50 HP Tesla Disc Pump vs Discflo Interpolation Performance Envelopes 30 ft Head

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Below is a recalculated, engineering-consistent comparison at a fixed target head of 30 ft for 50 HP class pumps, followed by a complete mining-ready article.
All values are based on:
- Target total dynamic head: 30 ft (9.1 m)
- Fluid cases:
  - Wash water: SG 1.03, viscosity 1.2 cP
  - Dirty slurry water: SG 1.15, viscosity 5 cP
- 50 HP shaft power limit
- Realistic overall efficiencies:
  - Tesla style disc pump: 38 percent
  - Discflo type Discpac pump: 48 percent

These efficiencies are consistent with wide-gap mining tolerant Tesla pumps versus engineered Discpac geometry.

Power available for pumping
50 HP = 37.3 kW
Hydraulic power:
Tesla style
37.3 × 0.38 = 14.2 kW hydraulic
Discflo type
37.3 × 0.48 = 17.9 kW hydraulic

Flow calculation at 30 ft head
Hydraulic power equation:
Power = rho × g × Q × H
Solve for Q.
Case 1 Wash water (SG 1.03)
Density ≈ 1030 kg per cubic meter
Head = 9.1 m
Tesla style
Q = 14,200 / (1030 × 9.81 × 9.1)
Q ≈ 0.153 cubic meters per second
Q ≈ 2,420 gpm
Q ≈ 549 m3 per hour
Discflo type
Q = 17,900 / (1030 × 9.81 × 9.1)
Q ≈ 0.193 cubic meters per second
Q ≈ 3,050 gpm
Q ≈ 694 m3 per hour

Case 2 Dirty slurry water (SG 1.15)

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