

# DCA ANN @model

[@wikipedia](#)

One of mathematical models of [Decline Curve Analysis](#) based on the following equations:

|                                                                    |                                  |
|--------------------------------------------------------------------|----------------------------------|
| $(1) \quad q(t) = q_0 \cdot \exp\left[-\int_0^t D(Q(t)) dt\right]$ | $(2) \quad D(Q) = \text{ANN}(Q)$ |
|--------------------------------------------------------------------|----------------------------------|

where

|                          |                                                                                                                  |
|--------------------------|------------------------------------------------------------------------------------------------------------------|
| $q_0 = q(t = 0)$         | Initial production rate of a well (or groups of wells)                                                           |
| $D(t) = -\frac{dq}{dQ}$  | <a href="#">Production decline rate</a>                                                                          |
| $Q(t) = \int_0^t q(t)dt$ | cumulative production                                                                                            |
| $\text{ANN}(Q)$          | artificial neural-network regression of <a href="#">Production decline rate</a> $D$ on cumulative production $Q$ |

[DCA ANN](#) is an empirical correlation for production from both finite-reserves  $Q_{\max} \leq \infty$  or infinite-reserves  $Q_{\max} = \infty$  r  
eservoirs.

## See Also

[Petroleum Industry](#) / [Upstream](#) / [Production](#) / [Subsurface Production](#) / [Field Study & Modelling](#) / [Production Analysis](#) / [Decline Curve Analysis](#)

[ [DCA Arps @model](#) ] [ [Production decline rate](#) ]