

## Internal Rate of Return - IRR

### Internal Rate of Return - IRR - the project break-even interest rate

A primary measure of an investments worth is based on yield and known as the *internal rate of return - IRR*. The *internal rate of return* can be defined as the *break-even interest rate* which equates the [Net Present Worth - NPW](#) - (Net Present Value) of a projects cash flow in and out.

$$PW(i_{rr}) = PW_{cash\_in} - PW_{cash\_out}$$

$$= 0 \quad (1)$$

where

$PW =$  [Present Worth](#)

$i_{rr} =$  internal rate of return

(1) can be expressed as

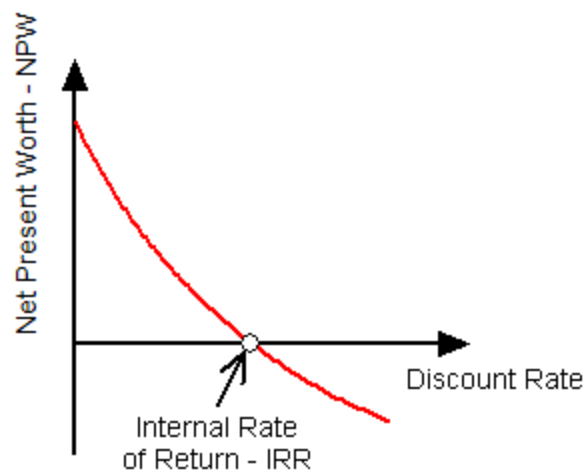
$$PW(i_{rr}) = F_0 / (1 + i_{rr})^0 + F_1 / (1 + i_{rr})^1 + F_2 / (1 + i_{rr})^2 + \dots + F_n / (1 + i_{rr})^n$$

$$= 0 \quad (2)$$

where

$F =$  cash flow

For a given cash flow equation (2) can be solved by iteration.



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## **Minimum Attractive Rate of Return - MARR**

*Minimum Attractive Rate of Return - MARR* - represents the required or minimum Internal Rate of Return for a project investment.

Source:

[http://www.engineeringtoolbox.com/internal-rate-of-return-irr-d\\_1235.html](http://www.engineeringtoolbox.com/internal-rate-of-return-irr-d_1235.html)