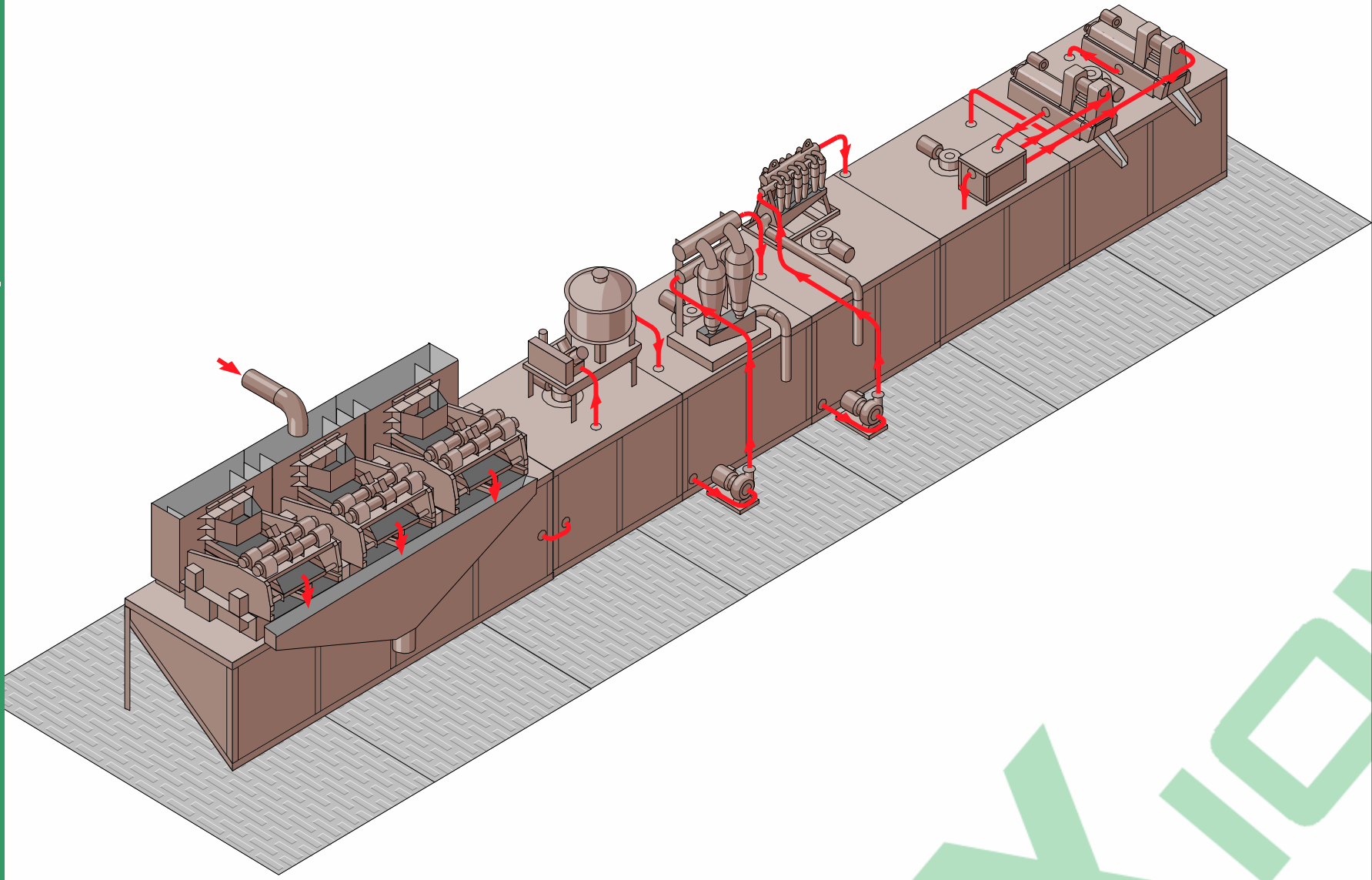


G hyhor sp hqwv #lq #####  
S u p du | #V r o l g v #F r q w u r o #V | v w h p v

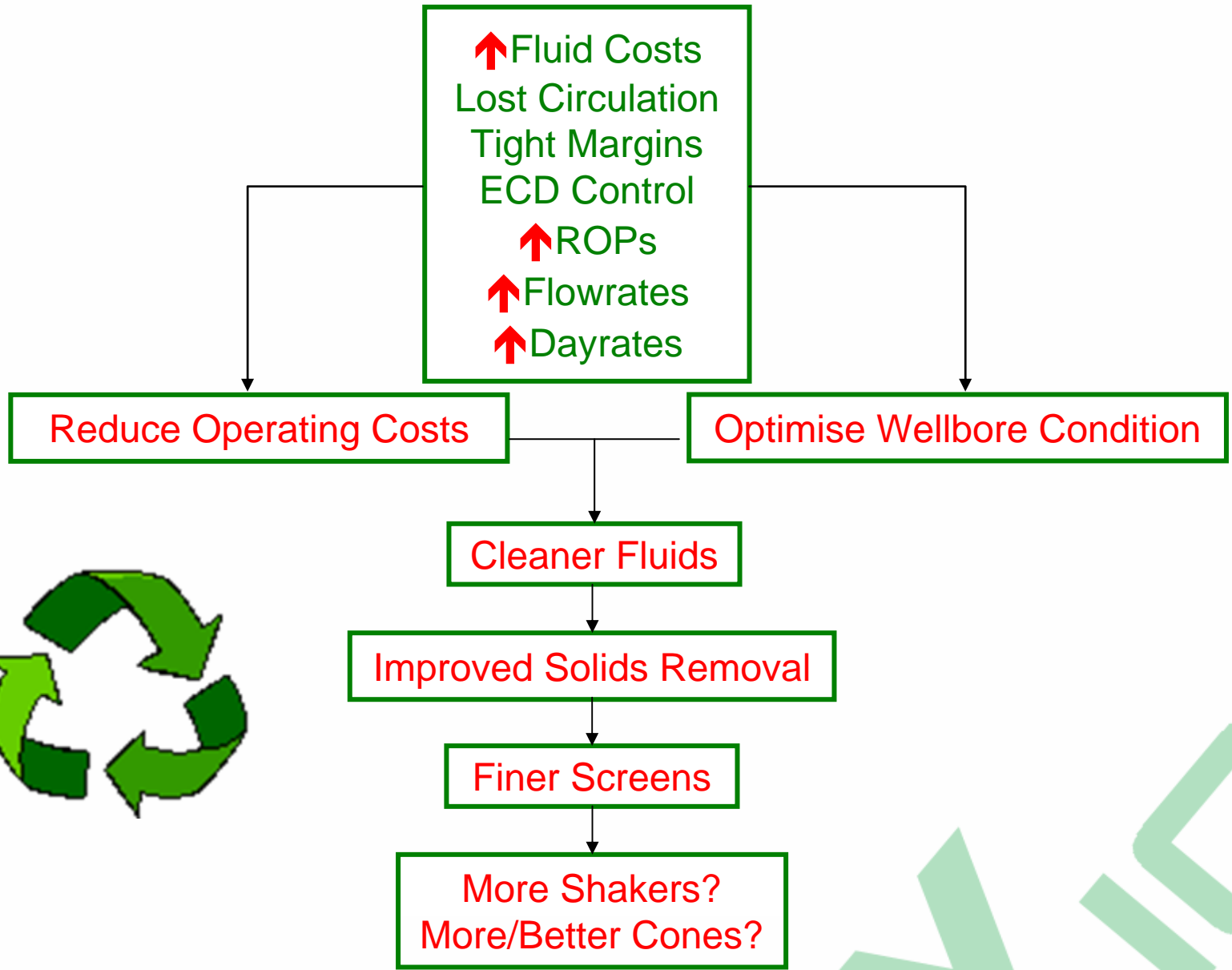
## **Field Performance of an Innovative 3-Deck Shale Shaker**

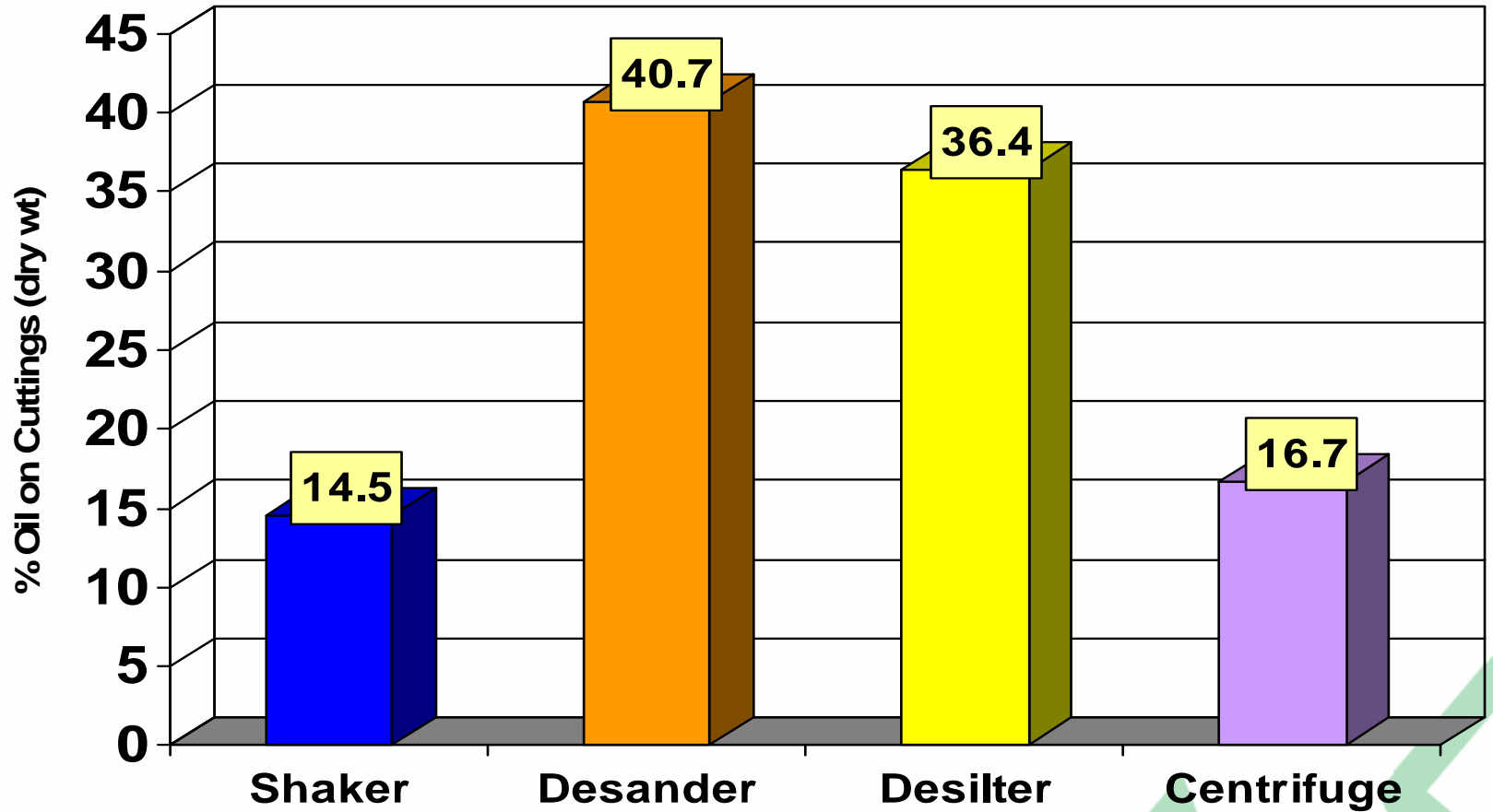
**George Fisher**  
Managing Director – Axiom Process Ltd

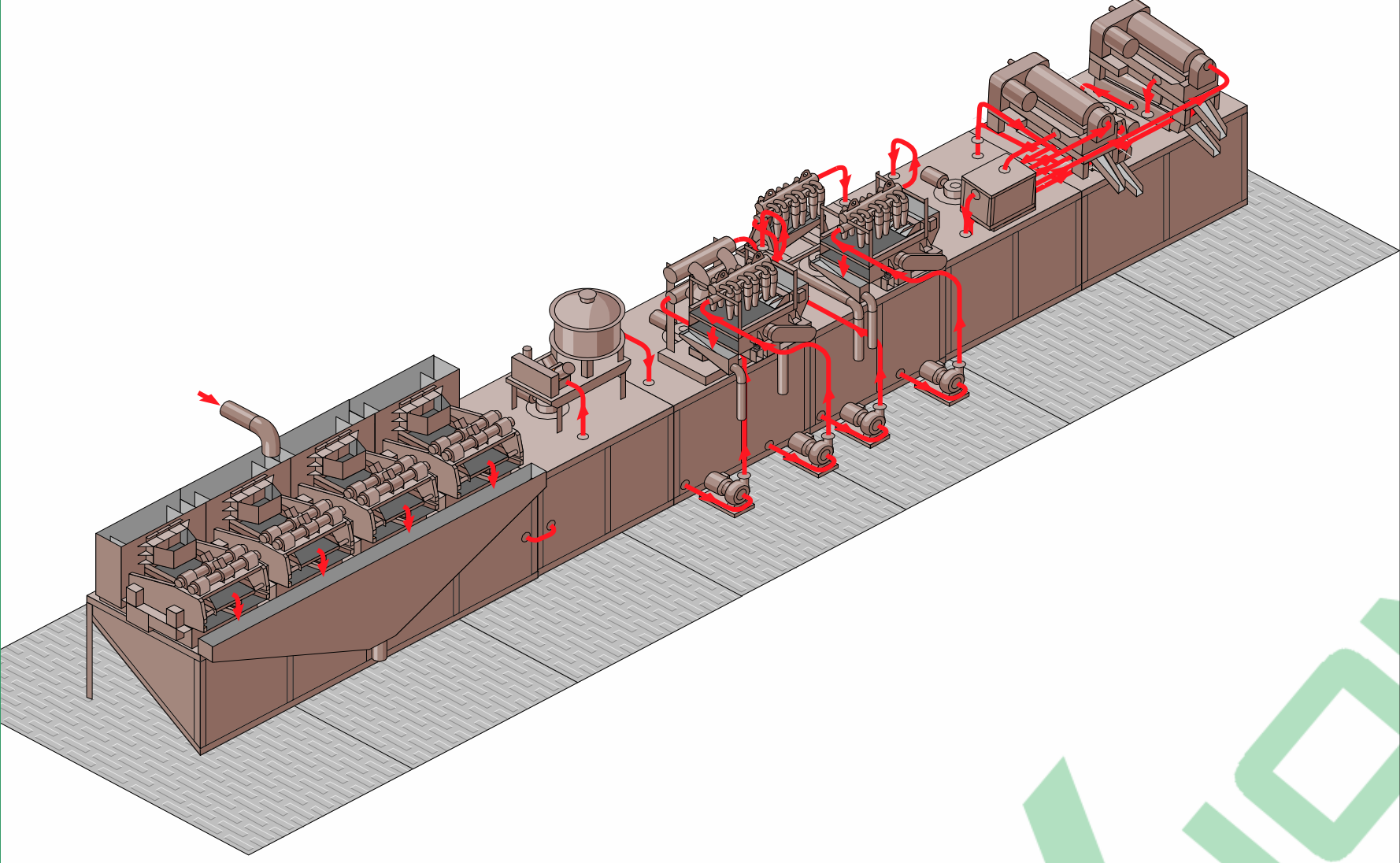
- *D# Su y d w h o / # r z q h g # f r p s d q / # e d v h g # l q #  
D e h u g h h q / # X N*
- *H v w d e o l v k h g # l q # 5 3 3 4 # z l w k # w k h # v w u d w h j l f #  
r e m h f w l y h # r i # g h y h o r s l q j # d # v k d o h # v k d n h u #  
r i i h u l q j # d # v w h s o f k d q j h # l q # i o x l g # k d q g o l q j # ) #  
v r o l g v # v h s d u d w l r q # s h u i r u p d q f h*
- *S u l q f l s d o v # d o o # k d y h # h { w h q v l y h # h { s h u l h q f h # l q #  
w k h # e x v l q h v v / # k d y l q j # e h h q # u h v s r q v l e o h # i r u #  
w k h # g h y h o r s p h q w # r i # w k h # Y V P # i d p l b / # r i #  
v k d n h u v # d q g # v f u h h q v # z l w k # W k x o h # U l j w h f k*



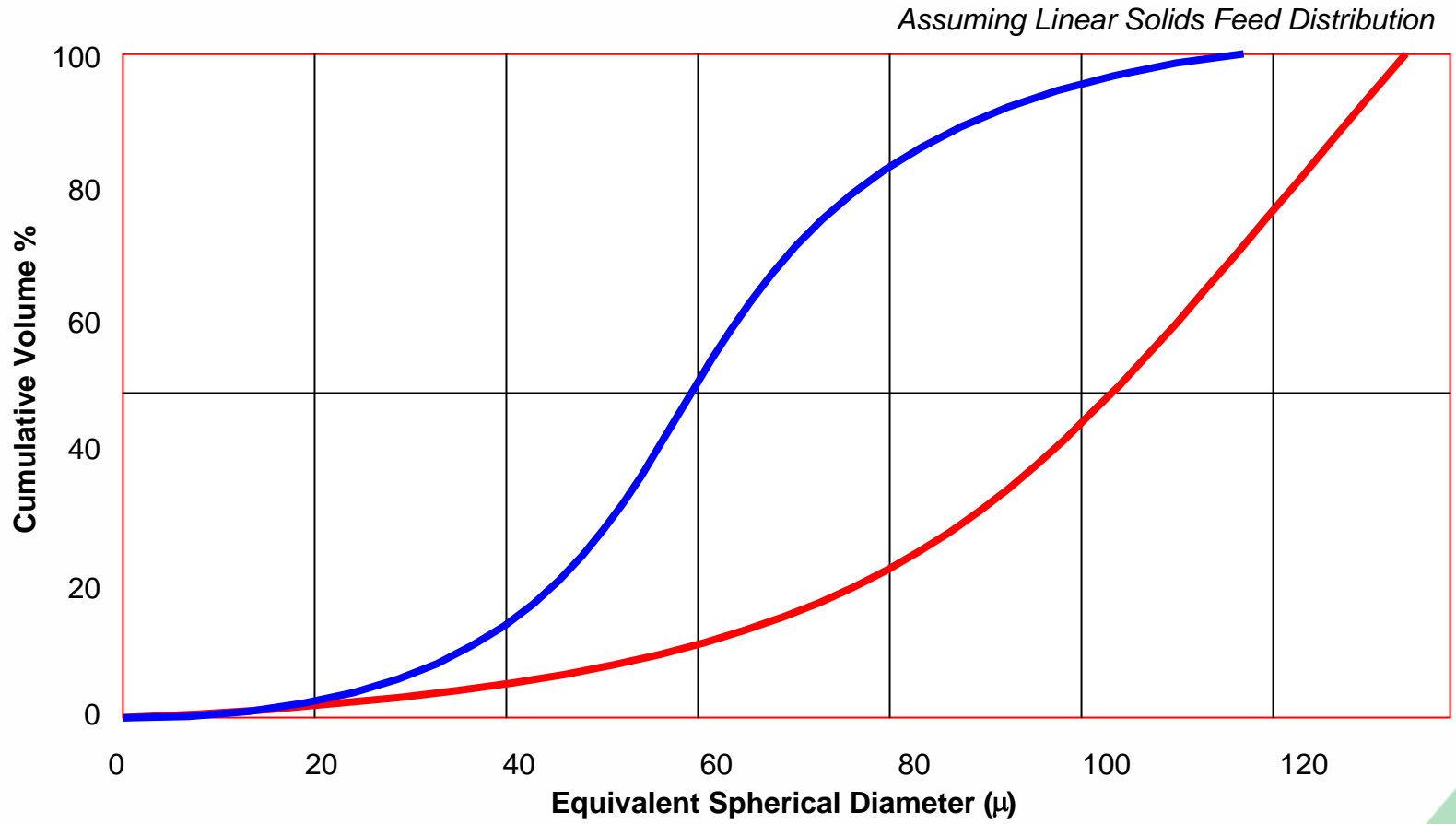
АКІО





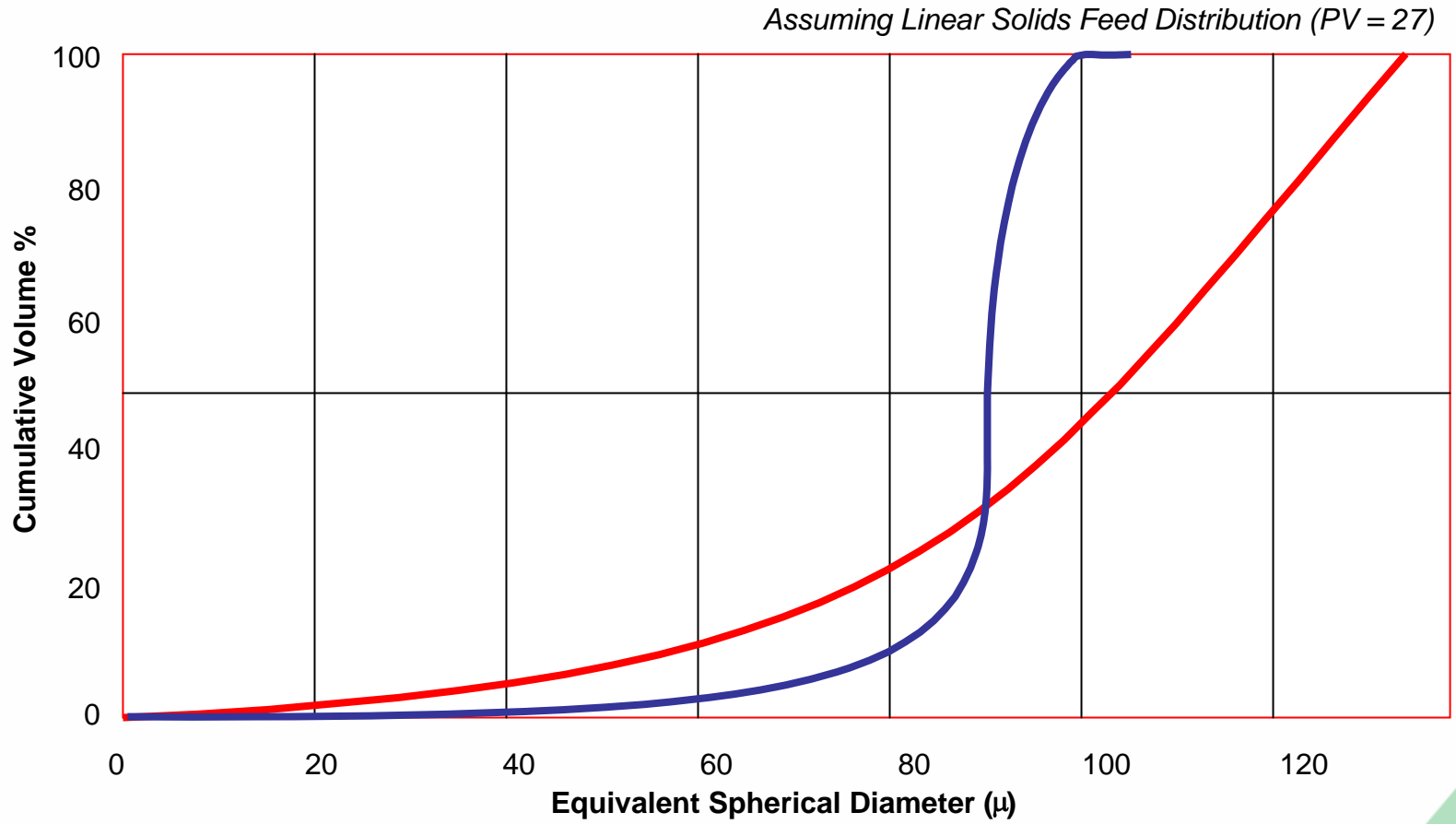


ALIO



- 4" Desilter (PV = 5)
- 4" Desilter (PV = 27)

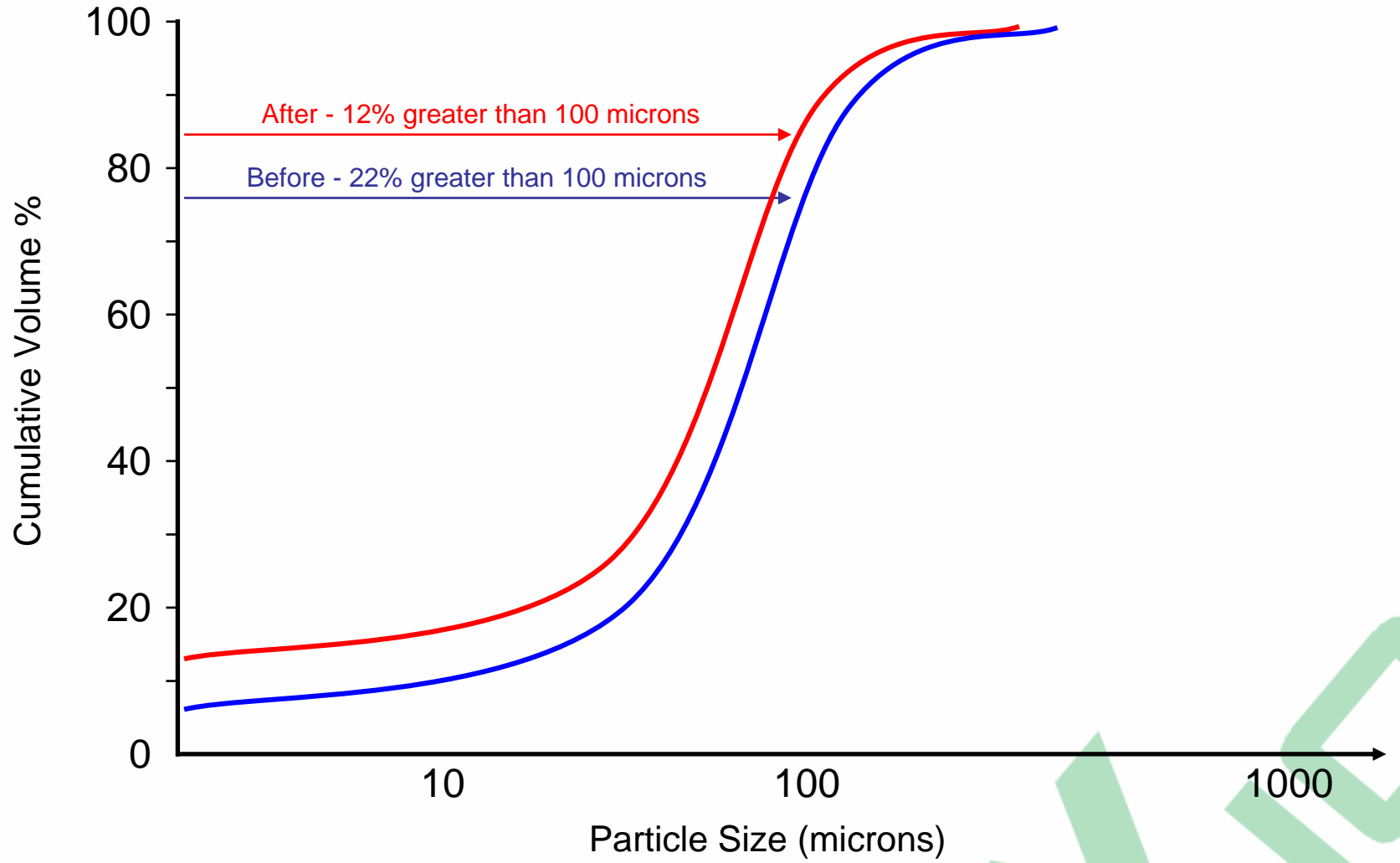
F r q h # y # V f u h h q



Screen data is based upon API RP13E

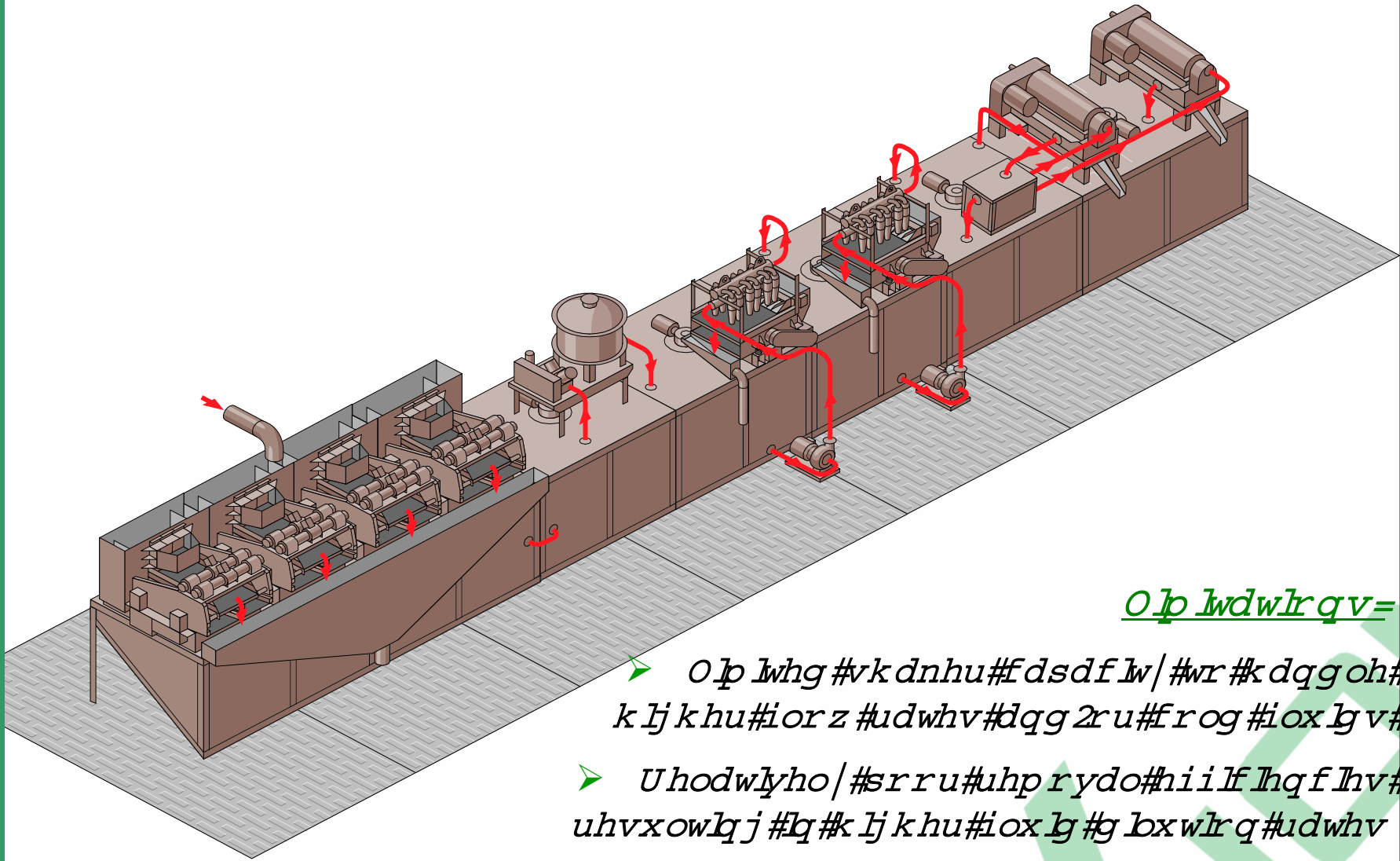
— 4" Desilter  
— 200 TBC Screen

H i i h f w v # r i # s x p s v



After - 12% greater than 100 microns

Before - 22% greater than 100 microns

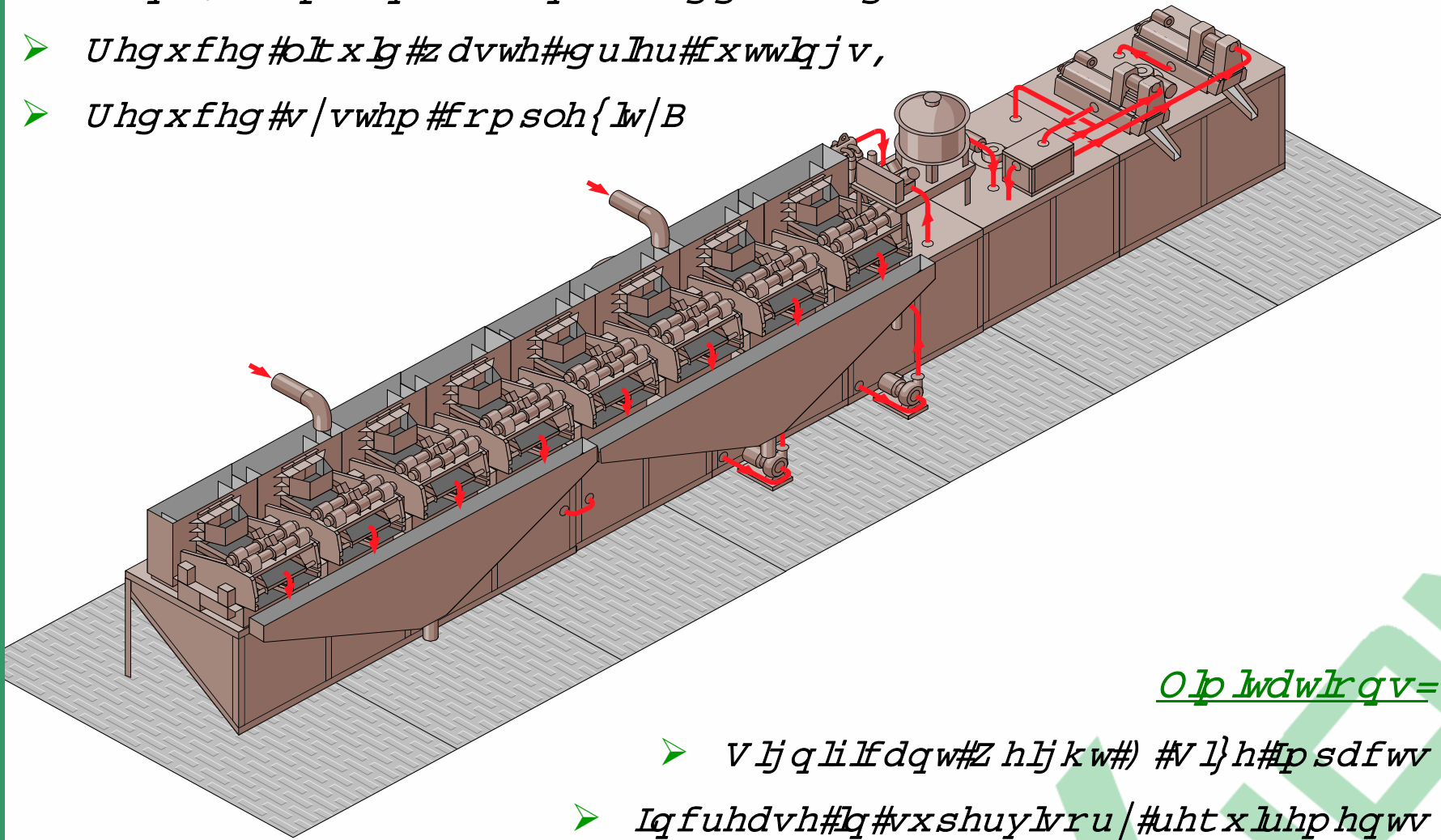


0 1p 1wdwlrqv =

- 0 1p 1whg #vk dnhu #f dsdf lw / #wr #k dqg oh #  
k lj k hu #i or z #udwhv #dqg 2ru #f rog #i ox lg v #
- U hodwlyho / #srru #u hp rydo #i i lf lhq f lhv #  
uhvxowlqj #lq #k lj k hu #i ox lg #g bxwlrq #udwhv
- vro lg v #G hjudgdwlrq #wkurxjk #vhfrqgdu / #surfhvvlgj
- K lj k #olt xlg #g lvfkdujhv #wkurxjk #vhfrqgdu / #vro lg v #frgwuro

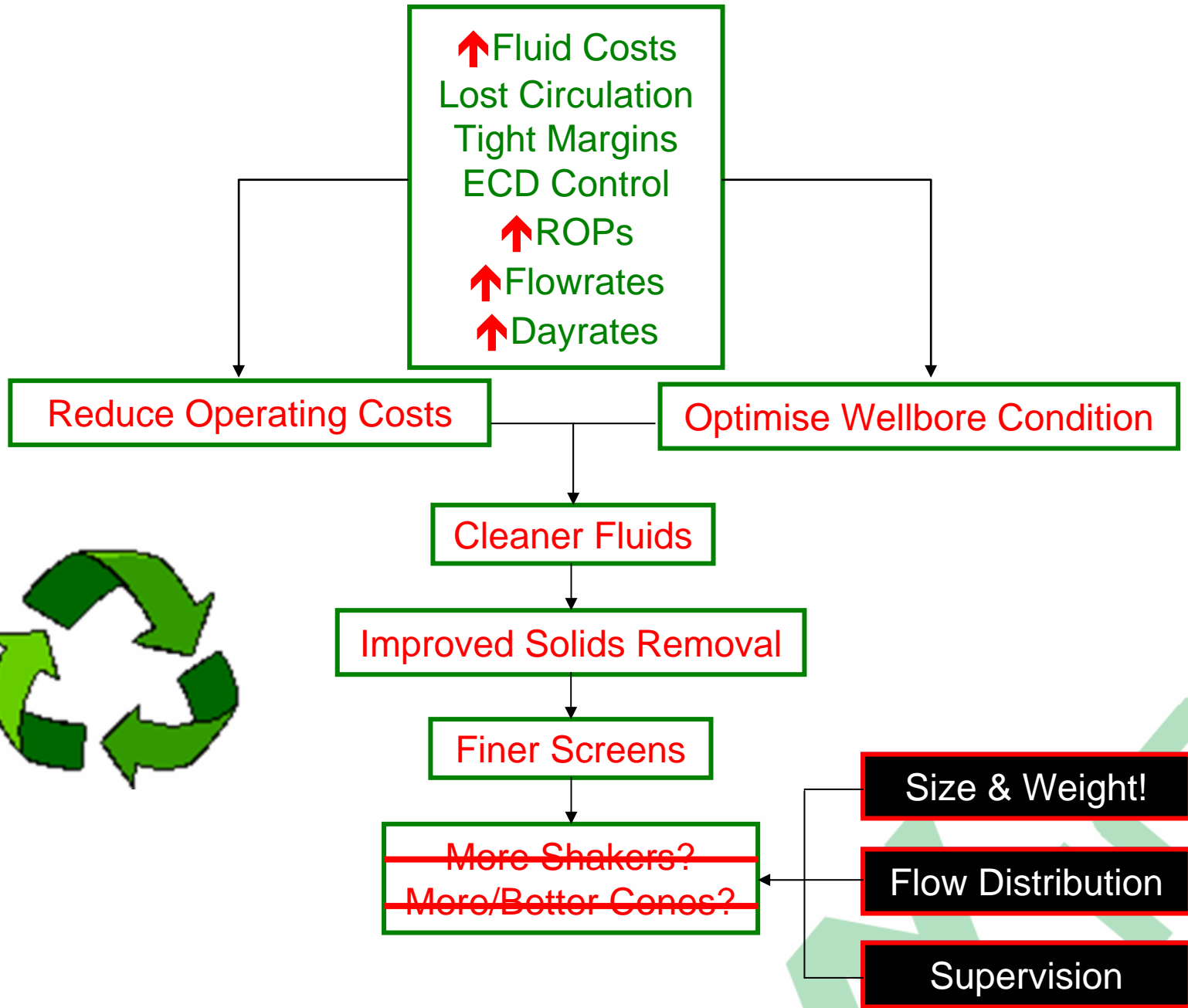
Ehghi lw =

- $I_p \text{ suryhg} \# \text{su} \# \text{p du} / \# \text{vro} \# \text{lg v} \# \text{uhp rydo} \# \text{hiilf} \# \text{hqf} /$
- $Frqh \#) \# \text{Sxps} \# \text{qhiilf} \# \text{hqf} \# \text{lv} \# \text{dgg} \# \text{uhvvhg}$
- $Uhgxfhg \# \text{olt} \# \text{lg} \# \text{z} \# \text{dvwh} \# \text{gu} \# \text{thu} \# \text{fxw} \# \text{bjv},$
- $Uhgxfhg \# \text{v} / \text{vw} \# \text{hp} \# \text{frp} \# \text{soh} \{ \text{lw} / \text{B}$



Op lwdwlrqv =

- $V \# \text{lj} \# \text{q} \# \text{li} \# \text{lf} \# \text{dqw} \# \text{Z} \# \text{h} \# \text{lj} \# \text{kw} \#) \# \text{V} \# \text{lj} \# \text{h} \# \text{p} \# \text{sdfwv}$
- $Iq \# \text{fuhdv} \# \text{h} \# \text{q} \# \text{vx} \# \text{shuy} \# \text{lvru} / \# \text{uht} \# \text{x} \# \text{luhp} \# \text{hqvw}$
- $G \# \text{li} \# \text{lf} \# \text{xow} / \# \text{edod} \# \text{qf} \# \text{lj} \# \text{ior} \# \text{z} \# \text{U} \# \text{hvshf} \# \text{ldoo} / \# \text{ior} \# \text{dwhuv}$
- $Q \# \text{rw} \# \text{vx} \# \text{lwdeoh} \# \text{dv} \# \text{d} \# \text{uhwuri} \# \text{lw} \# \text{rsw} \# \text{lrq} \# \# \text{r} \# \text{q} \# \text{rog} \# \text{hu} \# \text{u} \# \text{ljv}$





AYRI

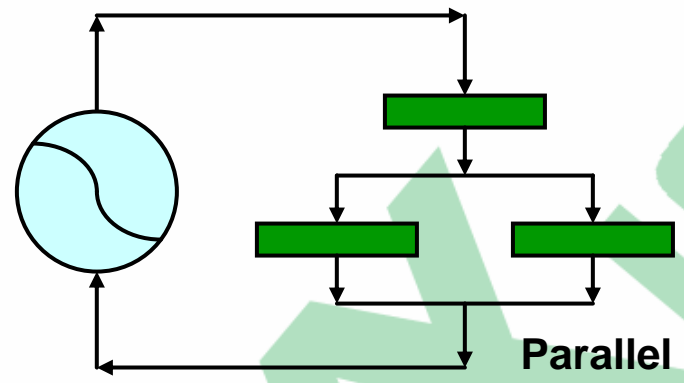
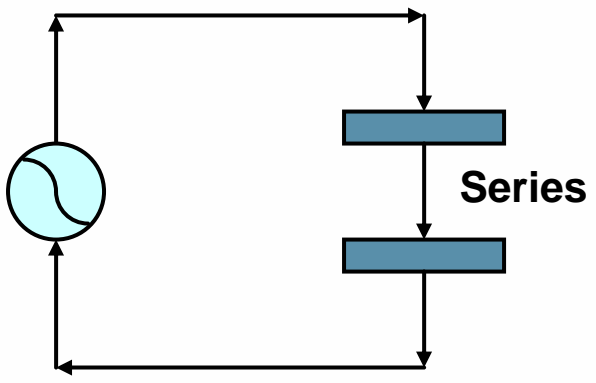
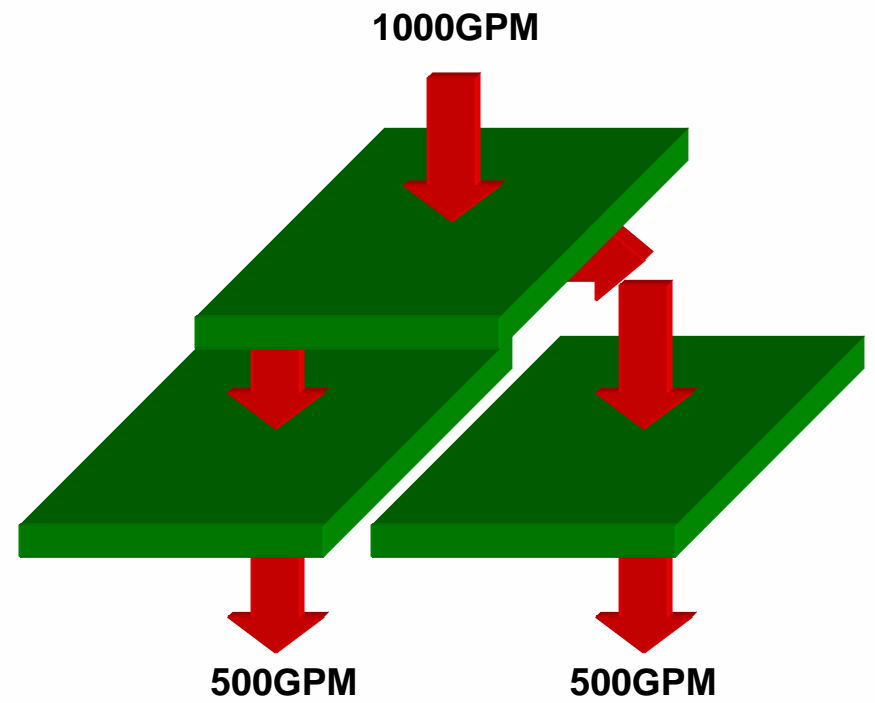
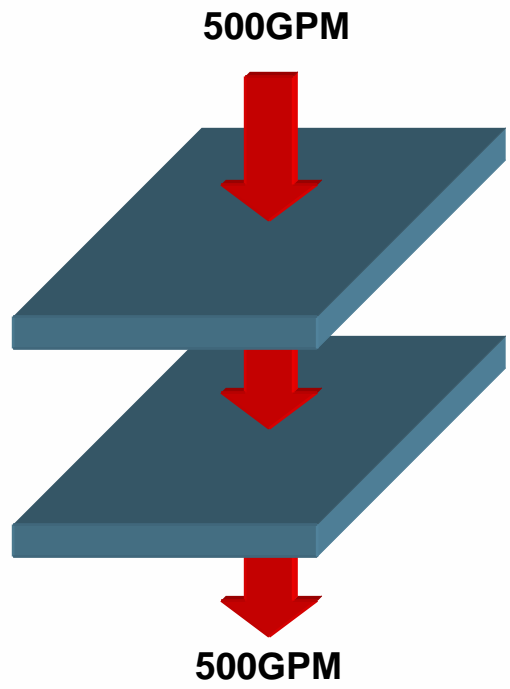
*Wk h#D [ 4 #k d v#e h h q#G h v l j q h g#wr  
R i i h u#d#V w h s#F k d q j h#l q#S u l p d u / #  
V r o l g v#F r q w u r o#S h u i r u p d q f h*

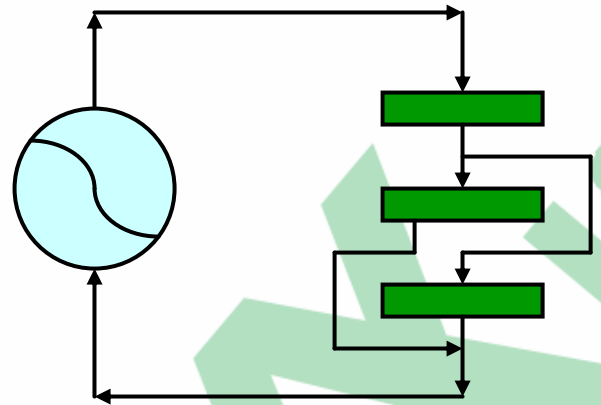
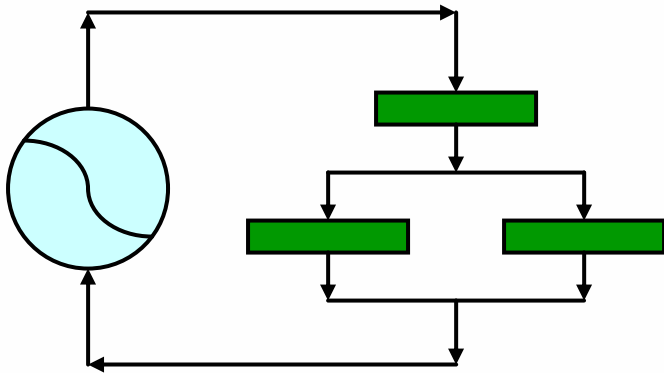
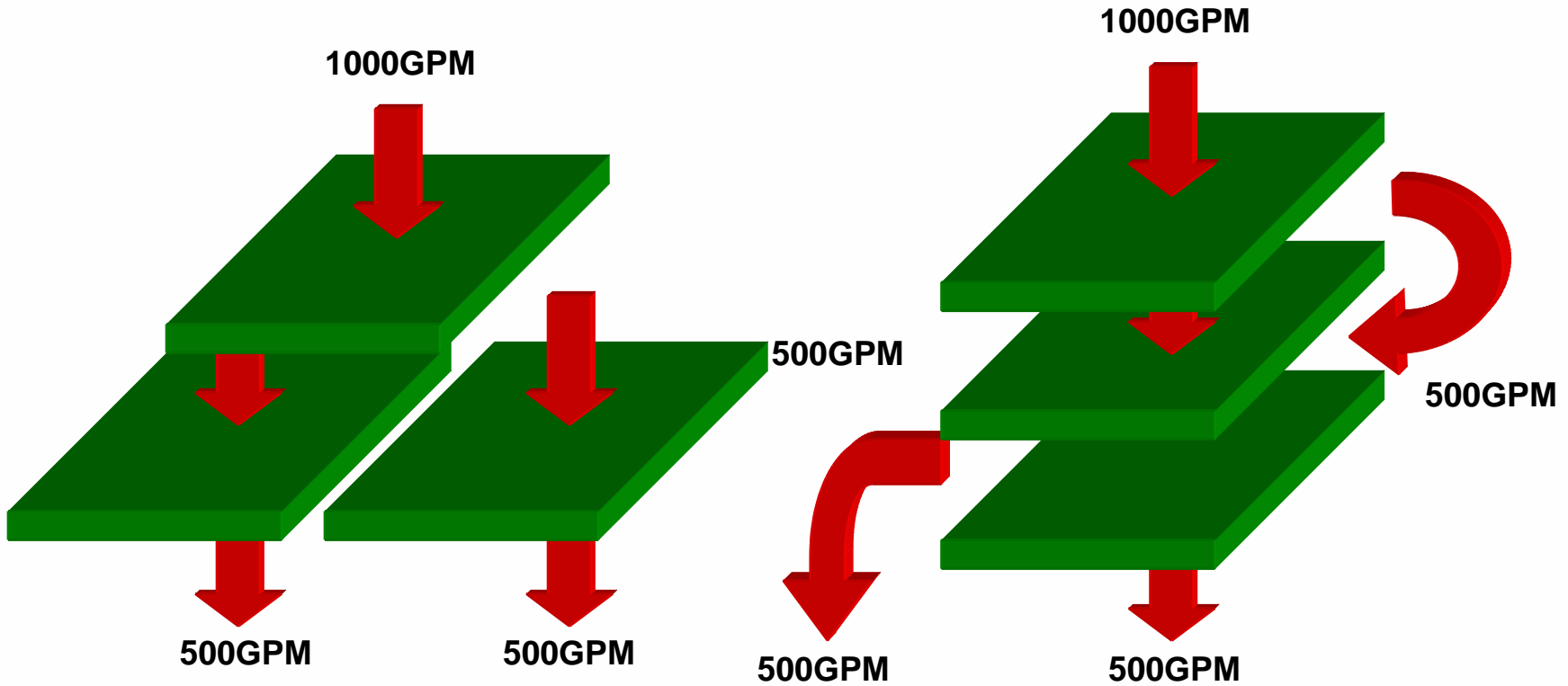
*The AX-1 has been designed to deliver  $\pm 100\%$   
more capacity than the best alternatives*

*It therefore offers significant improvements  
and flexibility in fluid processing*

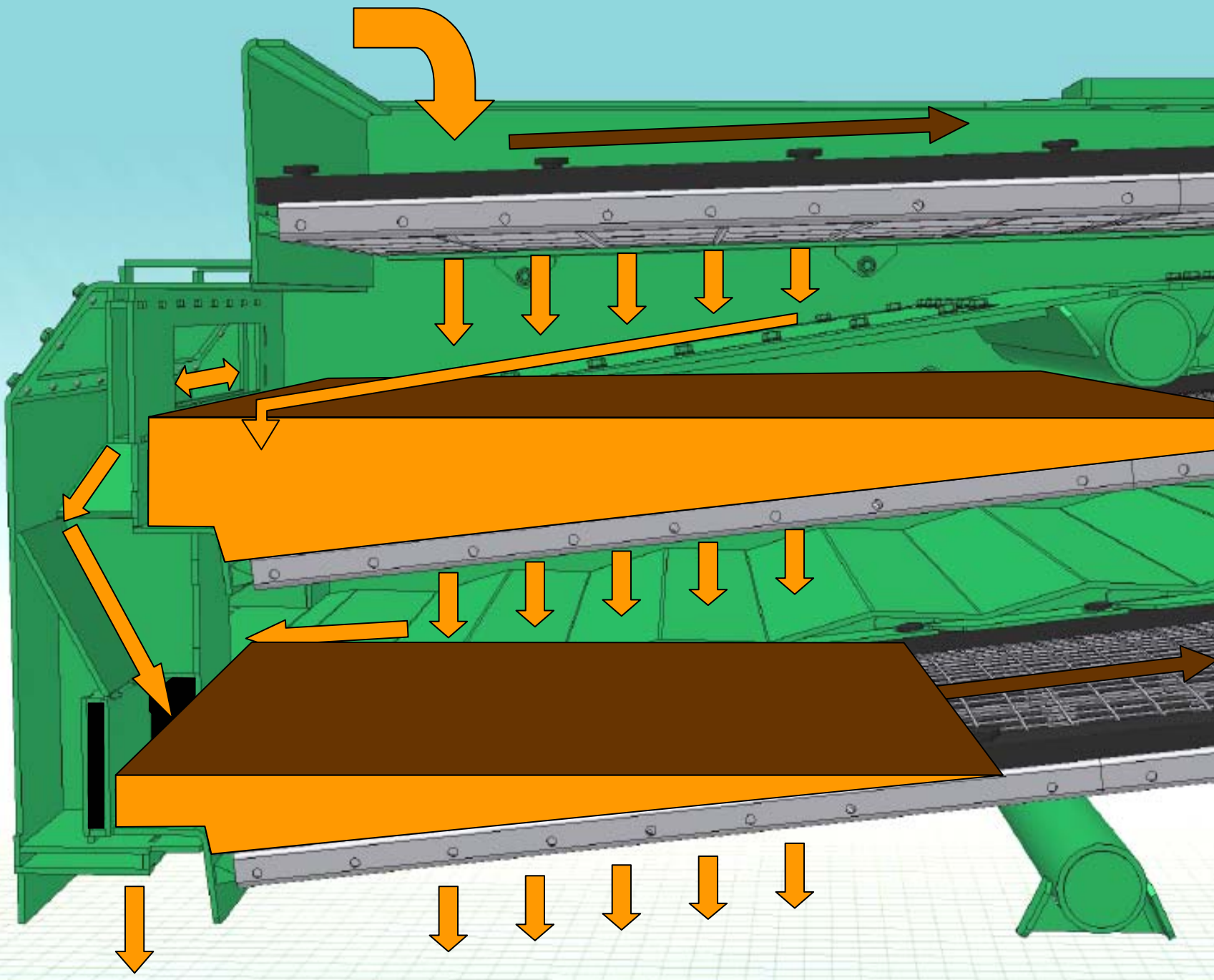
*An ability to ‘progressively’ screen solids also suggests  
new opportunities for fluid & reservoir engineers*

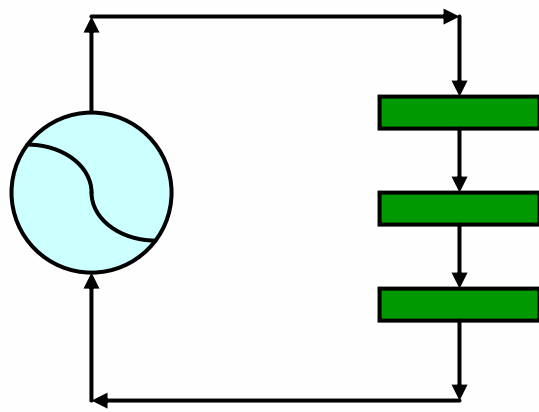
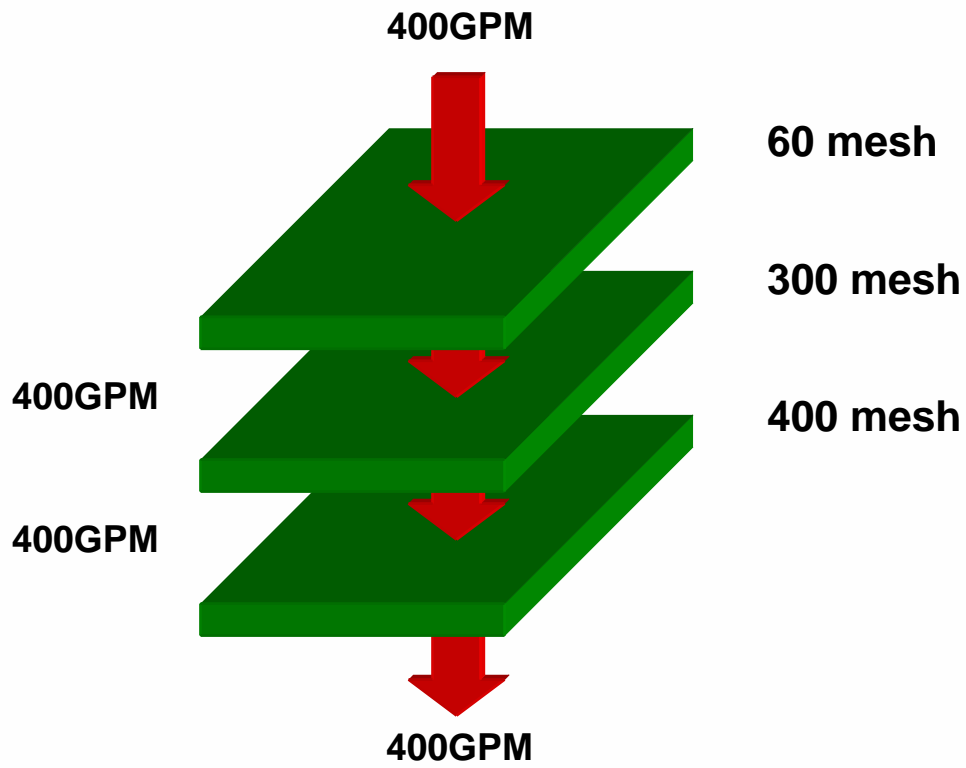
# *Doubling Capacity...means Doubling Screen Area*



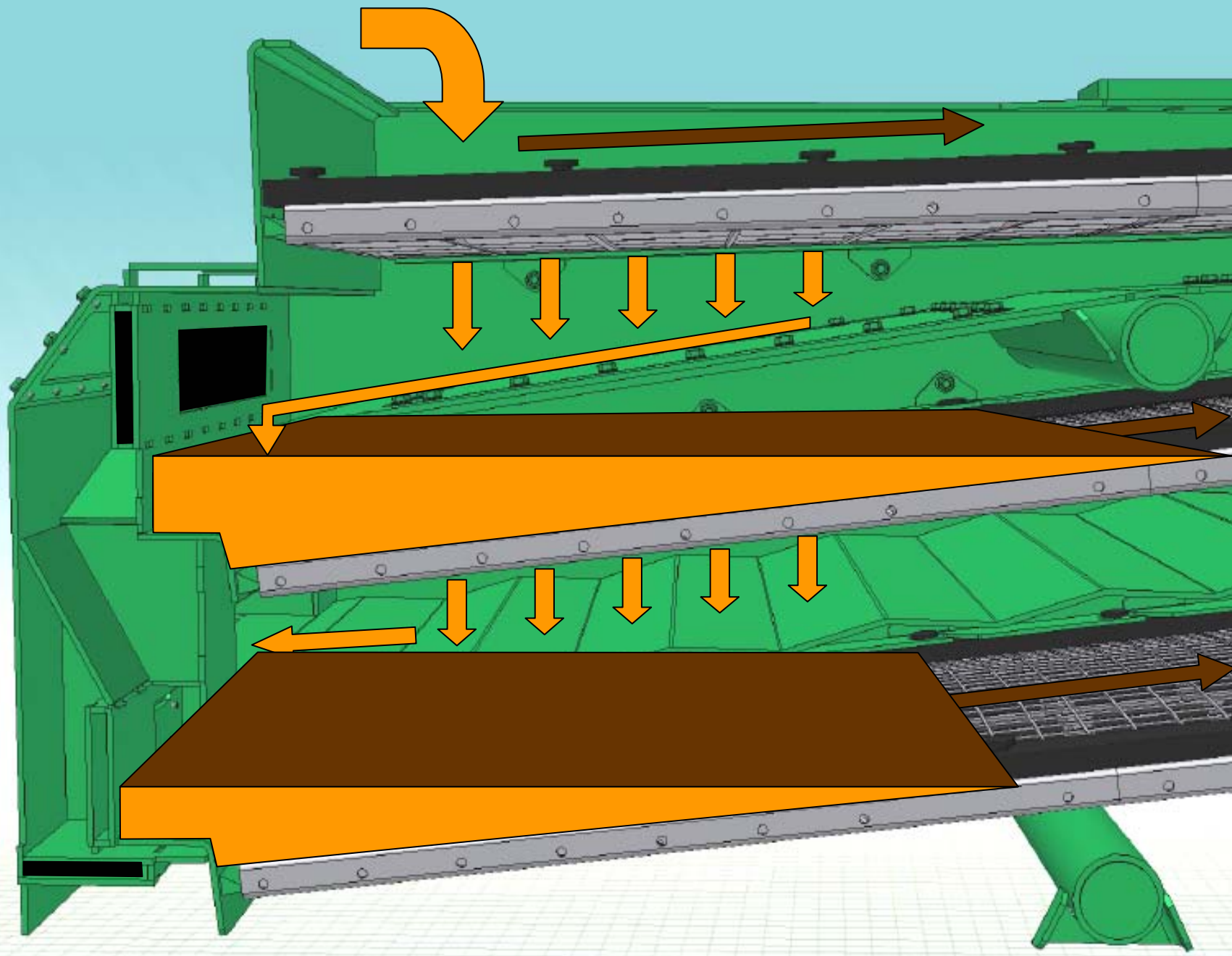


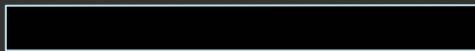
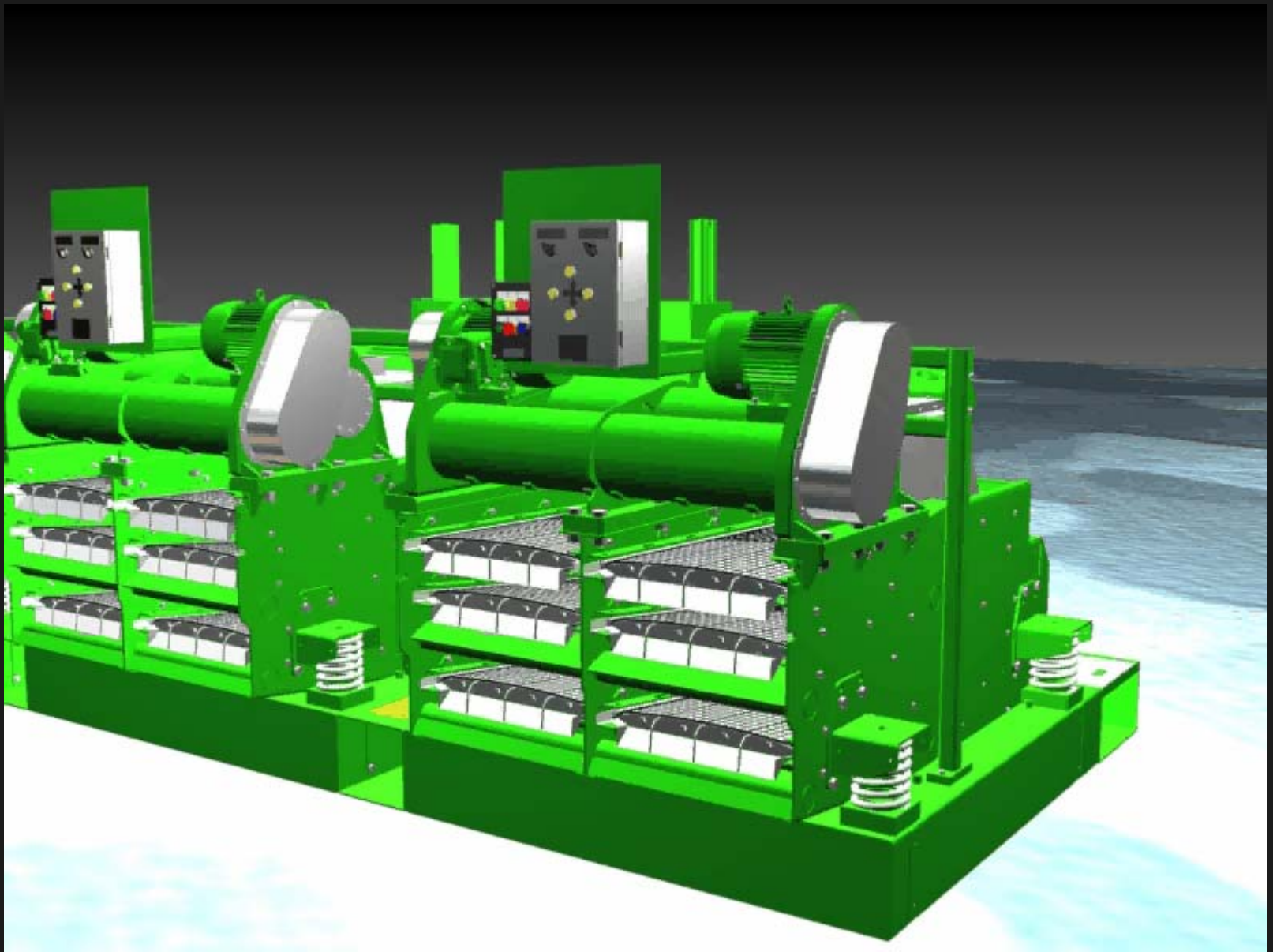
Wk h#S dudooho#F r q fhsw





# ý dgg #lq #V hu lhv ý



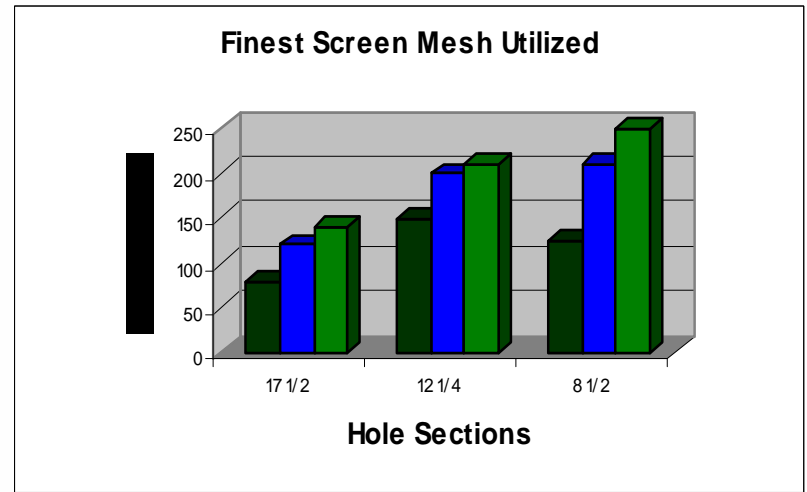
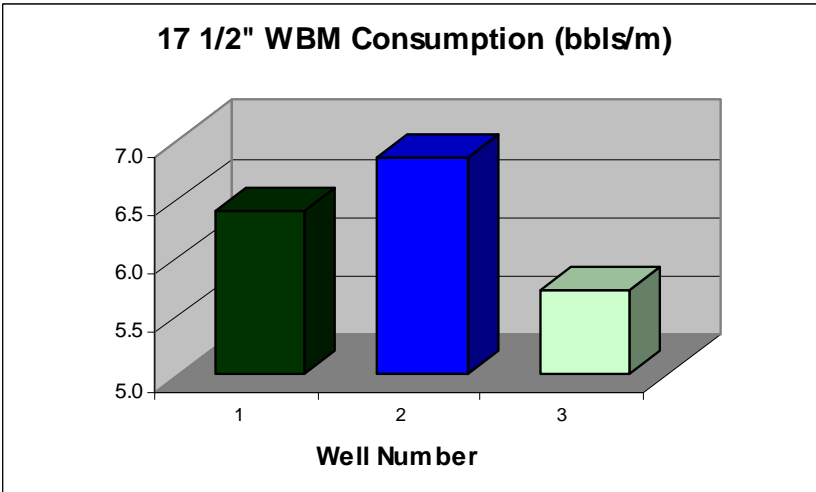


The AX-1 System

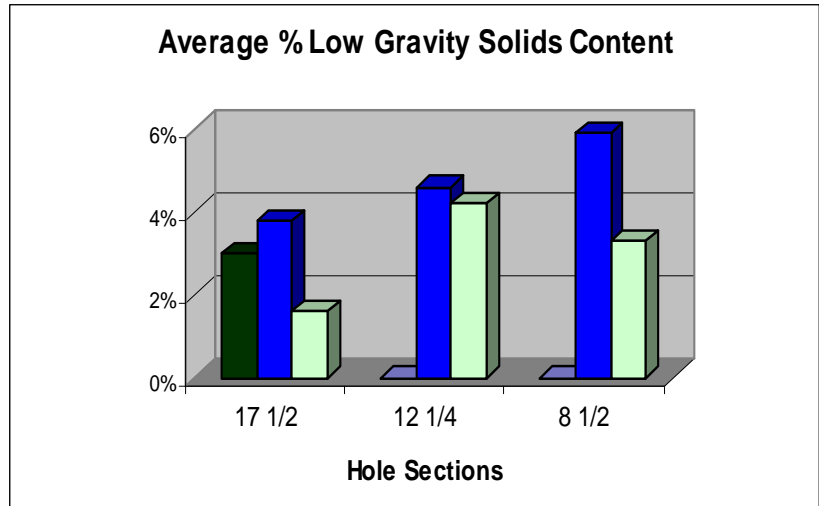
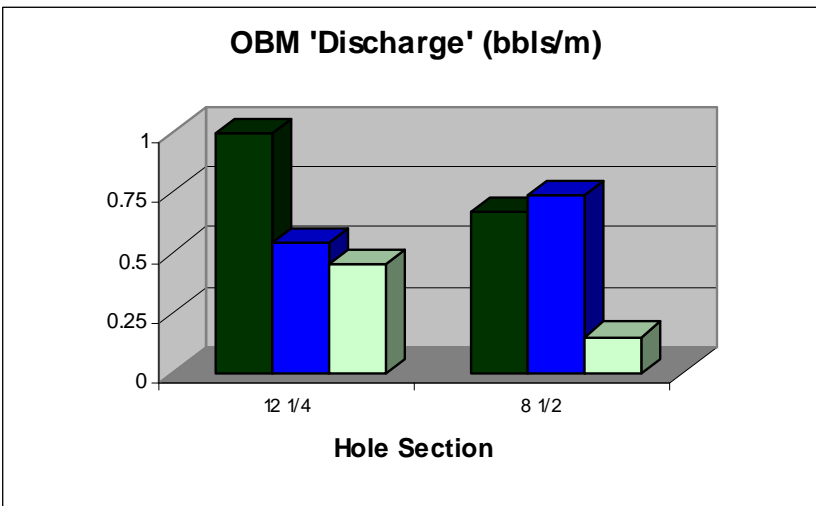
I Inog #S hu ir up dq fh

One (1) x AX-1 replaced one (1) x VSM 100™ on the GSF Arctic IV. The system was operated on two wells on the Farragon development in the Central North Sea. The wells were 'batched':

- ✓ Handled  $\pm 70\%$  of the feed ( $\pm 800\text{GPM}$ ) on both  $17\frac{1}{2}$ " hole sections whilst fitted with 140 thru 175 mesh screens – with ROP averaging 25-30m/hr. The  $17\frac{1}{2}$ " section was drilled with KCI/PHPA/Glycol mud
- ✓ Handled 100% of the feed ( $\pm 950\text{GPM}$ ) on the first  $12\frac{1}{4}$ " hole section whilst fitted with 210 mesh screens – with ROP averaging 25-30m/hr. The  $12\frac{1}{4}$ " sections were drilled with OBM
- ✓ Maintained LGS levels below 3% without the use of ANY other SCE throughout both  $12\frac{1}{4}$ " sections
- ✓ Reduced screen costs by 80% (against historic rig performance) through the operation of fewer shakers and longer screen life – despite running finer screens
- ✓ Pilot testing indicated potential for the use of the 3-deck arrangement to allow recovery of significant quantities ( $>70\%$ ) of LCM/bridging material
- ✓ Company Men, Mud Engineers, Toolpushers & Rig Crew all stated their approval of the system
- ✓ BP approved replacement of the COMPLETE system with 3 x AX-1s for 'tricky' Machar development



"We justified the replacement of 5 x VSM 100s with 3 x AX-1s on ONE 17 1/2" Section"  
 Andrew Cowie – BP



Three (3) x AX-1s replaced two (2) x scalpers & four (4) flowline shakers on the Roger Mowell. The complete workscope was completed in <5 days.

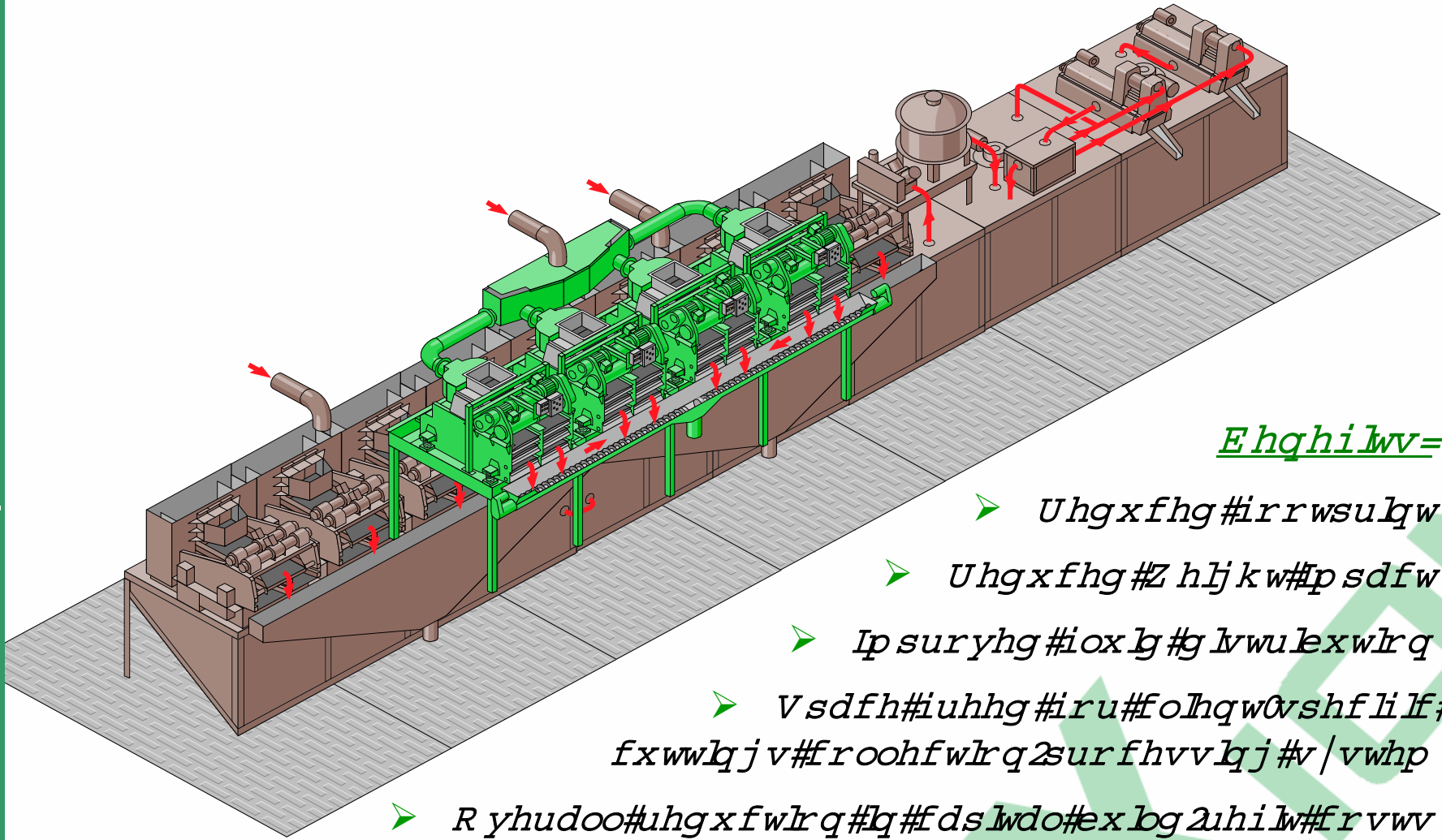
The following feedback was received from Talisman (Malaysia):

- ✓ Initial mechanical problems resolved to client satisfaction
- ✓ AX-1s field performance fully met expectations
- ✓ 300 mesh screens routinely used
- ✓ LGS levels reduced from around 12-15% to 5-6%
- ✓ LGS concentration maintained over 3 x days despite centrifuge breakdown
- ✓ Dilution volume decreased by an average of 30% over 14,000m of 8½” hole (circa 700 bbls v 1000 bbls per hole section)
- ✓ Over 9 x 8½” Hole Sections only 8 Screen Panels were Discarded

**Additional Comment on Operation:**

*“The rig crew love them, the mud engineers love them the OIM and rig manager love them and my boss loves them. They are easy to work with, the screens are easy to change and as you can see they are not often changed. If you get the chance try them out you will be pleasantly surprised.”*

	<b>Location</b>	<b>Qty</b>	<b>23" &amp; 24"</b>	<b>17½"</b>	<b>12¼"</b>	<b>8½"</b>	<b>6" or 5 3/8"</b>
GSF Arctic IV	North Sea	3		175SS & 210SS	250E	300E	300E
GSF Galaxy I	North Sea	3	140SS & 175SS	Recently Started Operations			
Seadrill 5	Indonesia	3		175SS & 210SS	210SS & 250E	250E	
Roger Mowell	Malaysia	3			175SS	250E & 300E	
Smedvig T-7	Thailand	2				140SS & 175SS	210SS & 250SS
Songa Venus	Australia	3		175SS & 210SS	Recently Started Operations		
Transocean Prospect	North Sea	3		175SS	250E & 300E	TBA	
Sedco 709	Nigeria	4			175SS, 210SS & 250E		



E hqhi lw =

- U hg x f h g # i r r w s u l q w
- U hg x f h g # Z h l j k w # p s d f w
- I p s u r y h g # i o x l g # g l w u l e x w l r q
- V s d f h # i u h h g # i r u # f o l h q w 0 v s h f l i l f # f x w w l q j v # f r o o h f w l r q 2 s u r f h v v l q j # v | v w h p
- R y h u d o o # u h g x f w l r q # l q # f d s l w d o # e x l g 2 u h i l w # f r v w v
- I q w h j u d o # r s w l r q # i r u # U h f r y h u | # r i # E u l g j l q j # p d w h u l d o



Here is Edward Bear,  
coming downstairs now,

**bump, bump, bump**

on the back of his head  
behind Christopher Robin

It is as far as he knows,  
the only way of coming downstairs  
but sometimes he feels  
there is another way,  
if only he could stop bumping  
for a moment and think of it

***A A Milne***

Wkdqn#\ rx  
T xhvwlr qvB

