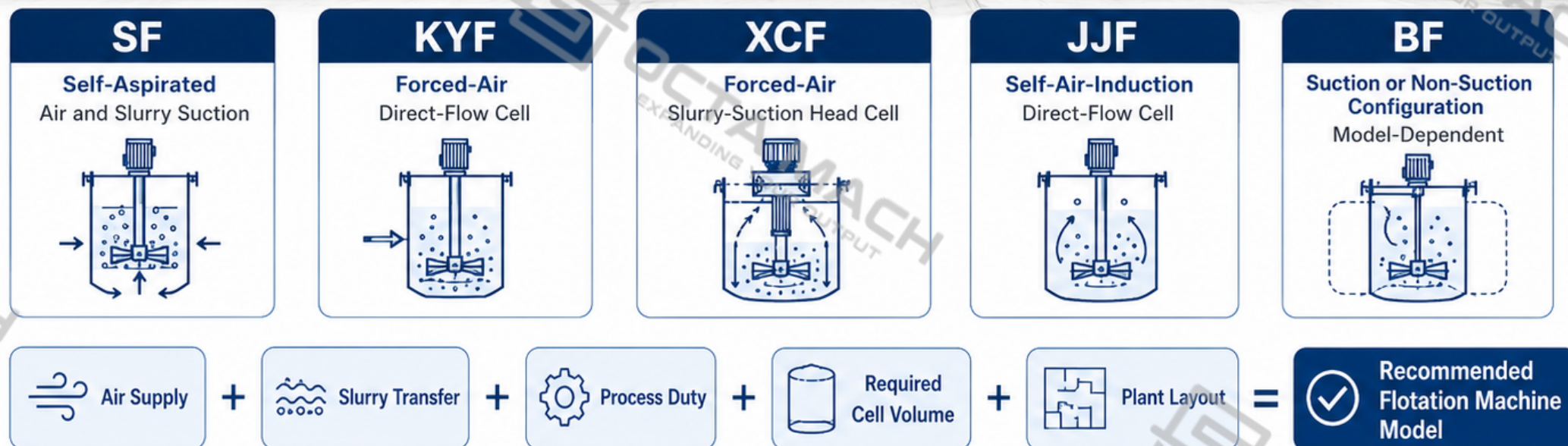


Flotation Machine Model Comparison and Selection Guide

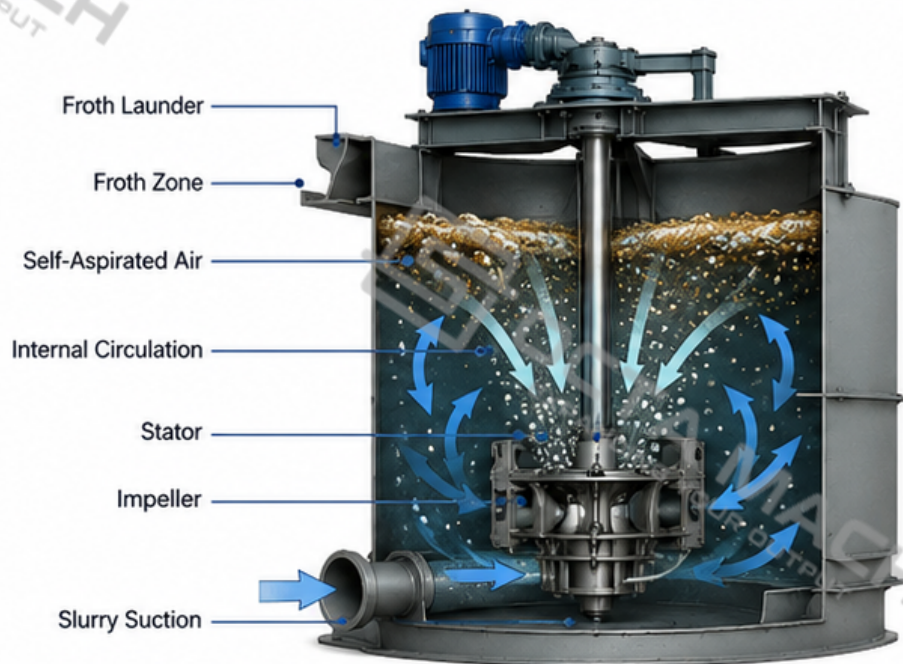
SF, KYF, XCF, JJF and BF Mechanical Flotation Cells



i Model numbers generally indicate nominal effective cell volume, but do not define recovery, dry-ore throughput or complete plant duty.

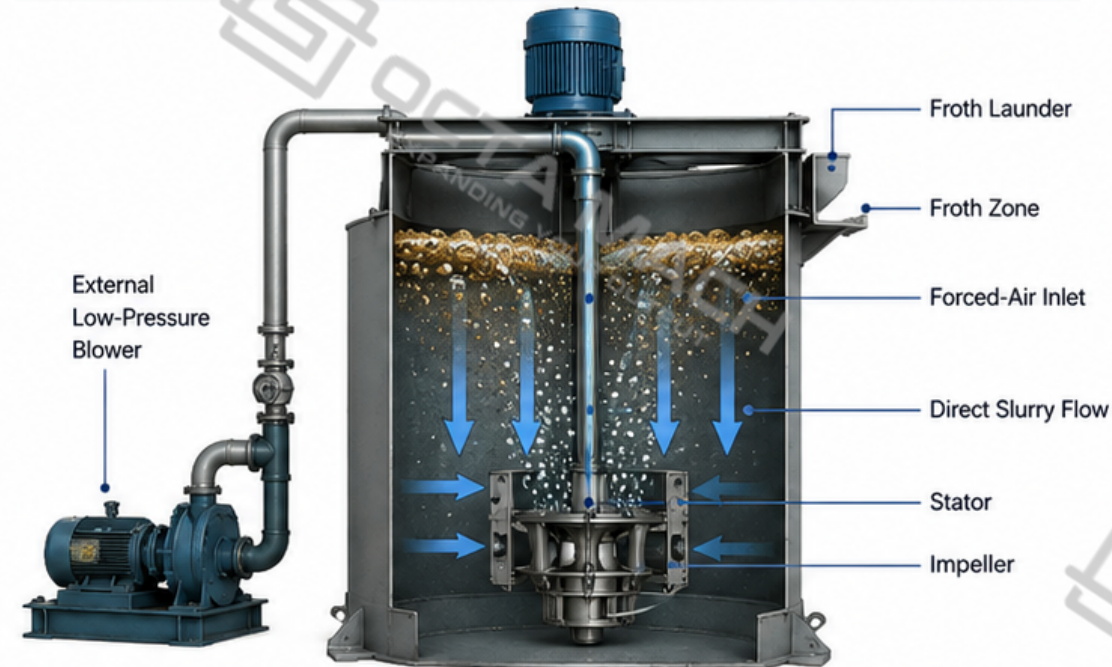
SF vs KYF Operating Differences

SF Flotation Machine (Self-Aspirated)



- Air is drawn into the pulp by impeller-generated negative pressure.
- Air intake is linked to impeller speed, wear condition and slurry properties.
- The cell can provide slurry suction.
- An external flotation-air blower is generally not required.

KYF Flotation Machine (Forced-Air)



- Air is supplied by an external low-pressure blower.
- Airflow can be adjusted separately from much of the mixing duty.
- The standard cell does not provide independent slurry suction.
- Feed transfer, elevation or an XCF head cell must be considered.

Comparison Item	SF Flotation Machine (Self-Aspirated)	KYF Flotation Machine (Forced-Air)
Air Supply	Self-aspirated by impeller (negative pressure)	Supplied by external low-pressure blower
Slurry Suction	Yes, cell can provide slurry suction	No standard slurry suction capability
Airflow Control	Linked to impeller speed and slurry conditions	Air rate can be controlled independently
Auxiliary Equipment	No external blower required (simpler system)	Requires blower, piping, valves and instruments
Typical Bank Arrangement	Can be used as suction cell or in horizontal banks	Direct-flow cells; need elevation, pump or XCF head cell

KYF Flotation Machine Parameters



Model	Tank Size L x W x H (mm)	Effective Volume (m ³)	Slurry Capacity (m ³ /min)	Main Motor (kW)	Impeller Diameter (mm)	Scraper Motor (kW)
KYF-1	1000 x 1000 x 1100	1	0.2–1	4.0	340	1.1
KYF-2	1300 x 1300 x 1250	2	0.4–2	5.5	410	1.1
KYF-3	1600 x 1600 x 1400	3	0.6–3	7.5	480	1.5
KYF-4	1800 x 1800 x 1500	4	1.2–4	11.0	550	1.5
KYF-8	2200 x 2200 x 1950	8	3–8	15.0	630	1.5
KYF-16	2800 x 2800 x 2400	16	4–16	30.0	740	1.5
KYF-24	3100 x 3100 x 2900	24	4–24	30.0	800	1.5
KYF-38	3600 x 3600 x 3400	38	10–38	37.0	880	1.5

- Capacity is expressed as slurry volume in m³/min.
- Published values are for preliminary model comparison.
- Final selection requires flotation testwork and complete process-flow data.

SF Flotation Machine Parameters



Model	Effective Volume (m ³)	Tank Size L × W × H (mm)	Impeller Diameter (mm)	Impeller Speed (r/min)	Slurry Capacity (m ³ /min)	Motor Power Main/Scrapper (kW)	Air Intake (m ³ /min)
SF-0.7	0.7	820 × 900 × 950	350	400	0.3–0.9	3/1.1	0.8–1.0
SF-1.2	1.2	1100 × 1100 × 1100	450	312	0.6–1.2	5.5/1.1	1.0–1.2
SF-2.8	2.8	1700 × 1600 × 1150	550	268	1.5–3.5	11/1.5	1.0–1.2
SF-4	4.0	1850 × 2050 × 1200	650	220	2–4.0	15/1.5	1.0–1.2
SF-8	8.0	2200 × 2900 × 1400	760	191	4–8.0	30/1.5	0.9–1.0
SF-10	10.0	2200 × 2900 × 1700	760	191	5–10.0	30/1.5	0.9–1.0
SF-16	16.0	2850 × 3800 × 1700	760	191	5–16.0	30 × 2/1.5	0.9–1.0
SF-20	20.0	2850 × 3800 × 2000	760	191	5–20.0	30 × 2/1.5	0.9–1.0

- SF cells combine mechanical agitation, air suction and slurry suction.
- Capacity is expressed as slurry volume, not dry-ore tonnes per hour.
- Actual performance depends on ore, particle size, pulp density and process duty.

KYF-8 vs SF-8

KYF-8

Forced-Air Flotation Cell



Item	KYF-8	SF-8
Effective Volume	8 m ³	8 m ³
Tank Size	2200 × 2200 × 1950 mm	2200 × 2900 × 1400 mm
Slurry Capacity	3–8 m ³ /min	4–8 m ³ /min
Main Motor	15 kW	30 kW
Scraper Motor	1.5 kW	1.5 kW
Impeller Diameter	630 mm	760 mm
Impeller Speed	Not Stated	191 r/min
Air System	External Low-Pressure Blower	Self-Aspirated
Slurry Suction	No Standard Self-Suction	Yes

SF-8

Self-Aspirated Flotation Cell



Same Cell Volume Does Not Mean Same Machine Duty



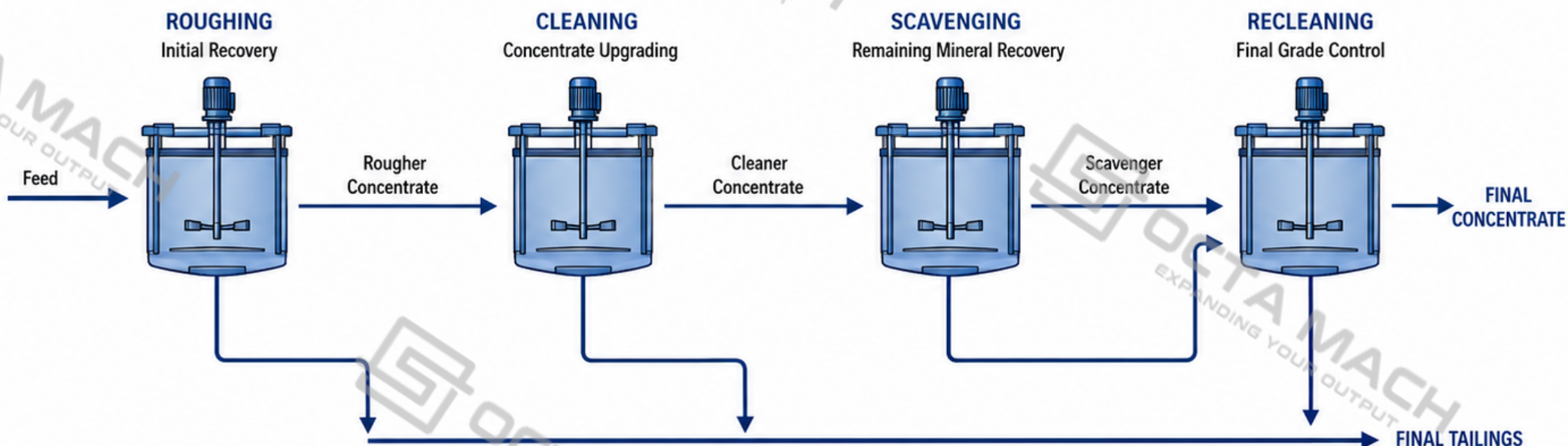
Note 1: KYF total plant power must include the blower and any slurry-transfer equipment.



Note 2: SF uses the impeller for suspension, circulation and air induction.

Flotation Stages and Cell Sizing

1. FLOTATION PROCESS STAGES



2. FLOTATION CELL SIZING

REQUIRED TOTAL EFFECTIVE VOLUME

$$\text{Slurry Volumetric Flow} = \text{Slurry Volumetric Flow} \times \text{Required Flotation Residence Time}$$

NUMBER OF CELLS

$$\text{Number of Cells} = \frac{\text{Required Total Effective Volume}}{\text{Effective Volume per Cell}}$$



**m³/min Is Slurry Volume,
Not Dry-Ore Throughput**

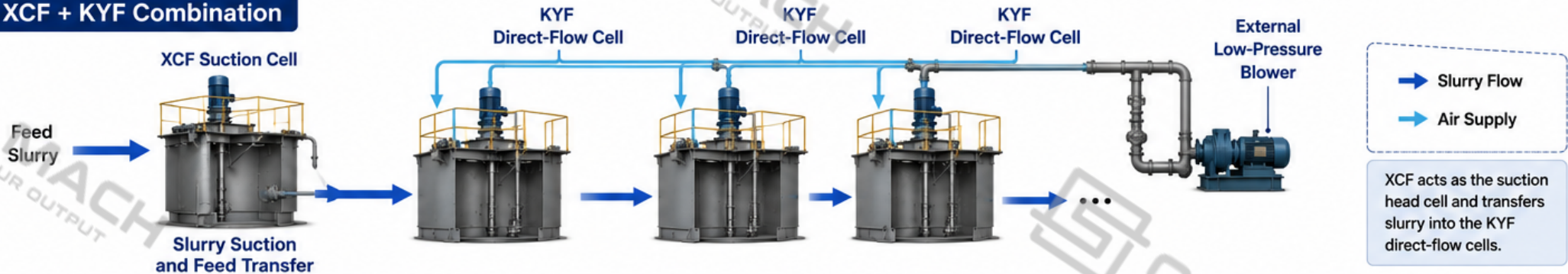
SIZING CHECKS

- ✓ Operating Volume
- ✓ Froth Volume
- ✓ Solids Concentration
- ✓ Recirculating Middlings
- ✓ Stage Recovery
- ✓ Process-Control Requirements

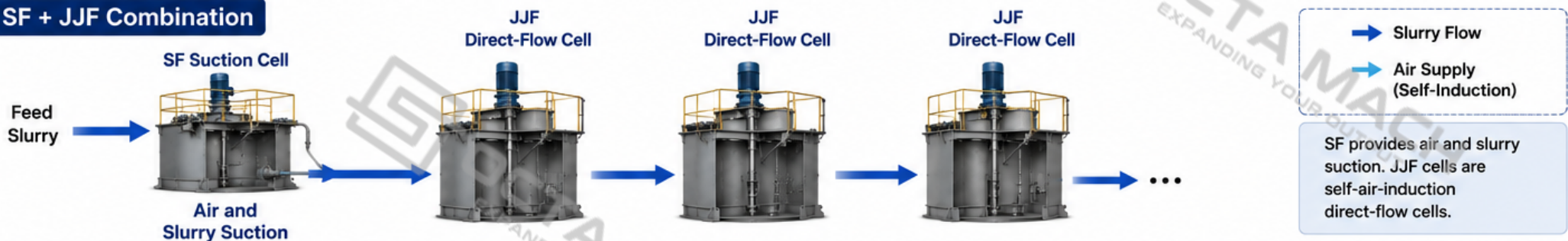
Bank Arrangements and Final Selection Checklist

TOP SECTION — MODEL COMBINATIONS

1 XCF + KYF Combination



2 SF + JJF Combination



BOTTOM SECTION — FINAL SELECTION CHECKLIST

☐ Mineralogy	☐ Solids Concentration	☐ Required Airflow	☐ Blower and Pump Interfaces
☐ Mineral Liberation	☐ Slurry Density	☐ Residence Time	☐ Wear Conditions
☐ Feed Particle-Size Distribution	☐ Process Duty	☐ Froth Handling	☐ Voltage and Frequency
☐ Slurry Flow	☐ Flotation Kinetics	☐ Plant Elevation	☐ Laboratory or Pilot Test Data



Final flotation-machine selection must be based on the complete flowsheet, not cell volume or motor power alone.