

Master REST

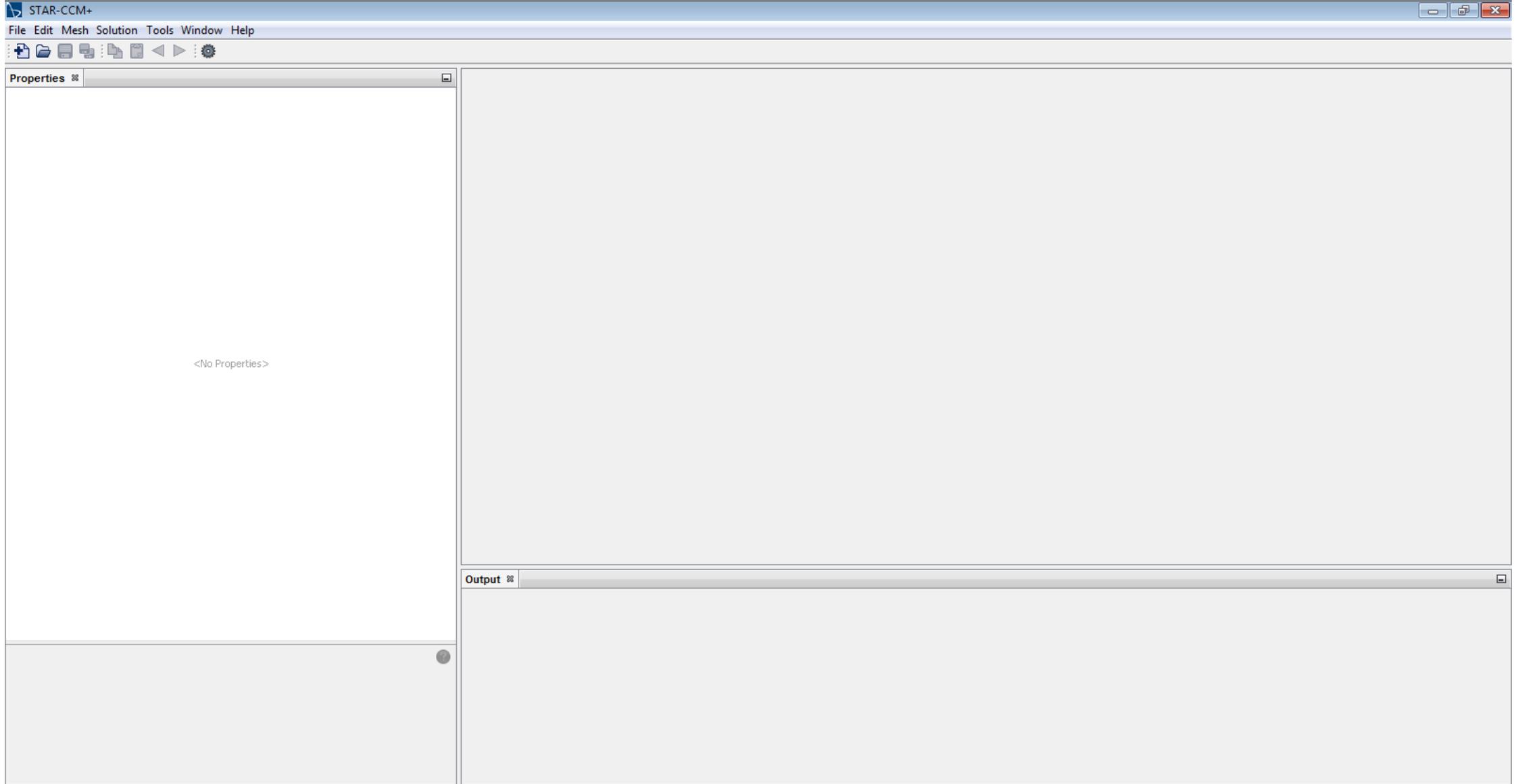
Modelization of a wind farm using a 1D momentum model

This tutorial was done using StarCCM+ v 12.06.011

The interface can slightly change between the different versions of the software. Different versions may be installed in the different classrooms of the school.

Please do not follow slide by slide this tutorial without asking you what you are currently doing. Be clever, smart, etc, etc, ask questions and refer to the online help of the software.

Launch StarCCM+



Create a new simulation

The screenshot displays the STAR-CCM+ software interface. The main window is titled "Star1 - STAR-CCM+" and features a menu bar (File, Edit, Mesh, Solution, Tools, Window, Help) and a toolbar. On the left, a tree view shows the simulation structure under "Star 1", including folders for Geometry, Continua, Regions, Stopping Criteria, Solution Histories, Solution Views, Monitors, Plots, Summaries, and Tools. The bottom-left pane shows the "Star 1 - Properties" window with fields for Name (Star 1) and Connection Mode (Default). The bottom-right pane is the "Output - Star 1" console, displaying the following text:

```
STAR-CCM+ 12.06.011 (win64/intel16.3)
License build date: 02 February 2017
This version of the code requires license version 2017.10 or greater.
Checking license file: 1055@flexlm-1.ensam.eu
1 copy of ccpsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccpsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
```

The "Create a File" dialog box is open, showing the following configuration options:

- Type: Simulation
- Process Options:
 - Serial
 - Parallel on Local Host
 - Parallel on Named Hosts
 - Parallel Specified by Machine File
 - Remote Server
- Remote Host: [Empty text box]
- Remote User: [Empty text box]
- Remote Shell: ssh
- Saved Configurations: [Dropdown menu] Save
- Microsoft HPC Server:
 - Submit Using Microsoft Job Scheduler
- License:
 - Lite
 - Power Session
 - Power-On-Demand
- Server: 1999@flex.cd-adapco.com
- Power-On-Demand Key: [Empty text box]
- Server Connection Mode: Default
- Command: starccm+ -server -cpubind -rsh ssh

Buttons: OK, Cancel, Help



Create a Block

The screenshot displays the STAR-CCM+ software interface. The main window is titled "Star 1 - STAR-CCM+" and contains a menu bar (File, Edit, Mesh, Solution, Tools, Window, Help) and a toolbar. The left sidebar shows a tree view of the simulation setup, including folders for Geometry, 3D-CAD Models, Parts, Continuum, Region, Stopping, Solution, Monitoring, Plots, Summary, and Tools. A context menu is open over the "Parts" folder, with the "New Shape Part" option selected. A sub-menu is visible, listing "Block", "Cone", "Cylinder", and "Sphere". The "Block" option is highlighted. Below the tree view is a "Parts - Properties" panel showing "<No Properties>". At the bottom right is an "Output - Star 1" console window displaying the following text:

```
STAR-CCM+ 12.06.011 (win64/intel16.3)
License build date: 02 February 2017
This version of the code requires license version 2017.10 or greater.
Checking license file: 1055@flexlm-1.ensam.eu
1 copy of ccpsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccpsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
```

The Windows taskbar at the bottom shows the system tray with the date "22/10/2019" and time "14:48".

Adapt the size of the block to your case

The screenshot displays the STAR-CCM+ software interface. The main window is titled "Star1 - STAR-CCM+" and shows a simulation setup. On the left, a tree view under "Simulation" shows the hierarchy: Star 1, Geometry, 3D-CAD Models, Parts, Descriptions, Contacts, Operations, Continua, Regions, Stopping Criteria, Solution Histories, Solution Views, Monitors, Plots, Summaries, and Tools. The "Parts" folder is selected. In the center, a "Create Block Part" dialog box is open, allowing the user to define the maximum and minimum coordinates for a block. The dialog has two columns for "Corner 1" and "Corner 2". The "Coordinate System" is set to "Laboratory".

Maximum and Minimum Coordinates	
Corner 1	Corner 2
X -1.0 m	X 1.0 m
Y -1.0 m	Y 1.0 m
Z -1.5 m	Z 3.0 m

Coordinate System: Laboratory

Buttons: OK, Cancel, Help

At the bottom, the "Output - Star 1" window shows the following text:

```
This version of the code requires license version 2017.10 or greater.  
Checking license file: 1055@flexlm-1.ensam.eu  
1 copy of ccpsuite checked out from 1055@flexlm-1.ensam.eu  
Feature ccpsuite expires in 334 days  
Tue Oct 22 14:47:17 2019  
  
Server::start -host PA-SAO-001.intram.ensam.eu:47827  
Started default macro:  
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java  
Loading module: StarMeshing  
Loading module: MeshingSurfaceRepair
```



Visualize: create a new « scene »

The screenshot displays the STAR-CCM+ software interface. The main window, titled 'Geometry Scene 1', shows a 3D perspective view of a gray rectangular block. A coordinate system with X, Y, and Z axes is visible in the bottom-left corner of the 3D view. The left sidebar contains a tree view of the simulation setup, including folders for Geometry, Continuum, Regions, and Plots. The 'Plots' folder is expanded, and the 'New Scene' menu is open, showing options for 'Geometry', 'Mesh', 'Scalar', 'Vector', and 'Empty'. The bottom panel shows the 'Output - Star 1' window with the following text:

```
Checking license file: 1055@flexlm-1.ensam.eu
1 copy of ccmsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccmsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
```



Prepare the boundaries: « split by patch »

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a rectangular block with a magenta surface highlighted. A context menu is open over this surface, with the 'Split by Patch...' option selected. The left sidebar shows the 'Star 1' simulation tree, with 'Block Surface' selected under 'Surfaces'. The bottom panel shows the 'Output - Star 1' window with the following text:

```
Checking license file: 1055@flexlm-1.ensam.eu
1 copy of ccmsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccmsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
```

Select the inlet, rename it, create the boundary
Idem for the outlet; the remaining four patches will be the side walls

The screenshot displays the STAR-CCM+ software interface. The main window, titled "Geometry Scene 1", shows a 3D model of a hexagonal prism with six distinct colored patches: blue, purple, red, pink, brown, and purple. A coordinate system with X, Y, and Z axes is visible at the bottom left of the scene. On the left side, the "Part Surface Patches" list shows patches 27, 28, 29, 30, and 32. The "Part Surface Name" field is set to "Outlet". Below the list is a "Patch Selection Control" area with several icons. At the bottom of the interface, the "Output - Star 1" window shows the following text:

```
Checking license file: 1055@flexlm-1.ensam.eu
1 copy of ccpsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccpsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
```



Create the « Region »: the fluid domain

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a magenta rectangular block, labeled "Block", in a perspective view. A context menu is open over the block, with the option "Assign Parts to Regions..." selected. The menu includes options such as "Edit Part in Current Scene", "Highlight", "Edit...", "Set New Tag...", "Create Mesh Operation", "Repair Surface...", "Set New Region...", "Delete Empty Entities", "Update Interfaces", "Statistics...", "Query Controls...", "Composite", "Duplicate", "Combine", "Transform", "Boolean", "Re-tessellate...", "Export...", "Copy", "Paste", "Delete", and "Rename...".

The left sidebar shows the "Star 1" tree structure, with "Parts" expanded to show the "Block" part. The "Block - Properties" panel at the bottom left shows the "Region" property set to "m, m".

The "Output - Star 1" window at the bottom right displays the following text:

```
Checking license file: 1055@flexlm-1.ensam.eu
1 copy of ccmsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccmsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
```



Be sure to create « a boundary for each part surface »

Star1 - STAR-CCM+

File Edit Mesh Solution Tools Window Help

Star 1

Simulation Scene/Plot

Star 1

- Geometry
 - 3D-CAD Models
 - Parts
 - Block
 - Surfaces
 - Side
 - Inlet
 - Outlet
 - Curves
 - Descriptions
 - Contacts
 - Operations
 - Continua
 - Regions
 - Derived Parts
 - Stopping Criteria
 - Solution Histories
 - Solution Views
 - Monitors
 - Plots
 - Scenes
 - Summaries
 - Representations

Block - Properties

Properties

Region	
Coordinate System	Laboratory
Corner 1	[-1.0, -1.0, -1.5] m, m, m
Corner 2	[1.0, 1.0, 3.0] m, m, m
Tags	

Expert

Metadata	
----------	--

Block

A Leaf-level Block Part

Geometry Scene 1

Assign Parts to Regions

Parts

- Block

1 of 1 selected

Create One Region for All Parts Region

Create a Boundary for Each Part Surface Select...

Create One Feature Curve for All Part Curves Feature Curve

Create Boundary-mode Interfaces From Contacts

Apply Close Help

C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167



Change the boundary type: « velocity inlet » for the inlet,
« pressure outlet » for the outlet and wall for the side walls

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a rectangular block with a purple face labeled "Region: Block.Inlet". The software window includes a menu bar (File, Edit, Mesh, Solution, Tools, Window, Help), a toolbar, and a tree view on the left. The tree view shows the following structure:

- Star 1
 - Geometry
 - 3D-CAD Models
 - Parts
 - Descriptions
 - Contacts
 - Operations
 - Continua
 - Regions
 - Region
 - Boundaries
 - Block.Inlet
 - Block.Outlet
 - Block.Side
 - Feature Curves
 - Derived Parts
 - Stopping Criteria
 - Solution Histories
 - Solution Views
 - Reports
 - Monitors
 - Plots
 - Scenes
 - Summaries

The "Block.Inlet - Properties" panel is open, showing the following settings:

- Properties
 - Index
 - Interfaces
 - Velocity Inlet
 - Part Surfaces
 - Wall
 - Type
 - Wall
 - Tags
 -
 - Expert
 - Allow Per-Surface Values
- Type
 - Boundary type

The "Output - Star 1" console shows the following text:

```
1 copy of ccmsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccmsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
No Interfaces were created
```

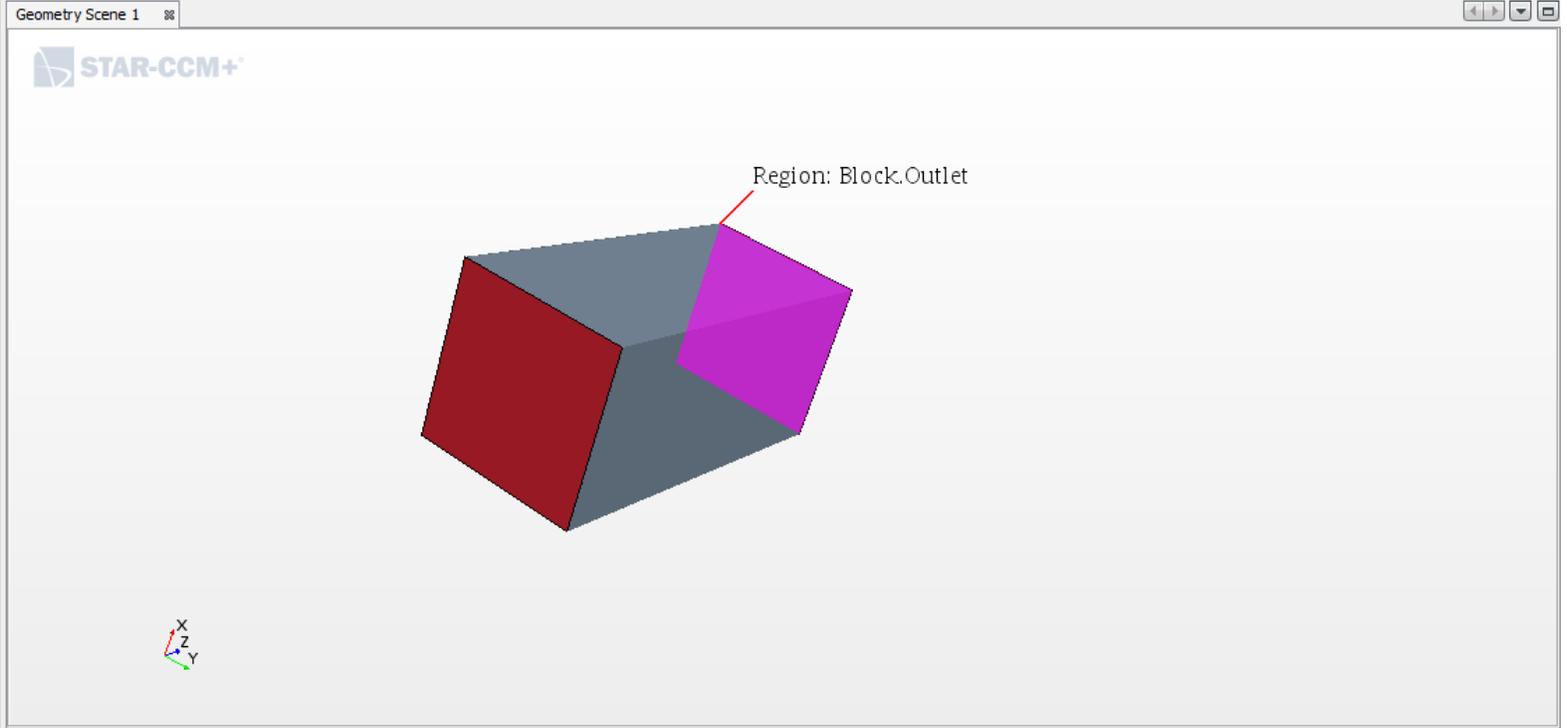




Star 1

Simulation Scene/Plot

- Star 1
 - Geometry
 - 3D-CAD Models
 - Parts
 - Descriptions
 - Contacts
 - Operations
 - Continua
 - Regions
 - Region
 - Boundaries
 - Block.Inlet
 - Block.Outlet
 - Block.Side
 - Feature Curves
 - Derived Parts
 - Stopping Criteria
 - Solution Histories
 - Solution Views
 - Reports
 - Monitors
 - Plots
 - Scenes
 - Summaries



Block.Outlet - Properties

Properties

Index	4
Interfaces	
Part Surfaces	[Block.Outlet]
Type	Pressure Outlet
Tags	[] Pressure Outlet

Expert

Allow Per-Surface Values

Type

Boundary type

Output - Star 1

```
1 copy of ccmsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccmsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
No Interfaces were created
```

Create a volume shape for refinement of the (future) mesh

The screenshot displays the STAR-CCM+ software interface. The main window, titled 'Geometry Scene 1', shows a 3D model of a cube with a red front face and grey sides. A coordinate system (X, Y, Z) is visible at the bottom left of the scene. On the left side, the 'Simulation' tree is open, with 'Volume Shapes' selected. A context menu is open over the 'Volume Shapes' folder, showing options: 'New Shape', 'Paste (Ctrl+V)', and 'Refresh'. The 'New Shape' sub-menu is also open, listing 'Block', 'Cone', 'Cylinder', and 'Sphere'. Below the 'Volume Shapes' tree, the 'Volume Shapes' panel shows '<No Properties>'. At the bottom, the 'Output - Star 1' window displays the following text:

```
1 copy of ccmsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccmsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
No Interfaces were created
```



Adpat the values to your case

Star1 - STAR-CCM+

File Edit Mesh Solution Tools Window Help

Star 1 Geometry Scene 1

Simulation Scene/Plot Edit

Create Cone Volume Shape

Snap to Part

Cone Parameters

Select a Coordinate to Edit

Start Circular Disc

End Circular Disc

Start Circular Disc Lock

X 0.0 m

Y 0.0 m

Z -1.5 m

Start Radius

0.12 m

End Circular Disc Lock

X 0.0 m

Y 0.0 m

Z 1.5 m

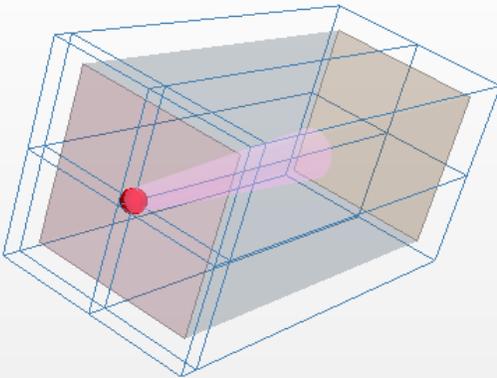
End Radius

0.3 m

Coordinate System

Laboratory

Create Close Help



Output - Star 1

```
1 copy of ccmsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccmsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
No Interfaces were created
```



Create a « Mesh Continuum »

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a rectangular block with a red front face and grey sides. A context menu is open over the 'Continua' folder in the left-hand tree, with 'Mesh Continuum' selected. The 'Output - Star 1' window at the bottom right shows the following text:

```
1 copy of ccmsuite checked out from 1055@flexlm-1.ensam.eu
Feature ccmsuite expires in 334 days
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
No Interfaces were created
```

The 'Continua - Properties' window at the bottom left shows the 'Continua' property set to 1. The 'Continua Manager' window is also visible at the bottom left.



Select the mesh models

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a geometry with a mesh. A dialog box titled "Mesh 1 Model Selection" is open, allowing the user to configure meshing options. The dialog box is divided into several sections:

- Surface Mesh:** Contains a checkbox for "Surface Wrapper" (Optional).
- Optional Models:** Contains checkboxes for "Prism Layer Mesher", "Embedded Thin Mesher", "Generalized Cylinder", and "Extruder" (Optional).
- Enabled Models:** Contains checkboxes for "Polyhedral Mesher" and "Surface Remesher", both of which are checked and marked as "<Not required by other models>".

At the bottom of the dialog box, there are "Close" and "Help" buttons. The background interface shows a tree view on the left with "Mesh 1" selected, and an output window at the bottom right displaying system logs.

```
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
No Interfaces were created
Loading module: StarResurfacer
Loading module: StarDualMesher
```



Change the base size: adapt the value to your case

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a cube with a red front face and grey sides. The left sidebar contains a tree view with the following structure:

- Star 1
 - Geometry
 - Continua
 - Mesh 1
 - Models
 - Reference Values
 - Base Size
 - Automatic Surface Repair
 - CAD Projection
 - Surface Curvature
 - Surface Growth Rate
 - Surface Proximity
 - Surface Size
 - Tet/Poly Density
 - Tet/Poly Volume Blending
 - Volumetric Controls
 - Regions
 - Derived Parts
 - Stopping Criteria
 - Solution Histories
 - Solution Views
 - Reports
 - Monitors
 - Plots

The 'Base Size - Properties' panel at the bottom left shows the 'Value' field set to 100.0 mm. The 'Output - Star 1' panel at the bottom right displays the following log text:

```
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
No Interfaces were created
Loading module: StarResurfacer
Loading module: StarDualMesher
```



Use a volumetric control in the cone shape previously defined

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a rectangular block with a red face. The interface includes a menu bar (File, Edit, Mesh, Solution, Tools, Window, Help), a toolbar, and several panels:

- Star 1** (Simulation Scene/Plot):
 - Star 1
 - Geometry
 - Continua
 - Mesh 1
 - Models
 - Reference Values
 - Base Size
 - Automatic Surface Repair
 - CAD Projection
 - Surface Curvature
 - Surface Growth Rate
 - Surface Proximity
 - Surface Size
 - Tet/Poly Density
 - Tet/Poly Volume Blending
 - Volumetric Controls
 - Volumetric Control 1
 - Mesh Conditions
 - Regions
 - Derived Parts
 - Stopping Criteria
 - Solution Histories
 - Solution Views
 - Reports

- Volumetric Control 1 - Properties**:
- Properties
- Parts: []
- Shapes: []
- Tags: Cone 1
- Output - Star 1**:

```
Tue Oct 22 14:47:17 2019

Server::start -host PA-SAO-001.intram.ensam.eu:47827
Started default macro:
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java
Loading module: StarMeshing
Loading module: MeshingSurfaceRepair
Started Parasolid modeler version 30.00.167
No Interfaces were created
Loading module: StarResurfacer
Loading module: StarDualMesher
```


Customize the « Surface Remesher » and the « Polyhedral Mesher »

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a rectangular block with a red face and grey faces. The left sidebar contains a tree view of the simulation setup, with the 'Polyhedral Mesher' and 'Surface Remesher' options highlighted under the 'Mesh Conditions' folder. Below the tree view, the 'Polyhedral Mesher - Properties' panel is open, showing the 'Customize Polyhedral Mesher' checkbox checked and the 'Enabled' button. The 'Output - Star 1' panel at the bottom right displays the following log text:

```
Tue Oct 22 14:47:17 2019  
  
Server::start -host PA-SAO-001.intram.ensam.eu:47827  
Started default macro:  
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java  
Loading module: StarMeshing  
Loading module: MeshingSurfaceRepair  
Started Parasolid modeler version 30.00.167  
No Interfaces were created  
Loading module: StarResurfacer  
Loading module: StarDualMesher
```


Generate the mesh

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a cube with a red front face and grey sides. The interface includes a menu bar (File, Edit, Mesh, Solution, Tools, Window, Help), a toolbar with various icons, and a left-hand tree view. The tree view is expanded to show the 'Continua' folder under 'Star 1'. Below the tree view is a 'Continua - Properties' panel with a 'Continua' property set to '1'. At the bottom, an 'Output - Star 1' panel shows the following text:

```
Tue Oct 22 14:47:17 2019  
  
Server::start -host PA-SAO-001.intram.ensam.eu:47827  
Started default macro:  
C:\Users\ravelet\AppData\Local\CD-adapco\STAR-CCM+ 12.06.011\var\journal\star3166707659214370129.java  
Loading module: StarMeshing  
Loading module: MeshingSurfaceRepair  
Started Parasolid modeler version 30.00.167  
No Interfaces were created  
Loading module: StarResurfacer  
Loading module: StarDualMesher
```



Visualize the mesh (a new « mesh scene »)

The screenshot displays the STAR-CCM+ software interface. The main window, titled "Geometry Scene 1", shows a 3D model of a cube with a red front face and grey sides. A coordinate system (X, Y, Z) is visible at the bottom left of the scene. The left sidebar shows a tree view of the simulation setup, with "Scenes" selected. A context menu is open over "Scenes", showing options like "New Scene", "Open All Scenes", and "Apply Representation". The "New Scene" submenu is also visible, with "Mesh" selected. The bottom panel shows the "Output - Star 1" window, which contains the following text:

```
Found 0 cells that need optimization
Found 0 vertices that need optimization
done, (Tabu Search Optimizing), CPU Time: 0.46, Wall Time: 0.46, Memory: 124.69 MB
done, (Mesh Optimization), CPU Time: 0.82, Wall Time: 0.82, Memory: 123.68 MB
done, (Optimizing mesh quality), CPU Time: 0.82, Wall Time: 0.82, Memory: 123.68 MB
Converting mesh into finite volume representation in Region Region
  Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363  Faces: 260807  Vertices: 228365
```

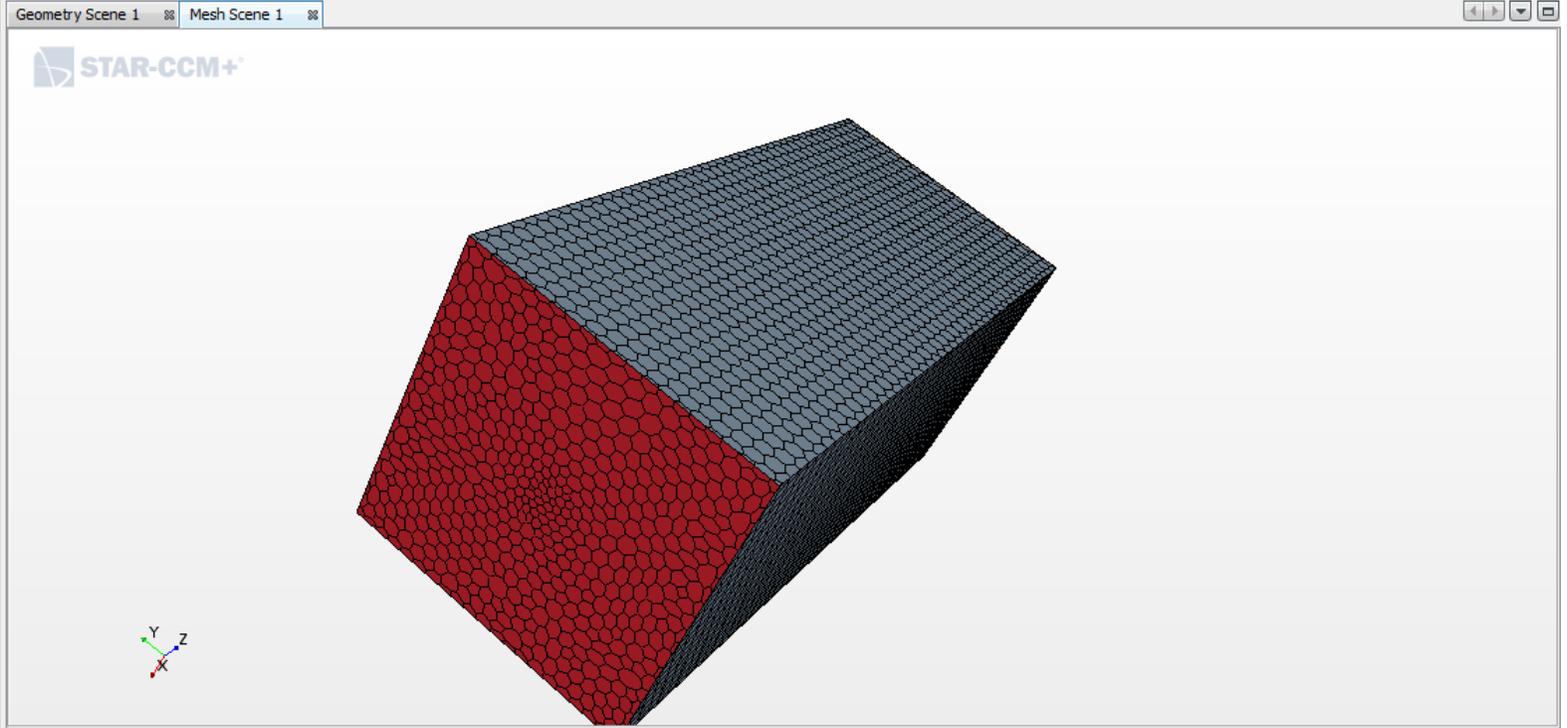




Star 1

Simulation Scene/Plot

- Star 1
 - Geometry
 - Continua
 - Regions
 - Derived Parts
 - Solvers
 - Stopping Criteria
 - Solution Histories
 - Solution Views
 - Reports
 - Monitors
 - Plots
 - Scenes
 - Geometry Scene 1
 - Mesh Scene 1
 - Summaries
 - Representations
 - Tools



Scenes - Properties

Expert

Output Verbosity

Scenes

Scene manager

Output - Star 1

```
Found 0 cells that need optimization
Found 0 vertices that need optimization
done, (Tabu Search Optimizing), CPU Time: 0.46, Wall Time: 0.46, Memory: 124.69 MB
done, (Mesh Optimization), CPU Time: 0.82, Wall Time: 0.82, Memory: 123.68 MB
done, (Optimizing mesh quality), CPU Time: 0.82, Wall Time: 0.82, Memory: 123.68 MB
Converting mesh into finite volume representation in Region Region
  Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
```

Import the table that contains the Wind Turbine characteristics

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a cube with a mesh. The left sidebar contains a tree view with categories like Plots, Scenes, Summaries, Representations, Tools, Annotations, Color Maps, Coordinate Systems, Custom Trees, Data Focus, Data Mappers, Data Set Functions, Environment Maps, Field Functions, Filters, Layouts, Motions, Parameters, Reference Frames, Rendering Materials, and Tables. A context menu is open over the 'Table' folder, listing options: New Table, Apply Representation, Paste (Ctrl+V), File Table, Histogram Table, Radial Internal Table, and XYZ Internal Table. The bottom panel shows the 'Output - Star 1' window with the following text:

```
Found 0 cells that need optimization
Found 0 vertices that need optimization
done, (Tabu Search Optimizing), CPU Time: 0.46, Wall Time: 0.46, Memory: 124.69 MB
done, (Mesh Optimization), CPU Time: 0.82, Wall Time: 0.82, Memory: 123.68 MB
done, (Optimizing mesh quality), CPU Time: 0.82, Wall Time: 0.82, Memory: 123.68 MB
Converting mesh into finite volume representation in Region Region
  Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
  Cells: 37363  Faces: 260807  Vertices: 228365
```



Create a « Physics Continuum »

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a cube with a mesh. The left sidebar contains a tree view with the following structure:

- Star 1
 - Geometry
 - Continua
 - Mesh 1
 - Physics (selected)
 - M...
 - Regions
 - Derived P...
 - Solvers
 - Stopping C...
 - Solution H...
 - Solution V...
 - Reports
 - Monitors
 - Plots
 - Scenes
 - Geometry Scene 1
 - Mesh Scene 1
 - Summaries
 - Representations
 - Tools

A context menu is open over the 'Physics' node, showing options: Select models..., Edit..., Set New Tag..., Copy (Ctrl+C), Paste (Ctrl+V), Delete, Rename..., and Dependencies.

The 'Physics 1 - Properties' panel is visible at the bottom left, showing the following settings:

- Properties
 - Regions: [Region]
 - Interfaces: []
 - Point Sets: []
 - Tags: []
- Expert
 - Active:
- Physics 1
 - A Physics Continuum

The 'Output - Star 1' panel at the bottom right displays the following text:

```
done, (Tabu Search Optimizing), CPU Time: 0.46, Wall Time: 0.46, Memory: 124.69 MB
done, (Mesh Optimization), CPU Time: 0.82, Wall Time: 0.82, Memory: 123.68 MB
done, (Optimizing mesh quality), CPU Time: 0.82, Wall Time: 0.82, Memory: 123.68 MB
Converting mesh into finite volume representation in Region Region
  Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
  Cells: 37363  Faces: 260807  Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
```





Star 1

Geometry Scene 1 Mesh Scene 1

Simulation Scene/Plot

- Star 1
 - Geometry
 - Continua
 - Mesh 1
 - Physics 1
 - Models
 - Reference Values
 - Initial Conditions
 - Regions
 - Derived Parts
 - Solvers
 - Stopping Criteria
 - Solution Histories
 - Solution Views
 - Reports
 - Monitors
 - Plots
 - Scenes
 - Geometry Scene 1
 - Mesh Scene 1
 - Summaries
 - Representations
 - Tools

Updating mapped interfaces: Finished

Physics 1 - Properties

Regions	[Region]
Interfaces	[]
Point Sets	[]
Tags	[]
Expert	
Active	<input checked="" type="checkbox"/>

Physics 1
A Physics Continuum

Physics 1 Model Selection

Optional Models	Enabled Models
<input type="checkbox"/> Segregated Fluid Enthalpy	<input checked="" type="checkbox"/> Virtual Disk <Not required by other models>
<input type="checkbox"/> Co-Simulation	<input checked="" type="checkbox"/> Two-Layer All y+ Wall Treatment
<input type="checkbox"/> Electromagnetism	<input checked="" type="checkbox"/> Exact Wall Distance
<input type="checkbox"/> Passive Scalar	<input checked="" type="checkbox"/> Realizable K-Epsilon Two-Layer
<input type="checkbox"/> Turbulence Suppression	<input checked="" type="checkbox"/> K-Epsilon Turbulence
<input type="checkbox"/> Fluid Film	<input checked="" type="checkbox"/> Reynolds-Averaged Navier-Stokes
<input type="checkbox"/> Mesh Deformation	<input checked="" type="checkbox"/> Turbulent
<input type="checkbox"/> Multiphase Interaction	<input checked="" type="checkbox"/> Constant Density
<input type="checkbox"/> Porous Media	<input checked="" type="checkbox"/> Gradients
<input type="checkbox"/> Gravity	<input checked="" type="checkbox"/> Segregated Flow
<input type="checkbox"/> Turbulent Viscosity User Scaling <Optional>	<input checked="" type="checkbox"/> Gas
<input type="checkbox"/> Cell Quality Remediation	<input checked="" type="checkbox"/> Steady
<input type="checkbox"/> Radiation	<input checked="" type="checkbox"/> Three Dimensional
<input type="checkbox"/> Lagrangian Multiphase	
<input type="checkbox"/> Aeroacoustics	
<input type="checkbox"/> Boussinesq Model	
<input type="checkbox"/> Segregated Fluid Isothermal	
<input type="checkbox"/> Vorticity Confinement Model	
<input type="checkbox"/> Electrochemistry	
<input type="checkbox"/> Plasma	
<input type="checkbox"/> Segregated Fluid Temperature	

Auto-select recommended models

Close Help

Loading module: KeTurbModel
Loading module: VirtualDisk

column0', 'column1', 'column2'
r\props.mdb"...

Control the properties of the fluid

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D visualization of a cube with a mesh. The left sidebar contains a tree view of the simulation setup, including Geometry, Continua, Mesh 1, and Physics 1. The 'Physics 1' folder is expanded, showing various models such as Constant Density, Exact Wall Distance, Gas, Air, Material Properties, Gradients, K-Epsilon Turbulence, Realizable K-Epsilon Two-Layer, Reynolds-Averaged Navier-Stokes, Segregated Flow, Steady, Three Dimensional, Turbulent, Two-Layer All y+ Wall Treatment, and Virtual Disk. The 'Constant - Properties' dialog box is open, showing the 'Value' field set to 1.2 kg/m³. The 'Output - Star 1' window at the bottom displays the following text:

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```

Create a new « Virtual Disk »

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a rectangular block with a mesh, colored in red and grey. The left sidebar contains a tree view of the simulation setup, including Geometry, Continua, Mesh 1, and Physics 1. Under Physics 1, the 'Virtual Disk' option is highlighted, and a context menu is open with 'New' selected. The bottom panel shows the 'Output - Star 1' window with the following text:

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```



Select the model

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D view of a propeller model with a mesh. The left sidebar contains a tree view of the simulation setup, including Geometry, Continua, Mesh 1, and Physics 1. The 'Physics 1' folder is expanded, showing various models such as Constant Density, Exact Wall Distance, Gas, Air, Gradients, K-Epsilon Turbulence, Realizable K-Epsilon Two-Layer, Reynolds-Averaged Navier-Stokes, Segregated Flow, Steady, Three Dimensional, Turbulent, Two-Layer All y+ Wall Treatment, Virtual Disk, and Virtual Disks. The 'Virtual Disk' folder is selected, and the 'Virtual Disk - Properties' dialog box is open. The 'Method' dropdown menu is set to 'None', and the '1D Momentum Method' is highlighted. The 'Output - Star 1' window shows the following text:

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```





Star 1

Simulation Scene/Plot

- Continua
 - Mesh 1
 - Physics 1
 - Models
 - Constant Density
 - Exact Wall Distance
 - Gas
 - Air
 - Gradients
 - K-Epsilon Turbulence
 - Realizable K-Epsilon Two-Layer
 - Reynolds-Averaged Navier-Stokes
 - Segregated Flow
 - Steady
 - Three Dimensional
 - Turbulent
 - Two-Layer All y+ Wall Treatment
 - Virtual Disk
 - Virtual Disk
 - Power Curve
 - Table (Wind Speed)
 - Disk Geometry
 - Inflow Specification

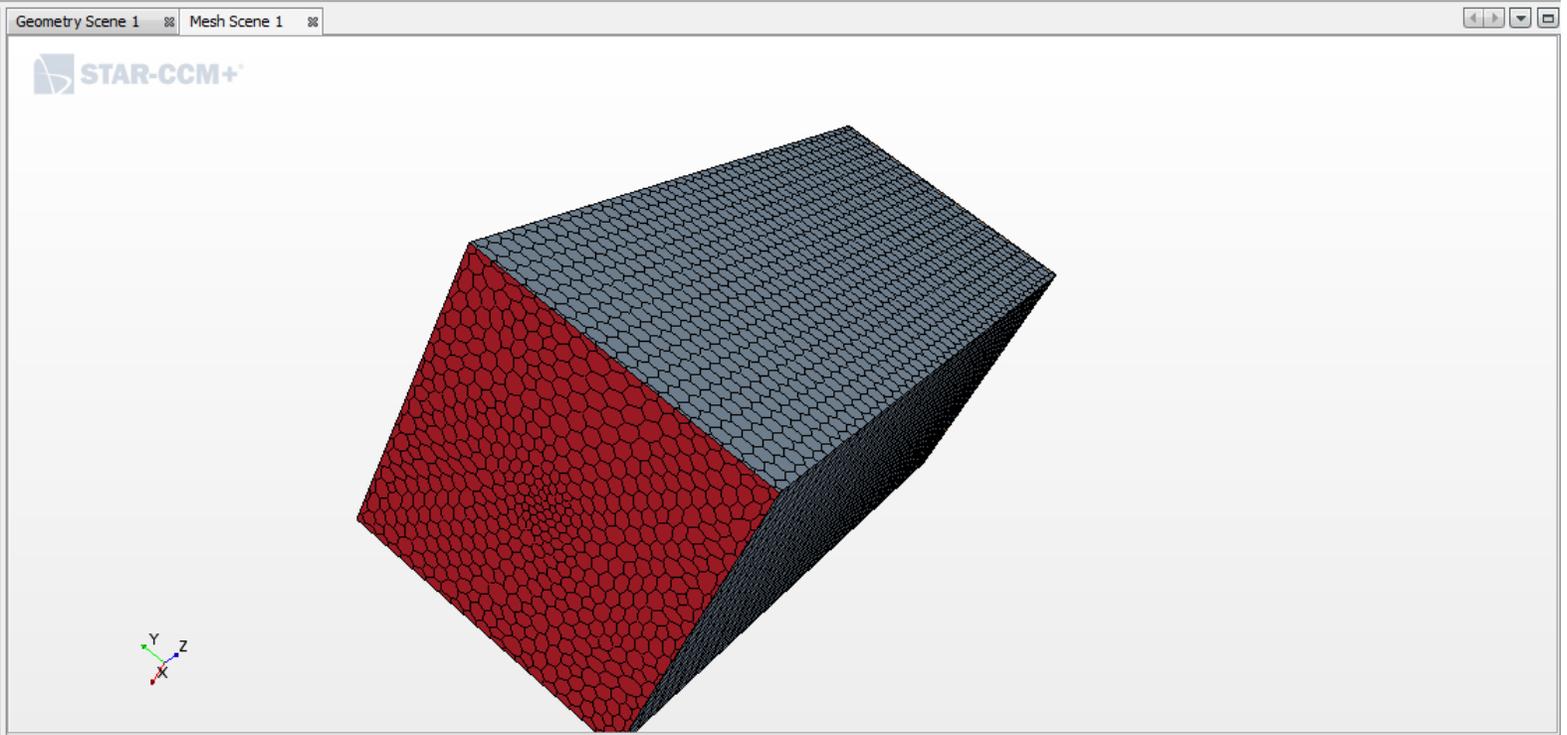


Table (Wind Speed) - Properties

Properties

Table	CourbesMaRutlandTest503
Table: Wind Speed	column0
Table: Power	column1
Table: Ct	column2
	column0
	column1
	column2

Table: Ct

Column within the table for thrust coefficient data

Output - Star 1

```

Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
    
```


Specify the rotation rate that corresponds to the data in the table

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D view of a meshed geometry, which appears to be a rectangular block with a red mesh on the front face and a grey mesh on the top and side faces. A coordinate system (X, Y, Z) is visible in the bottom left of the 3D view.

The left sidebar shows the 'Simulation' tree with various settings. The 'RotationRate (n)' property is highlighted under the 'Virtual Disk' section.

The bottom-left pane shows the 'RotationRate (n) - Properties' window. The 'Rotation Rate' is set to 1414.0 rpm.

The bottom-right pane shows the 'Output - Star 1' window with the following text:

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```

Change the inlet boundary condition

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D mesh of a rectangular block with a red inlet face. The left sidebar shows the simulation tree with 'Block.Inlet' selected. The bottom-left panel shows 'Velocity Magnitude - Properties' with a value of 10.0 m/s. The bottom-right panel shows the output log with meshing and material loading details.

Simulation Tree:

- Star 1
 - Geometry
 - Continua
 - Mesh 1
 - Physics 1
 - Models
 - Reference Values
 - Initial Conditions
 - Regions
 - Region
 - Boundaries
 - Block.Inlet (selected)
 - Block.Outlet
 - Block.Side
 - Feature Curves
 - Mesh Conditions
 - Physics Conditions
 - Physics Values

Velocity Magnitude - Properties:

Property	Value
Method	Constant
Value	10.0 m/s
Dimensions	Velocity

Output - Star 1:

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```


Prepare a scalar scene for visualization of the velocity field

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D visualization of a rectangular block with a mesh. The front face of the block is colored red, representing a scalar field. The top and side faces are grey, representing the mesh. A coordinate system (X, Y, Z) is visible in the bottom left corner of the main window.

The left sidebar shows the 'Simulation' tree with 'Plots' selected. A context menu is open over 'Plots', and the 'Scalar' option is highlighted. Other options include 'New Scene', 'Open All Scenes', 'Apply Representation', 'Test Graphics', 'Paste', 'Edit...', 'Refresh', 'New Group', and 'UnGroup'. The 'Scalar' sub-menu is also visible, showing 'Geometry', 'Mesh', 'Scalar', 'Vector', and 'Empty'.

The bottom right window, titled 'Output - Star 1', displays the following text:

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```

Define a « derived part » in which things are going to be displayed.
Adapt the plane to your case, explore the menus, be creative

The screenshot displays the STAR-CCM+ software interface. The main window is titled 'Star1 - STAR-CCM+' and contains a 3D scene labeled 'Geometry Scene 1'. The scene shows a large rectangular plane with a smaller, concentric rectangle inside it. A coordinate system with X, Y, and Z axes is visible in the bottom-left corner of the scene. A blue bar at the bottom of the scene contains the text '<Select Function>'. The left sidebar shows a tree view of the simulation setup, with 'Deriv' selected under 'Star 1'. A context menu is open over 'Deriv', listing various options such as 'New Part', 'Paste', 'Edit...', 'Section', 'Streamline...', and 'Plane...'. The 'Plane...' option is highlighted. Below the main window, there are two panels: 'Derived Parts - Properties' and 'Output - Star 1'. The 'Derived Parts - Properties' panel shows 'Derived Parts' set to 0. The 'Output - Star 1' panel displays a log of simulation operations, including mesh conversion, volume meshing, and material property loading.

STAR-CCM+

Star 1

Simulation Scene/Plot

Star 1

- Geometry
- Continua
- Regions
- Deriv
- Solve
- Stop
- Solut
- Repo
- Monit
- Plots
- Scen
- Mesh Scene 1
- Scalar Scene 1
- Displayers
 - Outline 1
 - Scalar 1
 - Parts
 - Scalar Field
 - Point Size
 - Color Bar
 - Animations

Cell Surface...
Isosurface...
Probe
Section
Streamline...
Constrained Streamline...
Vortex Core...
Separation/Attachment Line...
Threshold...
(m',theta) Warp...
Resampled Volume...
Warp

Plane...
Cylinder...
Sphere...
Constrained Plane...
Arbitrary...

<Select Function>

Derived Parts - Properties

Properties

Derived Parts 0

Derived Parts

Derived parts manager

Output - Star 1

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```



Here, the new plane will be automatically assigned to the scalar scene by choosing the option « display in existing displayer »

The screenshot displays the STAR-CCM+ software interface. The main window is titled "Star 1 - STAR-CCM+" and contains a menu bar (File, Edit, Mesh, Solution, Tools, Window, Help) and a toolbar. The left sidebar shows the "Simulation Scene/Plot" panel with the "Create Plane Section" dialog open. The dialog includes an "Input Parts" field with "[Region]" and a "Select..." button, a "Snap to Part" checkbox, and "Plane Parameters" for Origin (X: 0.0 m, Y: 0.0 m, Z: 0.75 m) and Normal (X: 1.0 m, Y: 0.0 m, Z: 0.0 m). The "Mode" is set to "Single" and the "Offset" is "0.0 m". Below the dialog is a "Coordinate System" dropdown set to "Laboratory" and a "Display" section with radio buttons for "No Displayer", "New Geometry Displayer", "New Scalar Displayer", "New Vector Displayer", and "Existing Displayer" (which is selected). A dropdown menu below "Existing Displayer" shows "Scalar 1". At the bottom of the dialog are "Create", "Close", and "Help" buttons. The main 3D view shows a rectangular domain with a red wireframe plane section. A blue arrow points from the plane to the right, and a blue bar with the text "<Select Function>" is positioned below it. The bottom status bar indicates "Update Scene: Finished".

STAR-CCM+

Geometry Scene 1 | Mesh Scene 1 | Scalar Scene 1

Simulation Scene/Plot | Edit

Create Plane Section

Input Parts

[Region] Select...

Snap to Part

Plane Parameters

	Origin	Normal
X	0.0 m	1.0 m
Y	0.0 m	0.0 m
Z	0.75 m	0.0 m

Mode: Single

Offset: 0.0 m

Coordinate System: Laboratory

Display

- No Displayer
- New Geometry Displayer
- New Scalar Displayer
- New Vector Displayer
- Existing Displayer

Scalar 1

Create Close Help

Update Scene: Finished

Output - Star 1

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```



Choose the scalar field to be displayed: here the velocity magnitude

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a geometry with a mesh and a scalar field plot. The 'Scalar Field - Function' dialog box is open, showing a list of field functions. The 'Velocity > Lab Reference Frame > Magnitude' option is selected. The 'Scalar Field - Properties' panel is also visible, showing the 'Function' dropdown set to '<Select Function>'. The 'Output - Star 1' panel shows the following text:

```
Converted mesh for
Mesh conversion compl
No parts-based volume
Volume Meshing Pipeli
Cells: 37363
Found 3 columns while
Imported 46 rows for
Reading material prop
Loading module: Segre
Loading module: KeTur
Loading module: VirtualDisk
```

Launch the simulation

The screenshot displays the STAR-CCM+ software interface. The main window shows a 3D model of a duct with a velocity magnitude plot. The plot is a blue bar at the bottom of the duct, indicating the flow velocity. The text "Velocity: Magnitude (m/s)" is visible next to the bar. The interface includes a menu bar (File, Edit, Mesh, Solution, Tools, Window, Help), a toolbar, and several panels:

- Star 1**: A tree view on the left showing the simulation hierarchy: Star 1, Geometry, Continua, Regions, Derived Parts, Solvers, Stopping Criteria, Solution Histories, Solution Views, Reports, Monitors, Plots, Scenes, Summaries, Representations, and Tools.
- Scenes - Properties**: A panel below the tree view showing the "Expert" tab and "Output Verbosity" set to "Off".
- Output - Star 1**: A log window at the bottom right showing the following text:

```
Converted mesh for Region CPU Time: 0.45, Wall Time: 0.45, Memory: 132.52 MB
Mesh conversion completed, CPU Time: 0.56, Wall Time: 0.56, Memory: 113.43 MB
No parts-based volume mesh operations to execute
Volume Meshing Pipeline Completed: CPU Time: 12.80, Wall Time: 12.80, Memory: 113.75 MB
Cells: 37363 Faces: 260807 Vertices: 228365
Found 3 columns while importing table C:\Users\ravelet\Downloads\CourbesMaRutlandTest503.csv: 'column0', 'column1', 'column2'
Imported 46 rows for all columns.
Reading material property database "C:\Program Files\CD-adapco\12.06.011\STAR-CCM+12.06.011\star\props.mdb"...
Loading module: SegregatedFlowModel
Loading module: KeTurbModel
Loading module: VirtualDisk
```

The Windows taskbar at the bottom shows the system clock at 15:58 on 22/10/2019, along with icons for the Start menu, Internet Explorer, File Explorer, and other applications.

Analyse the results, please call me

