

# pimpleFoam

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## 1 The PIMPLE algorithm in OpenFOAM

The PIMPLE algorithm without any keywords is the PISO algorithm.

```
PIMPLE
{
    nOuterCorrectors      50;
    nCorrectors           2;
    nNonOrthogonalCorrectors 1;

    residualControl
    {
        U
        {
            tolerance 1e-5;
            relTol    0;
        }
        p
        {
            tolerance 5e-4;
            relTol    0;
        }
    }
}

relaxationFactors
{
    fields
    {
        p      0.3;
        pFinal  1;
    }
    equations
    {
        "U|k|epsilon"      0.3;
        "(U|k|epsilon)Final" 1;
    }
}
```

## **1.1 nOuterCorrectors**

nOuterCorrectors is the number of times the momentum equation is solved in each time step.

### **1.1.1 relaxationFactors**

relaxationFactors are used the first (nOuterCorrectors - 1) iterations of each time step. Turbulence is calculated at the final iteration of each time step (turbOnFinalIterOnly = true).

## **1.2 nCorrectors**

nCorrectors (nInnerCorrectors) is the number of times the pressure equation is solved at each iteration of the outerCorrectors loop.

## **1.3 nNonOrthogonalCorrectors**

nNonOrthogonalCorrectors is the number of additional times the pressure equation is solved at each iteration of the innerCorrectors loop.

## **1.4 residualControl**

residualControl determines whether the PIMPLE loop is exited before the outerCorrectors loop is completed.