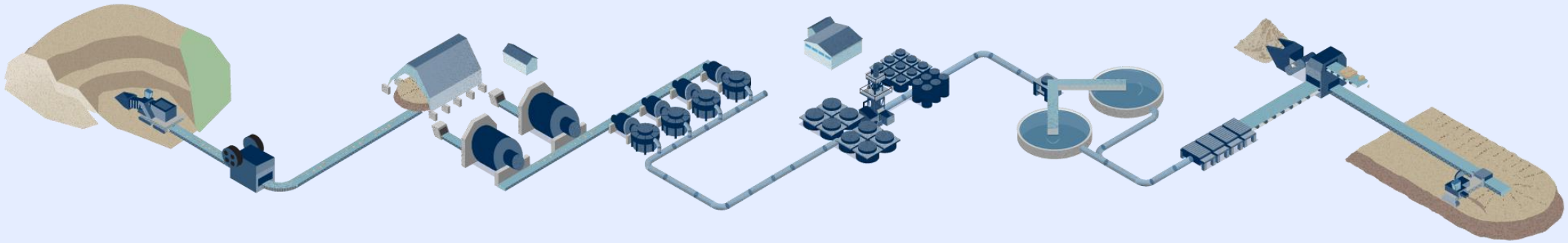
Driving sustainability in Mining through REFLUX™ Technology

Anson Gilbert – Business Development Manager: Separation

Mission Zero Towards zero emissions by 2030

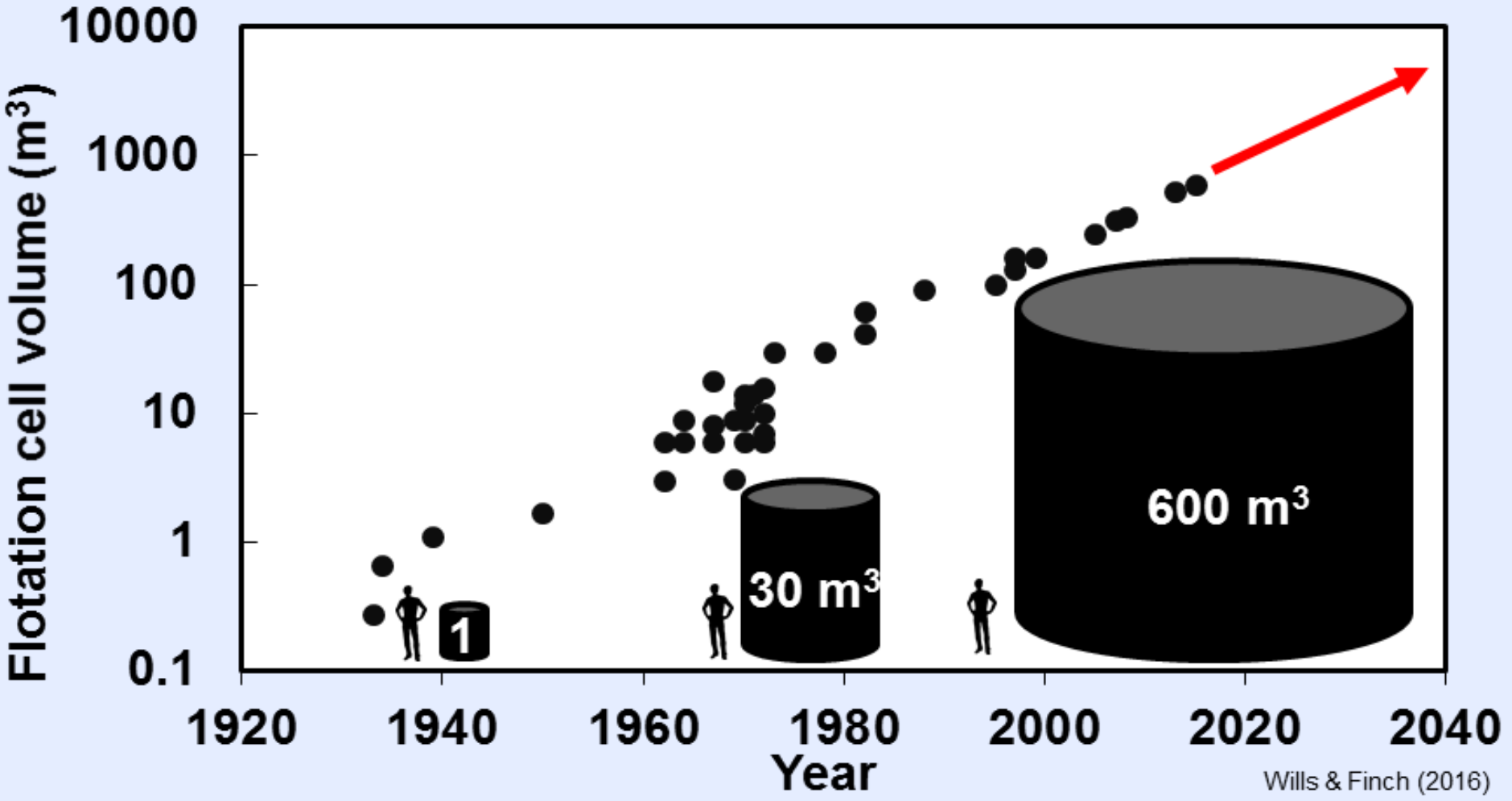
FLS

FLS - Full flowsheet & technology offering

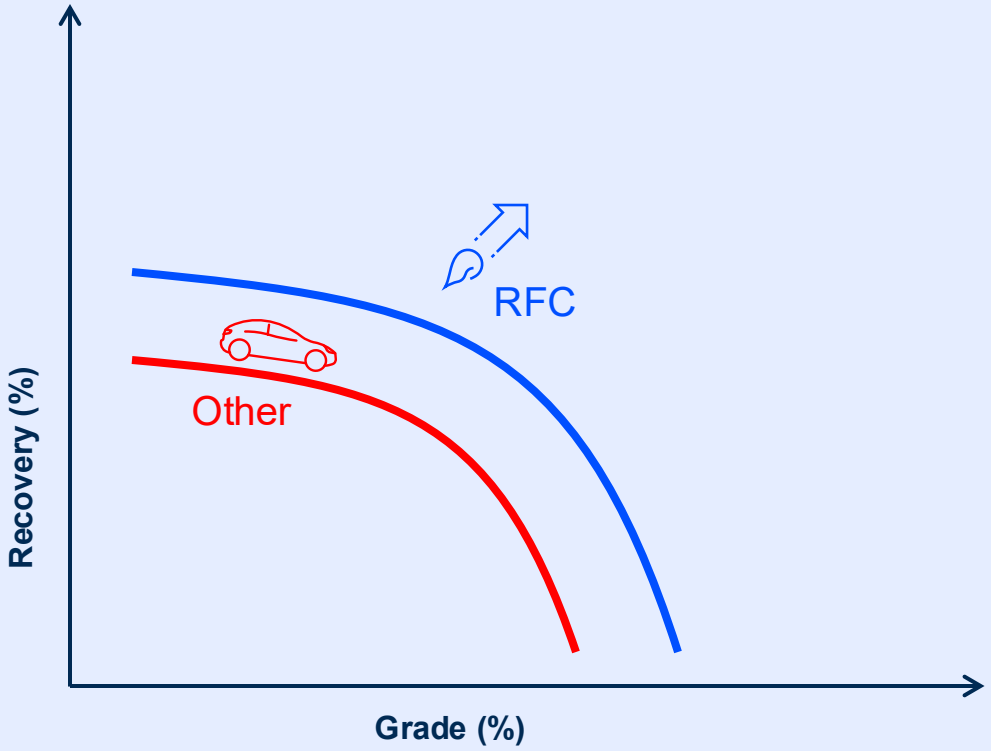


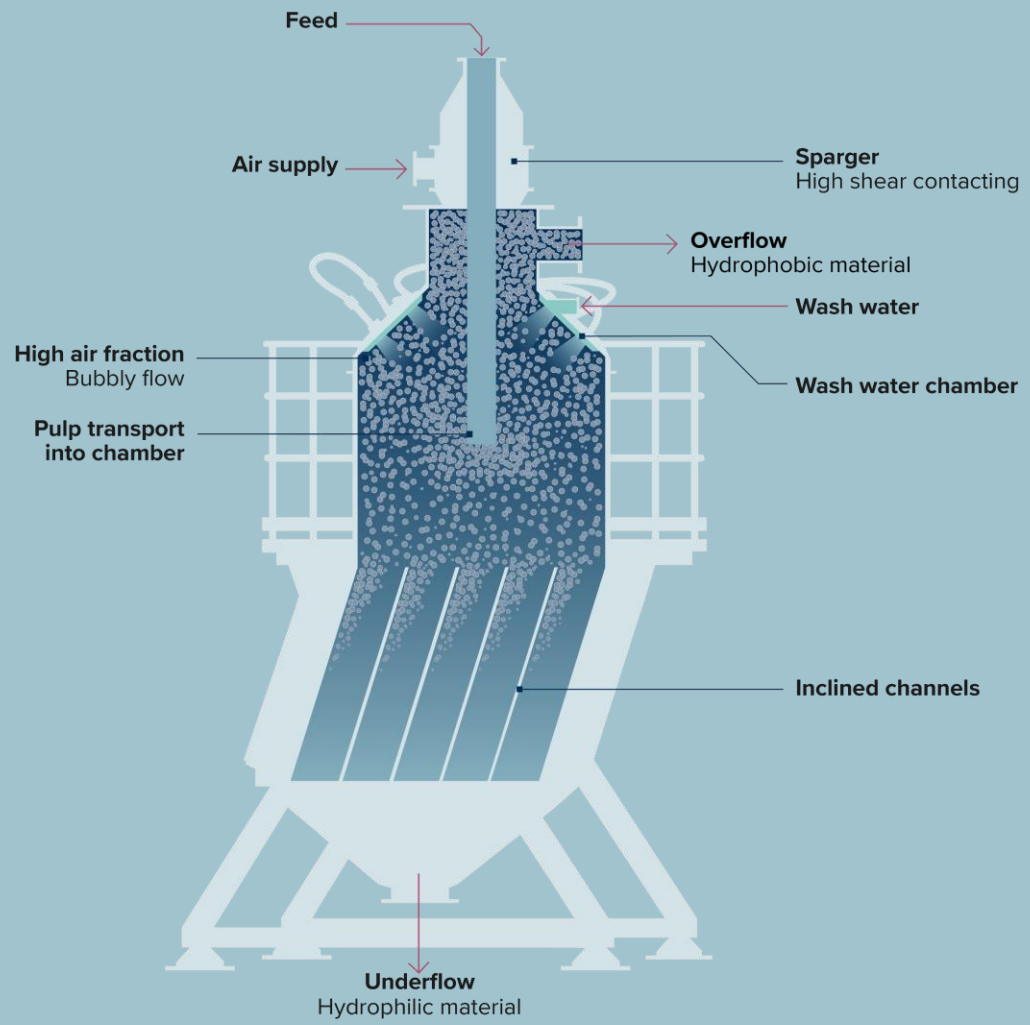
1. Extraction	2. Conveying	3. Comminution	4. Pumps, Cyclones and Valves	5. Beneficiation and Recovery	6. Thickening	7. Filtration	8. Tailings management

The Challenge for Flotation Technology



REFLUX™ Flotation Cell - Design





RFC – Select Recent Testing Results Summary

Application	Retention Time Reduction	Stages Tested	Highlight
Copper Rougher – North America	12x	1	Exceeding Bench Cu Recovery
Copper Rougher – Australia	8x	2	Exceed production recovery, enhanced grade
Coal – Australia	10x	1	Improved product quality
Gold Tailings – North America	5x	1	Improved recovery
Moly Cleaner – North America	2.5x	1	Product quality improved
Graphite	2-3x	1	Product quality significantly improved
Nickel	25x	1	Product quality improved
Potash	6-7x	1	Exceed production recovery, enhanced grade

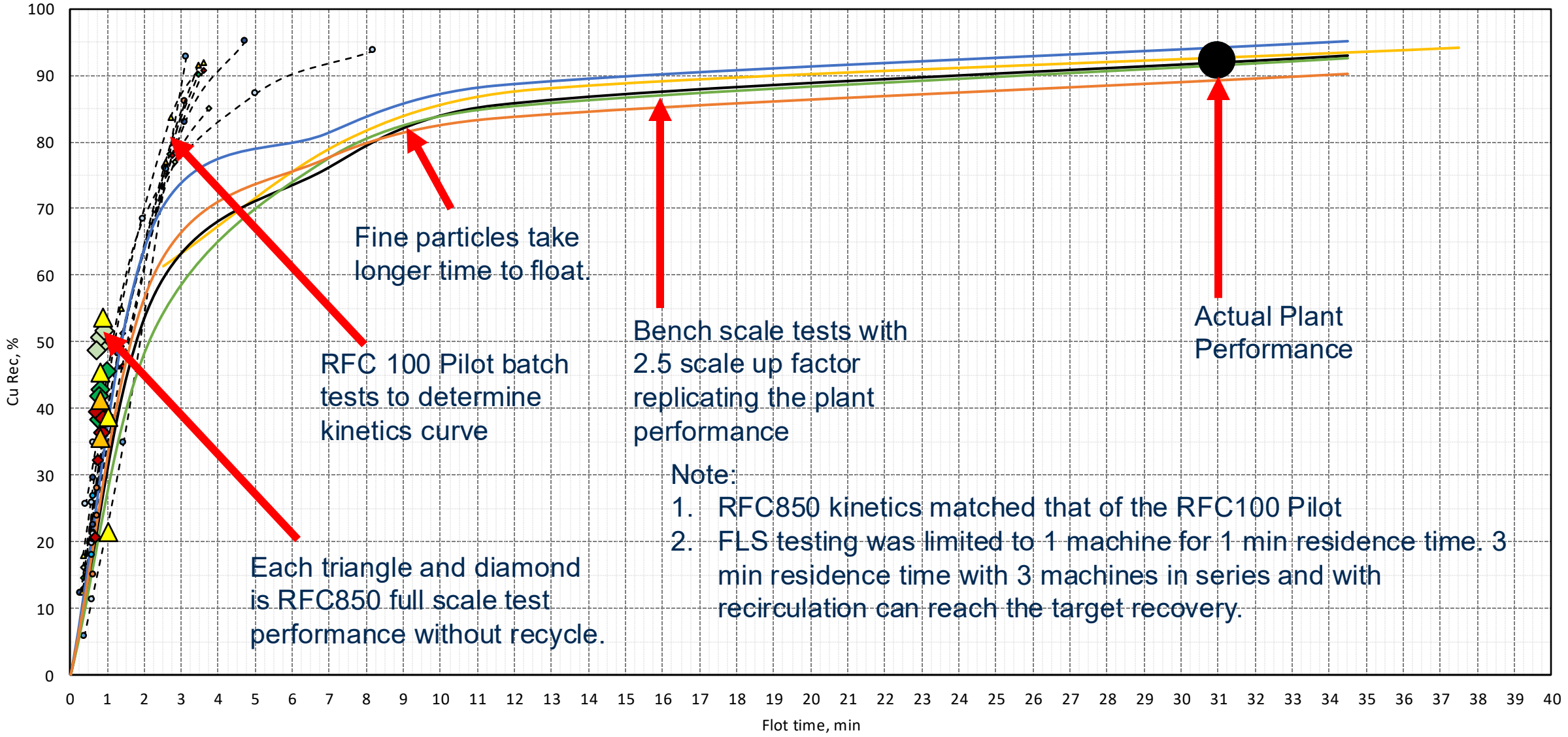
Full Scale Trial - Copper

Industrial Scale RFC850 Installation

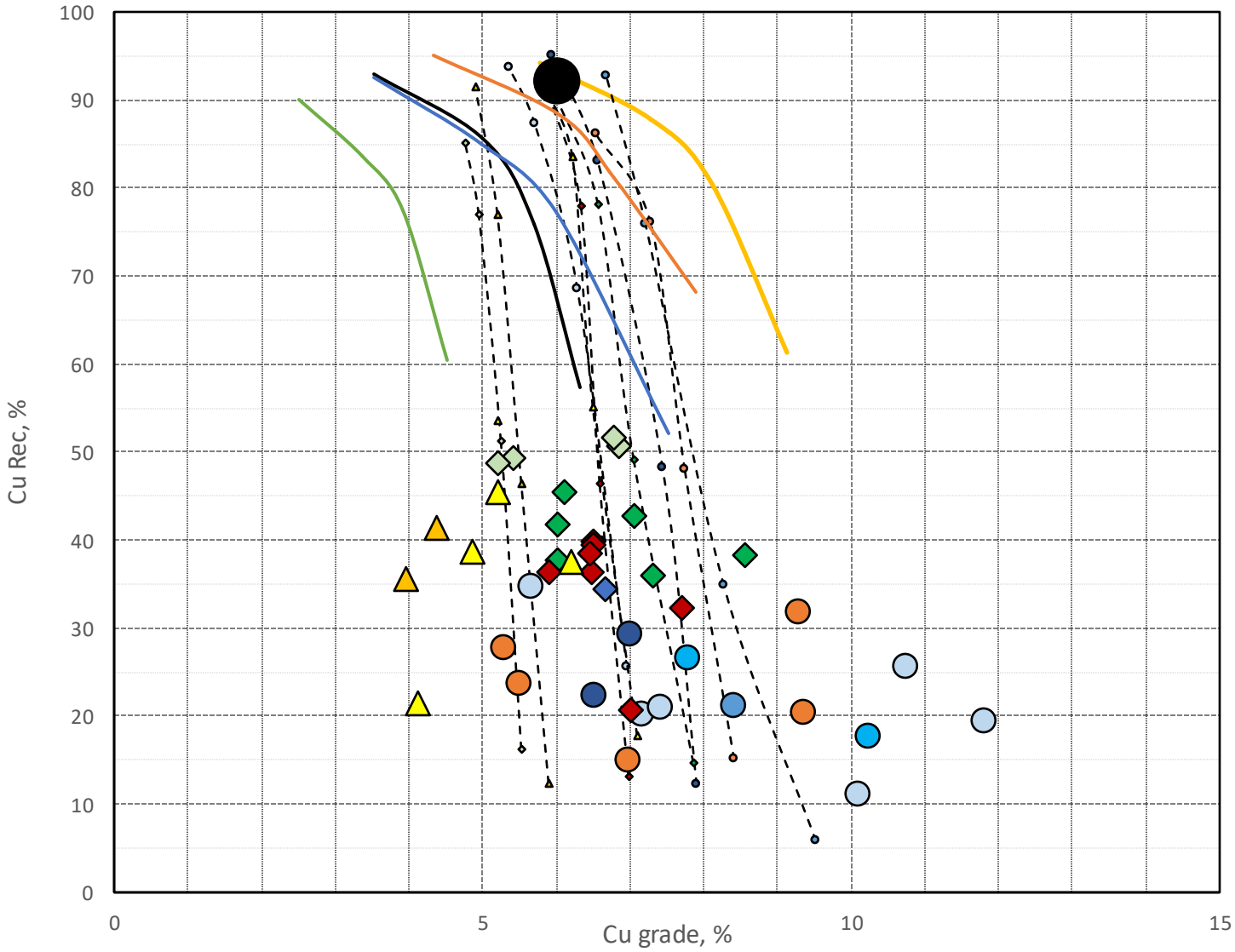
Installation at KGHM Polkowice Concentrator

1. Feed Piping
2. Sparger Arrangement
3. Concentrate Piping
4. Wash Water Chamber
5. Separation Chamber
6. Lamella Chamber

RFC100 Batch + Bench + RFC850 + Plant Results

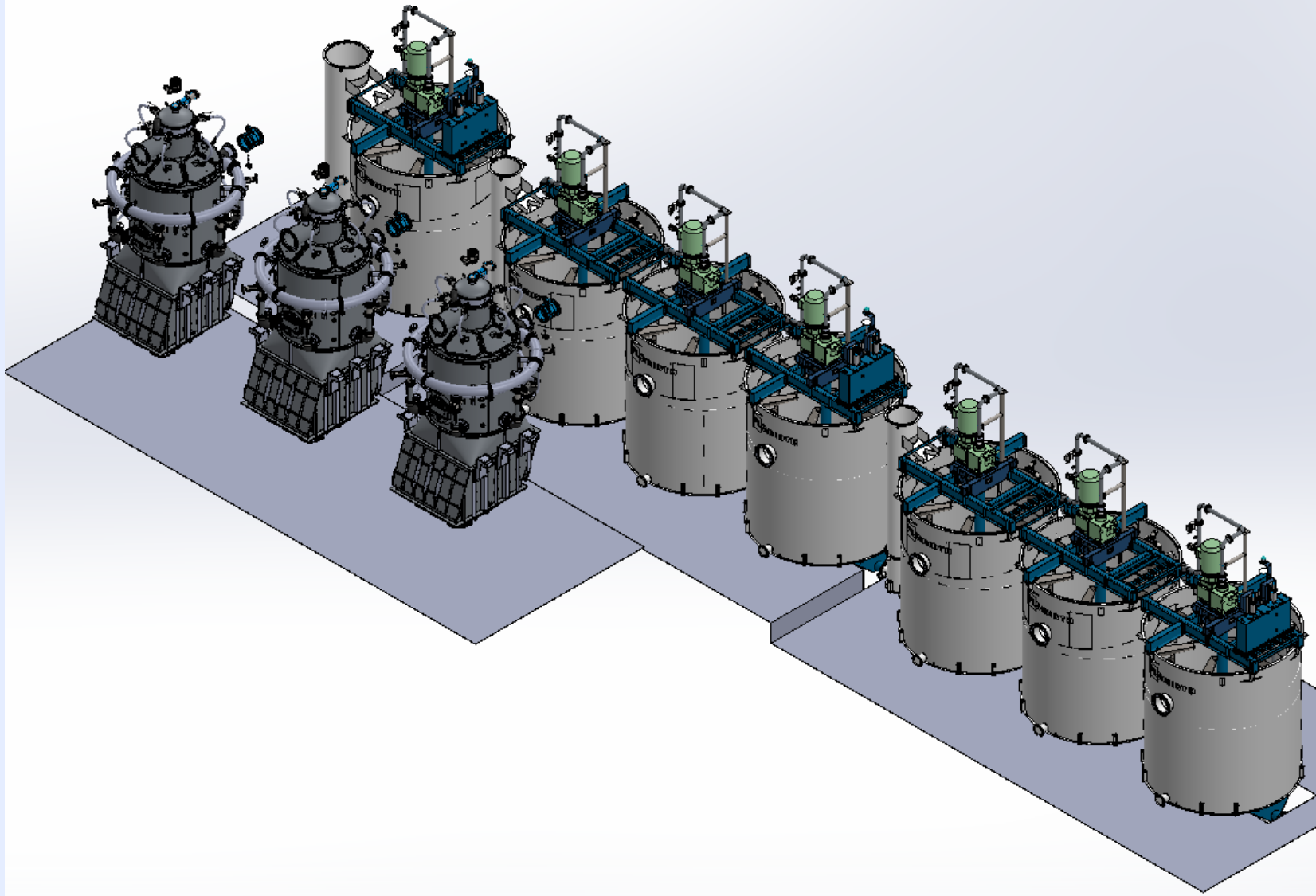


RFC100 Batch + Bench + RFC850 + Plant Results



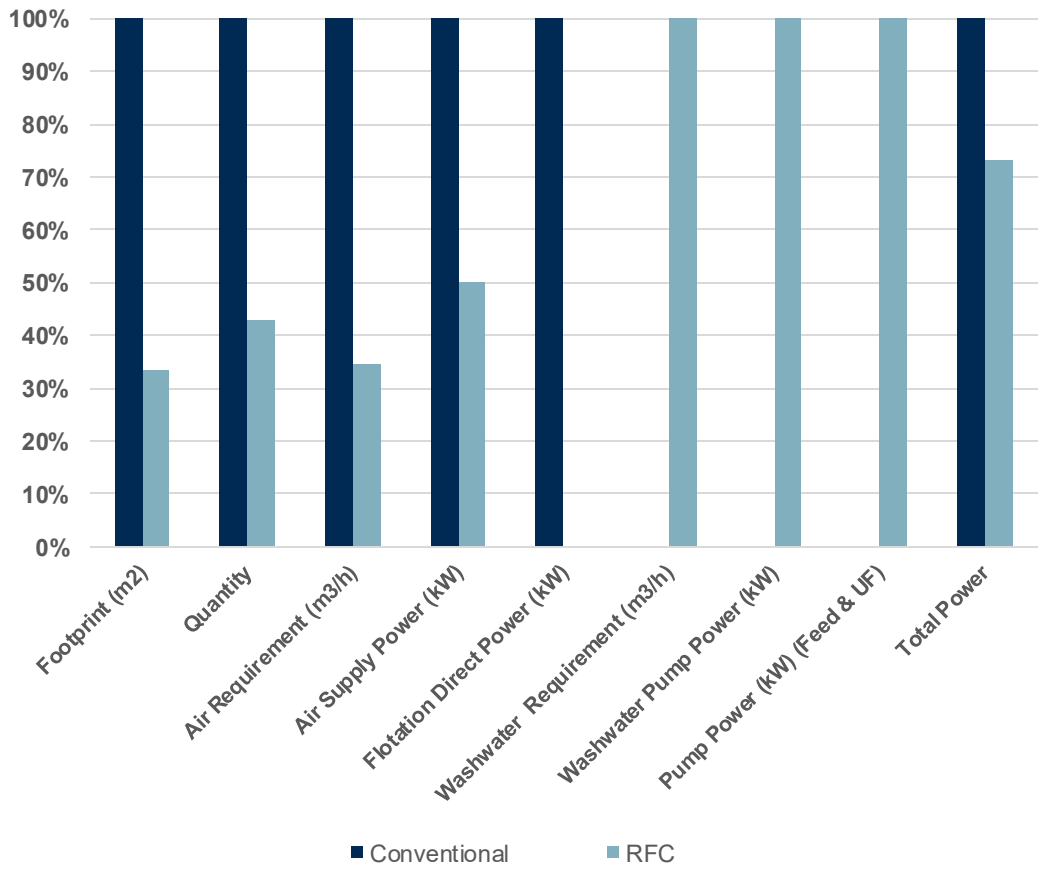
Comparison to conventional

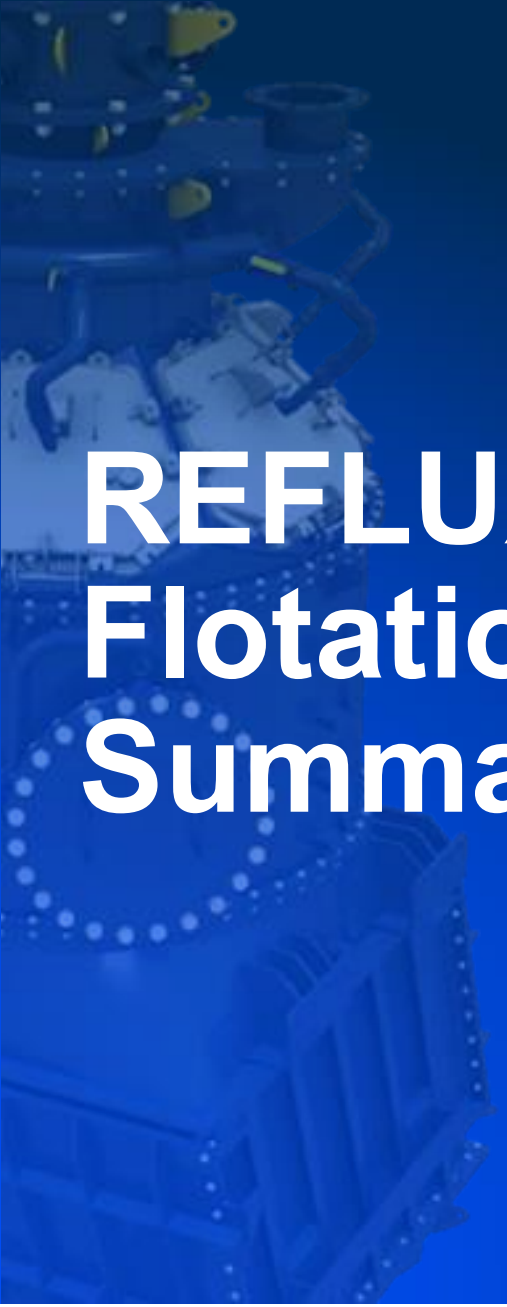
- 3 x RFC2350 equivalent to 7 x 50m^3 conventional cells
- 1-3% increase in recovery possible
- Equal or slight improvement in grade



Implications on circuit design
Copper Scavenger flotation

Parameters	RFC	Conventional	% Reduction in RFC
Size	2.35m Dia x 7m H	48m3	NA
Footprint (m^2)	109	325	66%
Quantity	3	7	57%
Air Requirement (m^3/h)	937	2700	65%
Air Supply Power (kW)	75	150	50%
Flotation Direct Power (kW)	0	315	100%
Wash Water (m^3/h)	468	0	0%
Wash Water Power (kW)	76	0	0%
Pump Power (Feed & UF)	189	0	0%
Total Power	340	465	27%





REFLUX™ Flotation Cell Summary

1. **Kinetics** of system are substantially quicker than existing open cell systems
2. **Recovery** advantage when compared to full scale conventional and bench top equipment
3. **Improved grade** when compared to open cell system especially flotation equipment designed for cleaning

Resulting in…

- Reduced flotation volume needed
- Reduction in cleaner circuit loading leading to improved product quality
- Optimized plant energy input
- Simplified maintenance

Lab testing and pilot trials available

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Thank you