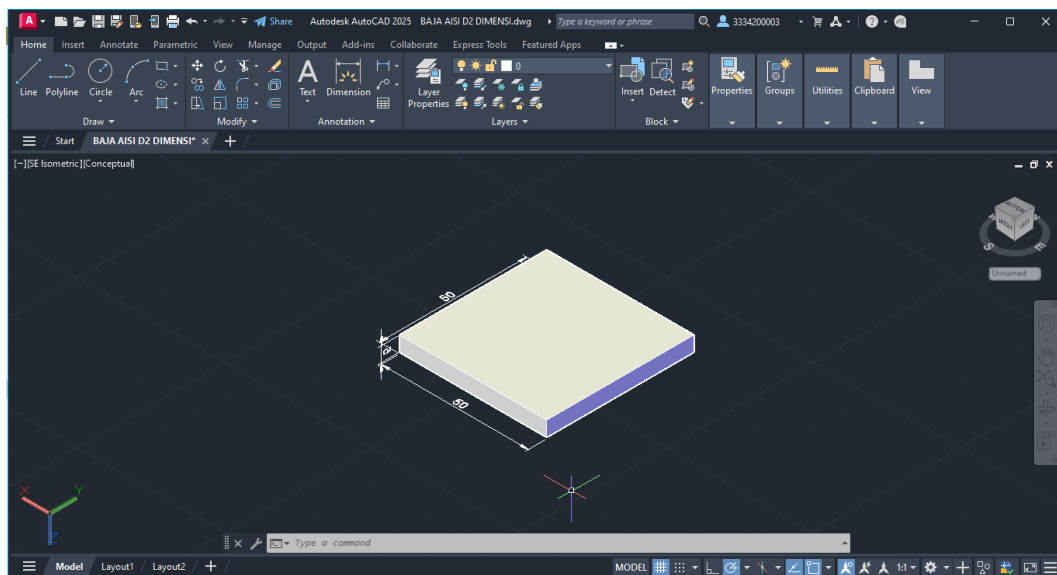
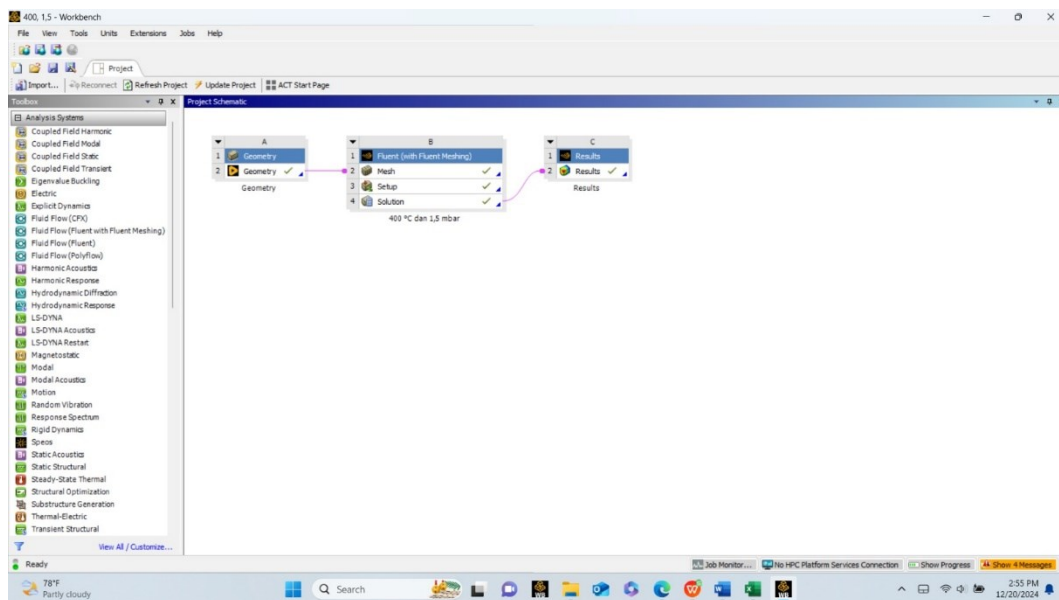


LAMPIRAN

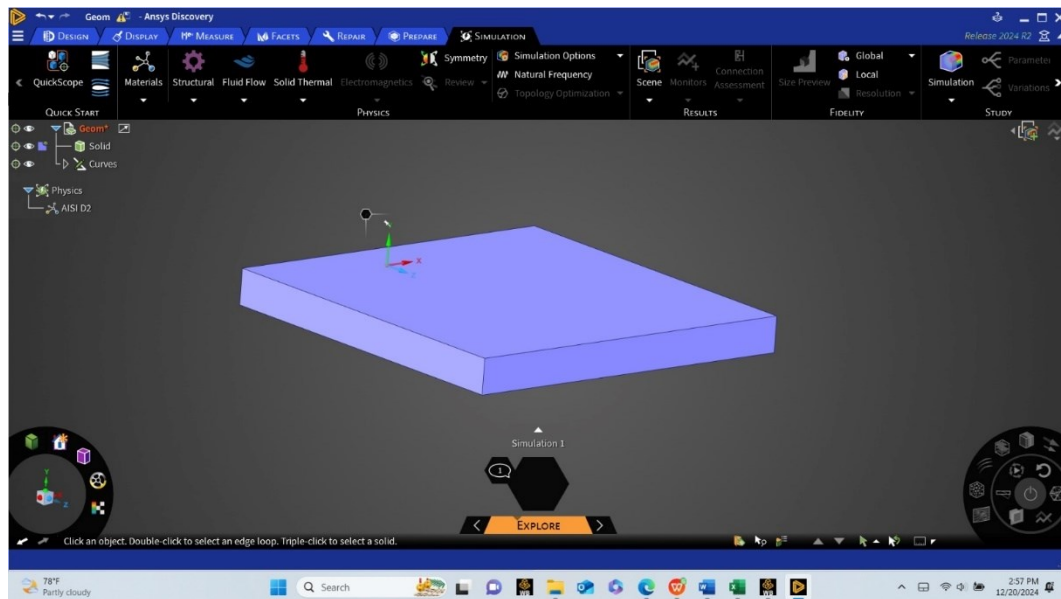
Lampiran A. *Input* Data dan Langkah Simulasi



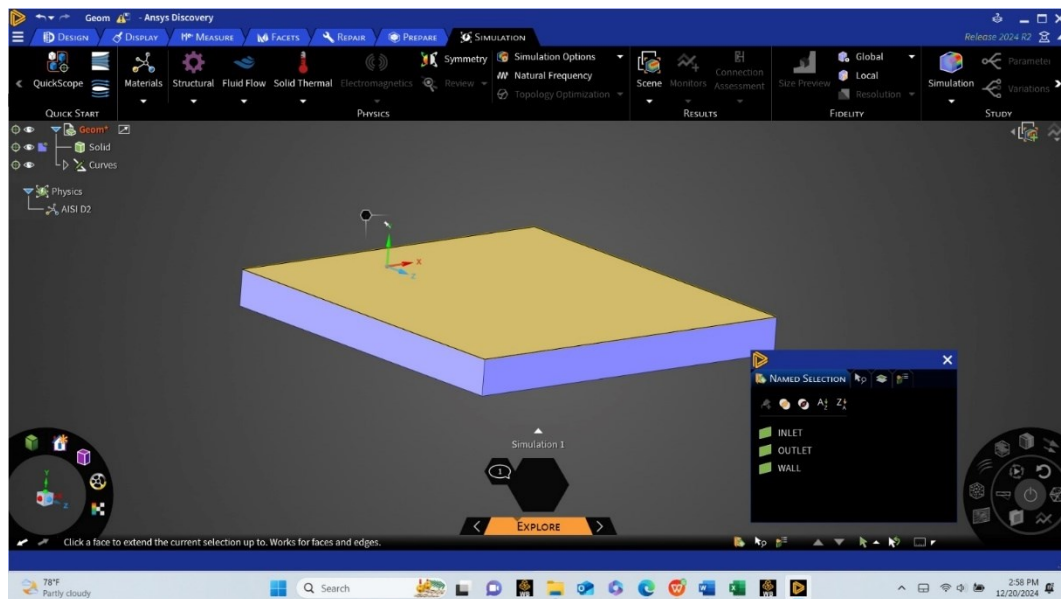
Gambar A.1 Dimensi Geometri pada AutoCAD



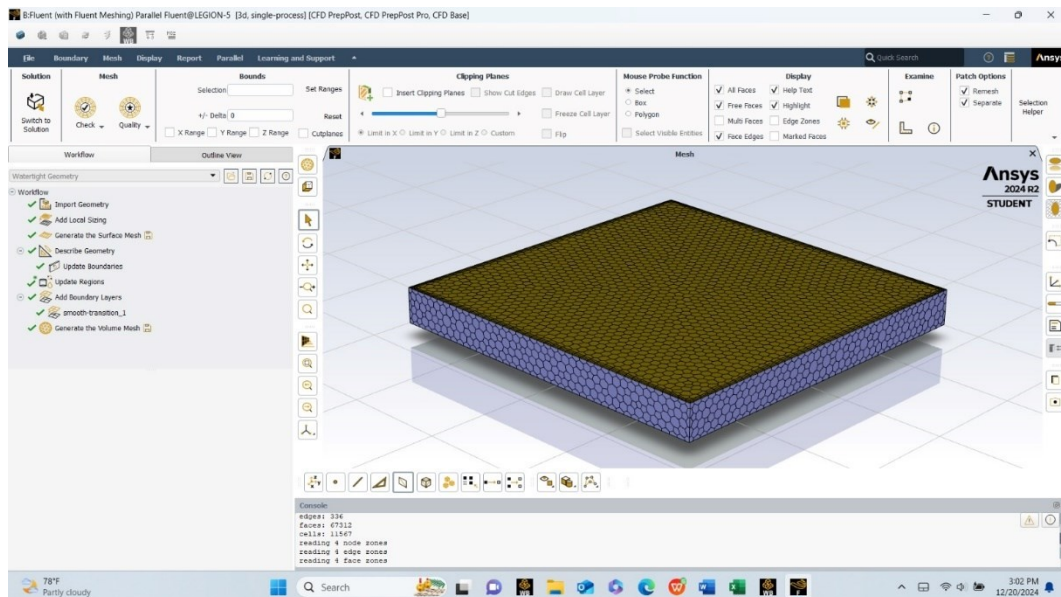
Gambar A.2 Set Up Workbench Ansys



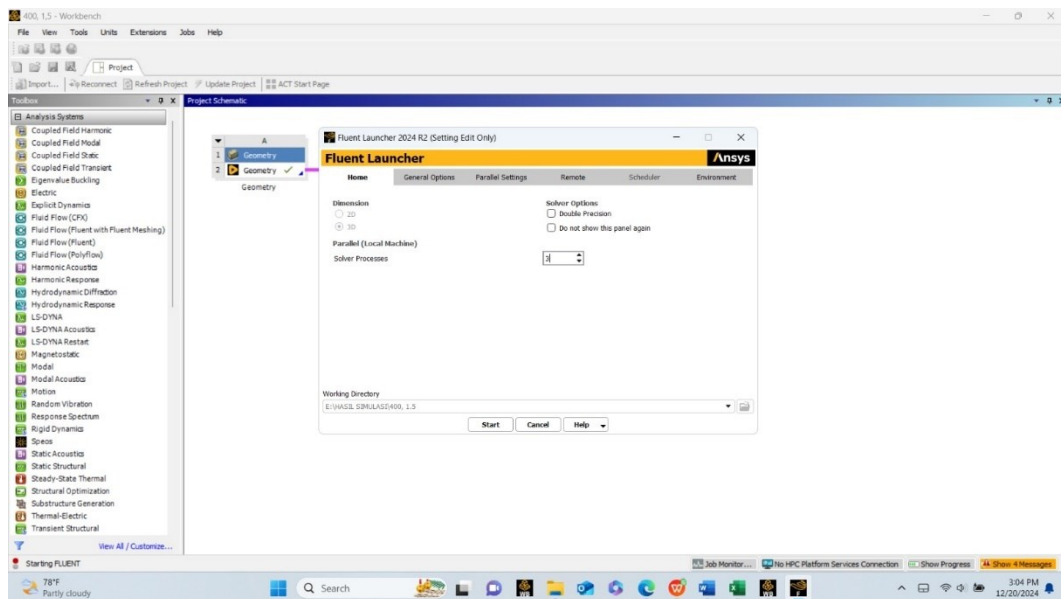
Gambar A.3 *Input Geometri dari AutoCAD*



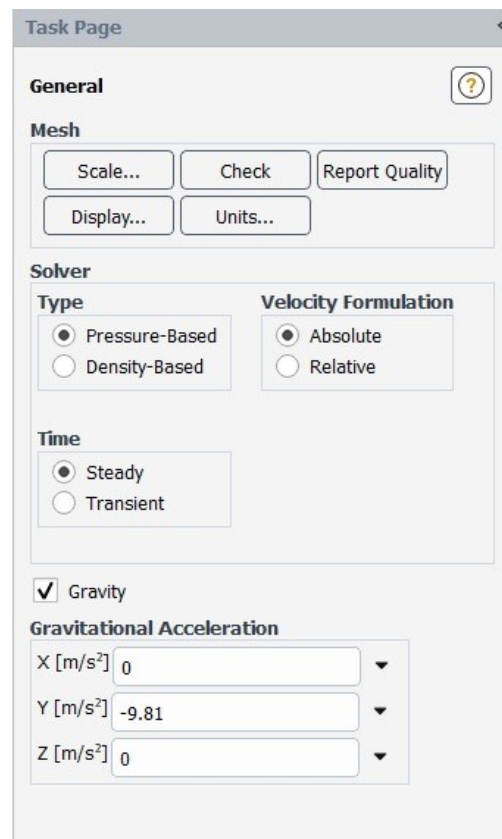
Gambar A.4 *Input Bagian Geometri*



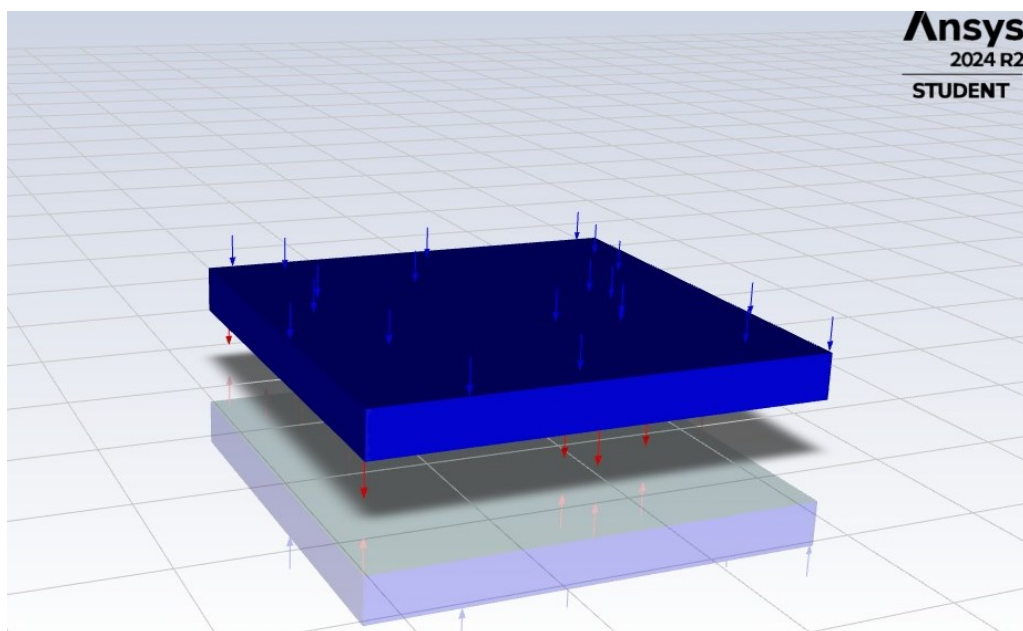
Gambar A.5 Proses *Meshing* pada *Geometri*



Gambar A.6 Setting *Solver* pada *CFD*



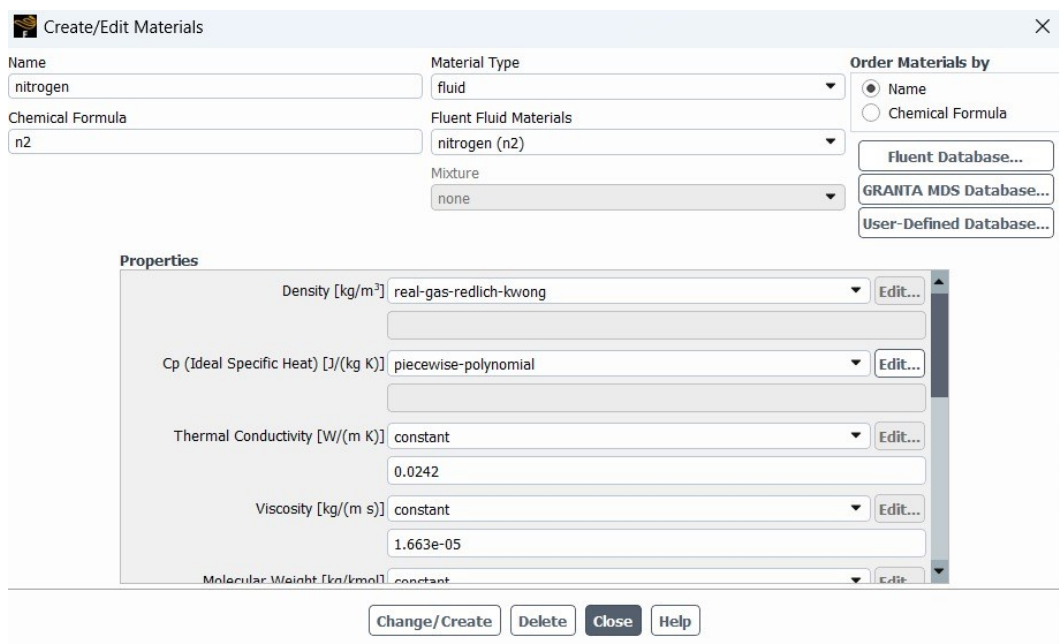
Gambar A.7 Pengaturan Standar Gravitasi dan Tipe Penyelesaian



Gambar A.8 Sistem *Inlet* pada Sampel



Gambar A.9 Pengaturan Temperatur



Gambar A.10 Standar Fisik Gas Nitrogen Pada ANSYS

Create/Edit Materials

Name: d2-steel

Material Type: solid

Chemical Formula:

Fluent Solid Materials: d2-steel

Mixture: none

Order Materials by: ☒ Name ☐ Chemical Formula

Fluent Database...
GRANTA MDS Database...
User-Defined Database...

Properties

Density [kg/m³]: constant 7610 Edit...

Cp (Specific Heat) [J/(kg K)]: constant 460 Edit...

Thermal Conductivity [W/(m K)]: constant 23 Edit...

Change/Create Delete Close Help

Gambar A.11 Standar Sifat Fisik Baja AISI D2 pada ANSYS

Fluid

Zone Name: liquid

Material Name: nitrogen Edit...

☐ Frame Motion ☐ 3D Fan Zone ☐ Source Terms
☐ Mesh Motion ☐ Laminar Zone ☐ Fixed Values
☐ Porous Zone

Reference Frame Mesh Motion Zonal Models Porous Zone 3D Fan Zone Embedded LES Reaction Source Terms Fixed Values Multiphase

Rotation-Axis Origin

X [m]: 0
Y [m]: 0
Z [m]: 0

Rotation-Axis Direction

X: 0
Y: 0
Z: 1

Apply Close Help

Gambar A.12 *Setting Zona Aliran*

Pressure Inlet [X]

Zone Name
inlet

Momentum Thermal Radiation Species DPM Multiphase Potential Structure UDS

Reference Frame: Absolute

Gauge Total Pressure [Pa]: 150

Supersonic/Initial Gauge Pressure [Pa]: 0

Direction Specification Method: Direction Vector

Coordinate System: Cartesian (X, Y, Z)

X-Component of Flow Direction: 0

Y-Component of Flow Direction: -1

Z-Component of Flow Direction: 0

☐ Prevent Reverse Flow

Turbulence

Specification Method: Intensity and Viscosity Ratio

Turbulent Intensity [%]: 5

Turbulent Viscosity Ratio: 10

Apply Close Help

Gambar A.13 *Input Data Inlet*

Pressure Outlet [X]

Zone Name
outlet

Momentum Thermal Radiation Species DPM Multiphase Potential Structure UDS

Backflow Reference Frame: Absolute

Gauge Pressure [Pa]: 100

Pressure Profile Multiplier: 1

Backflow Direction Specification Method: Direction Vector

Coordinate System: Cartesian (X, Y, Z)

X-Component of Flow Direction: 0

Y-Component of Flow Direction: -1

Z-Component of Flow Direction: 0

Backflow Pressure Specification: Total Pressure

☐ Prevent Reverse Flow

☐ Radial Equilibrium Pressure Distribution

☐ Average Pressure Specification

☐ Target Mass Flow Rate

Turbulence

Specification Method: Intensity and Viscosity Ratio

Backflow Turbulent Intensity [%]: 5

Backflow Turbulent Viscosity Ratio: 10

Apply Close Help

Gambar A.14 *Input Data Outlet*

Wall

Zone Name
wall

Adjacent Cell Zone
solid

Momentum Thermal Radiation Species DPM Multiphase UDS Potential Structure Ablation

Thermal Conditions

☐ Heat Flux
☒ Temperature
☐ Convection
☐ Radiation
☐ Mixed
☐ via System Coupling
☐ via Mapped Interface

Temperature [C] 200

Wall Thickness [m] 0

Heat Generation Rate [W/m³] 0

☐ Shell Conduction

Material Name
d2-steel

Apply Close Help

Gambar A.14 *Input Data Wall*

Solution Methods

Pressure-Velocity Coupling

Scheme
SIMPLE

Flux Type
Rhie-Chow: momentum based ☒ Auto Select

Spatial Discretization

Gradient
Least Squares Cell Based

Pressure
Second Order

Density
Second Order Upwind

Momentum
Second Order Upwind

Turbulent Kinetic Energy
Second Order Upwind

Specific Dissipation Rate
Second Order Upwind

Energy
Second Order Upwind

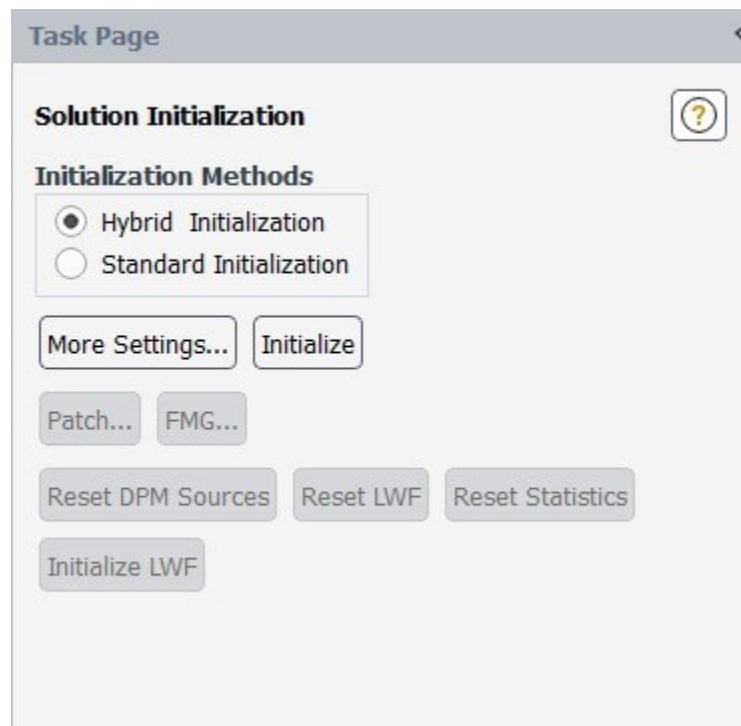
Pseudo Time Method
Off

Transient Formulation

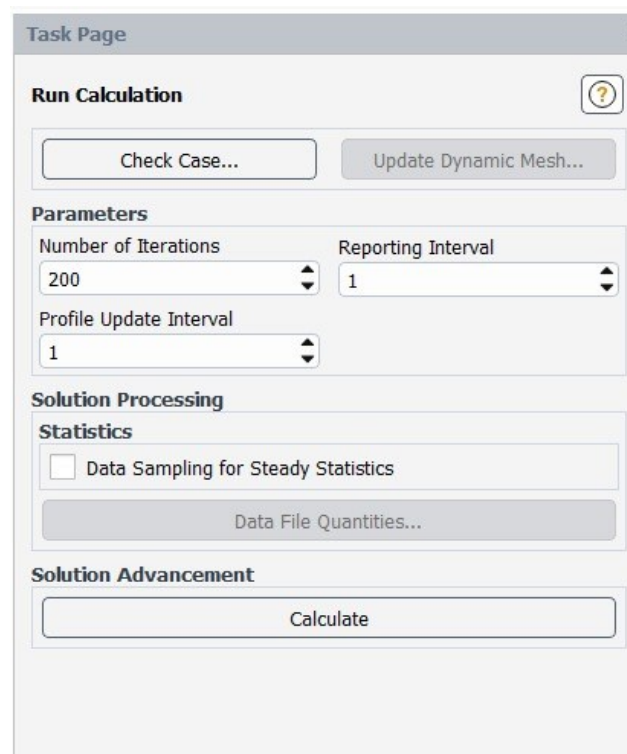
☐ Non-Iterative Time Advancement
☐ Frozen Flux Formulation
☒ Warped-Face Gradient Correction
☐ High Order Term Relaxation

Default

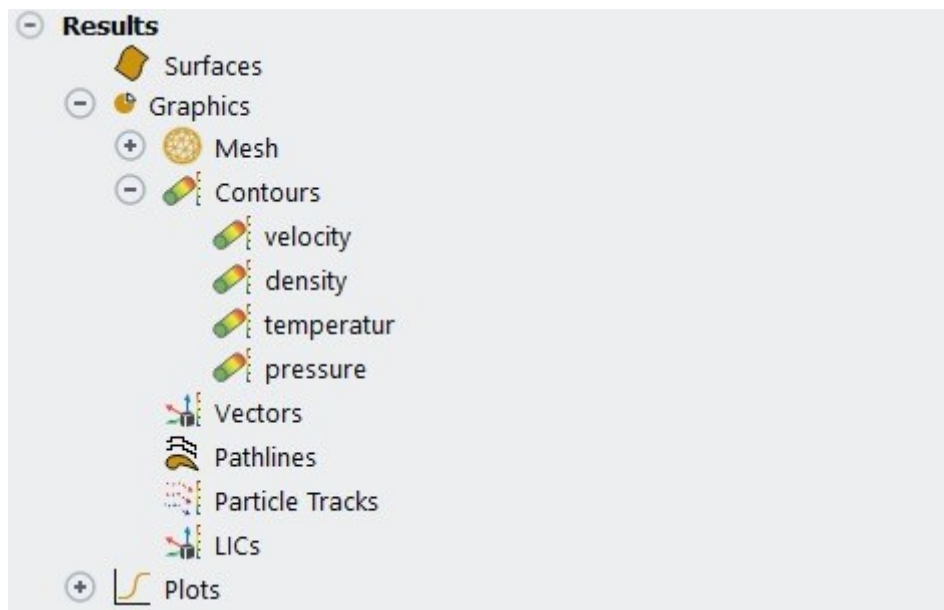
Gambar A.15 Pengaturan Metode Penyelesaian Simulasi



Gambar A.16 Pengaturan Metode Inisiliasi



Gambar A.17 Pengaturan Jumlah Iterasi dan Interval



Gambar A.18 Hasil Simulasi