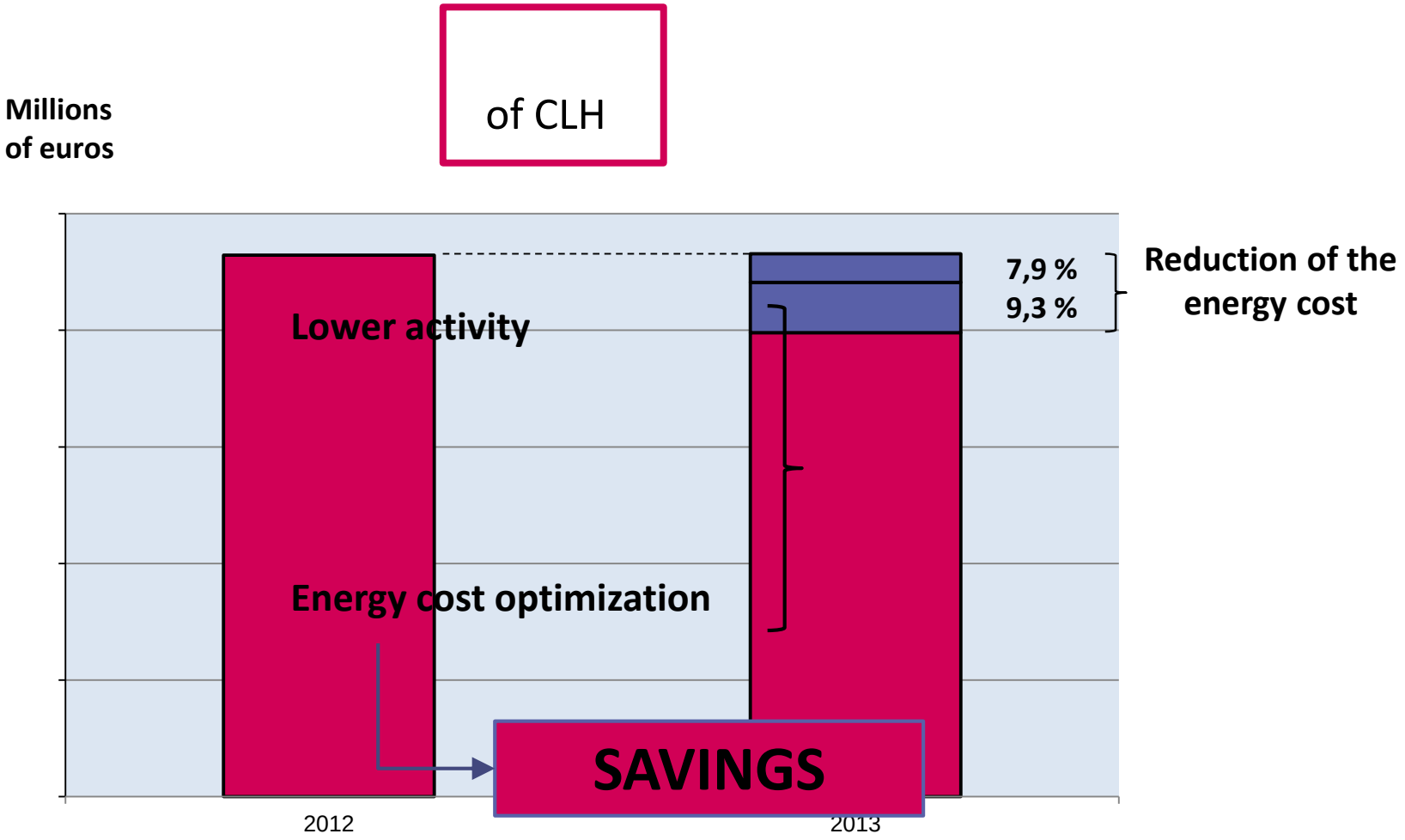
Reduction of the friction factor.



Reduction of the friction factor.



of CLH


Millions of euros
Lower activity
Energy cost optimization
SAVINGS
7,9 %
9,3 %
Reduction of the energy cost
2012
2013

Many thanks

Compañía
Logística de
Hidrocarburos

CLH