

# Pressure Diffusion @model

There is a large number of various [pressure diffusion models](#).

## Application-based classification

The table below shows a list of [Pressure Diffusion @model](#) components and corresponding popular models which in some cases can be simulated with [analytical methods](#) to speed up the calculations.

Wellbore storage	Well Trajectory	Well-Reservoir Contact	Reservoir	Boundary model
Constant	Vertical well	Skin-factor	Homogeneous	Unconstrained
Fair	Slanted well	Fractured vertical well	Dual-porosity	Infinite
Rate-dependant	Horizontal well	Limited entry well	Dual-permeability	Fully constrained
		Multifrac horizontal well	Anisotropic reservoir	Circle No Flow / Circle Constant $P_i$
			Multi-layer reservoir	Rectangular No Flow / Rectangular Constant $P_i$
			Linear-composite	Partially constrained
			Radial-composite	Single fault
				Parallel faults
				Intersecting Faults

There is a number of specific [pressure diffusion models](#) which represent the key practical scenarios of [pressure diffusion](#) and play important academical and practical role:

	Transient flow	Steady-State (SS) flow	Pseudo-Steady State (PSS) flow
Radial flow	Radial Flow Pressure Diffusion @model	Steady State Radial Flow Pressure Diffusion @model	Pseudo-Steady State Radial Flow Pressure Diffusion @model
Linear flow	Linear Flow Pressure Diffusion @model	Steady State Linear Pressure Diffusion @model	Pseudo-Steady State Linear Pressure Diffusion @model

## Computation-based classification

The table below shows the popular [pressure diffusion models](#) categories based on computation specifics:

Number of phases	Number of wells	Equation Linearity	Computational Scheme	Spatial dimension	
Single-phase	Single-well	Linear	Analytical	0D	
Multi-phase	Multi-well	Pseudo-Linear	Numerical	1D	
		Non-linear			
				2D	
				3D	

The usual combinations are:

Linear Analytical 1D	Pseudo-Linear Analytical 1D	Non-Linear Numerical 2D/3D
Single-phase Linear Analytical 1D	Single-phase Pseudo-Linear Analytical 1D	Single-phase Non-Linear Numerical 1D /2D/3D
Multi-phase Linear Analytical 1D	Multi-phase Pseudo-Linear Analytical 1D	Multi-phase Non-Linear Numerical 1D/2D/3D

In many practical cases a [pressure diffusion](#) process is honouring some [PDE](#) with constant coefficients availing a number of very efficient computational and diagnostic techniques:

Time Convolution	Spatial Superposition
Pressure convolution model	Pressure superposition model
Pressure deconvolution model	Pressure decomposition model

In some cases a [pressure diffusion](#) process can be fairly approximated by a hybrid model based on [PDE](#) with constant coefficients and [PseudoPressure](#) and [PseudoTime](#).

## See also

[Physics / Mechanics / Continuum mechanics / Fluid Mechanics / Fluid Dynamics / Pressure Diffusion](#)

[Petroleum Industry / Upstream / Subsurface E&P Disciplines / Well Testing / Pressure Testing](#)

[\[ Slightly Compressible Flow \] \[ PseudoPressure \] \[ PseudoTime \]](#)

[\[ Radial Flow Pressure Diffusion @model \] \[ Linear Flow Pressure Diffusion @model \]](#)