

Richardson and Shaw IPR @ model

A specific [IPR](#) model:

(1) $\frac{q_O}{q_{O,max}} = 1 - a \frac{p_{wf}}{p_r} - (1 - a) \left(\frac{p_{wf}}{p_r} \right)^2$, $p_b > p_r > p_{wf}$, $\{0 < a < 1\}$

where

q_O	surface production rate of rate
$q_{O,max}$	Absolute Open Flow (AOF) for oil
p_{wf}	bottom-hole pressure (BHP)
p_r	drainarea formation pressure
p_b	bubble-point pressure
a	model parameter $\{0 < a < 1\}$

This is a generalisation of [Vogel](#) model and reduces to [Vogel](#) model for $a = 0.2$.

It also goes as a partial case of the [Wiggins IPR @ model](#) with $\{a_1 = a, a_2 = 1 - a, a_k = 0, \forall k > 2\}$

See also

[Petroleum Industry / Upstream / Production / Subsurface Production / Subsurface E&P Disciplines / Field Study & Modelling / Production Analysis / Productivity Diagnostics / Inflow Performance Relation \(IPR\)](#)

[\[Vogel IPR @model \]](#) [\[Richardson and Shaw IPR @ model \]](#) [\[Wiggins IPR @ model \]](#)[\[LIT IPR @ model \]](#)[\[PADE IPR @ model \]](#)

References

- [Richardson, J. M., & Shaw, A. H. \(1982, March 1\). Two-rate IPR Testinga Practical Production Tool. Petroleum Society of Canada. doi:10.2118/82-02-01](#)
- [Vogel, J. V. \(1968, January 1\). Inflow Performance Relationships for Solution-Gas Drive Wells. Society of Petroleum Engineers. doi:10.2118/1476-PA](#)
- [Archer, R. A., Del Castillo, Y., & Blasingame, T. A. \(2003, January 1\). New Perspectives on Vogel Type IPR Models for Gas Condensate and Solution-Gas Drive Systems. Society of Petroleum Engineers. doi:10.2118/80907-MS](#)
- [Seidle, J. P., & Erickson, D. J. \(1993, January 1\). Use of Vogel’s Inflow Performance Relation for Coal Wells. Society of Petroleum Engineers. doi:10.2118/26201-MS](#)