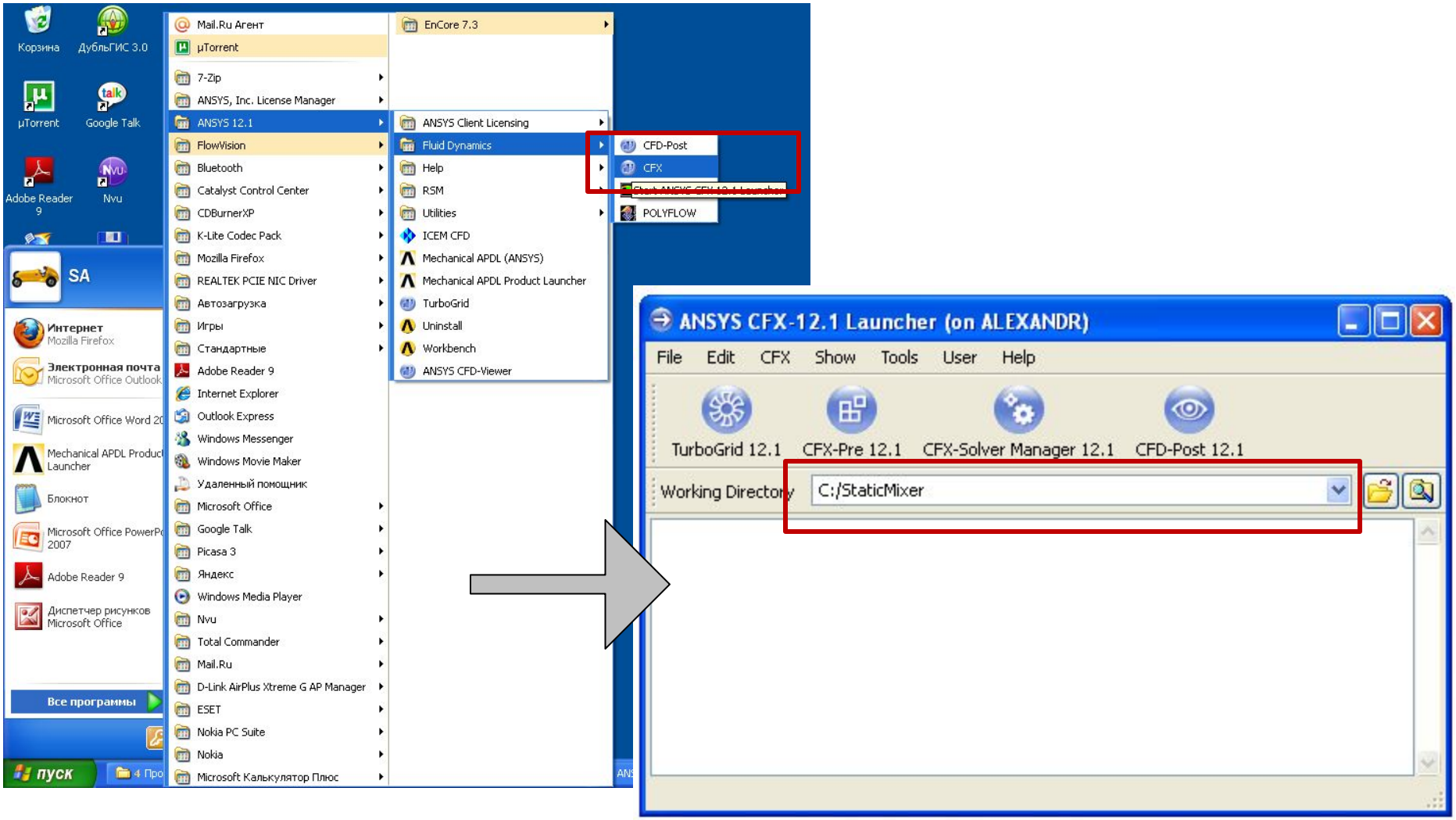
Анализ и моделирование течений жидкостей и газов с использованием комплекса ANSYS CFX

Основы ANSYS CFX-Pre

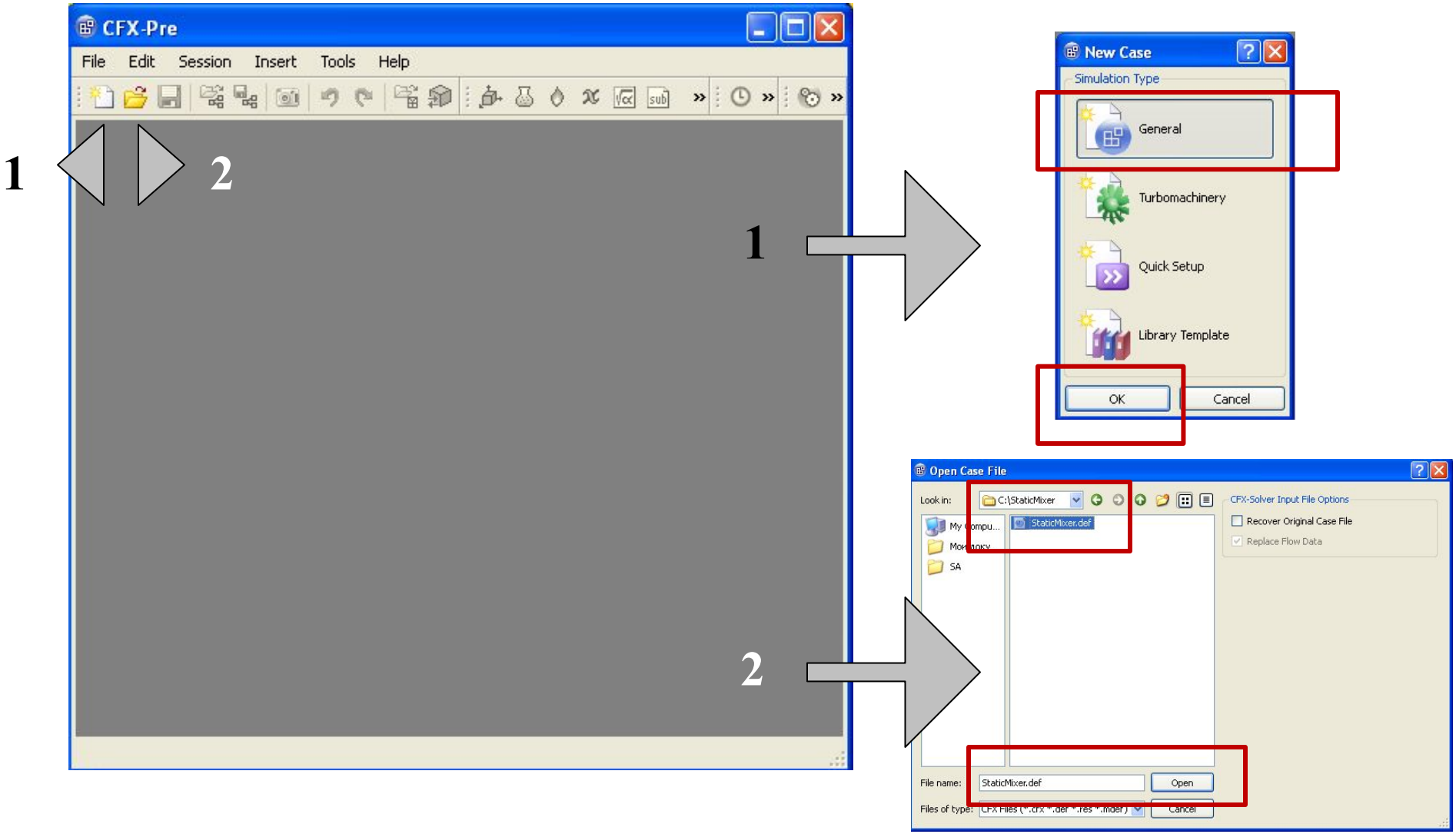
Содержание

- Главное меню ANSYS CFX-Pre;
- Понятия домена, региона, интерфейса;
- Панели инструментов.

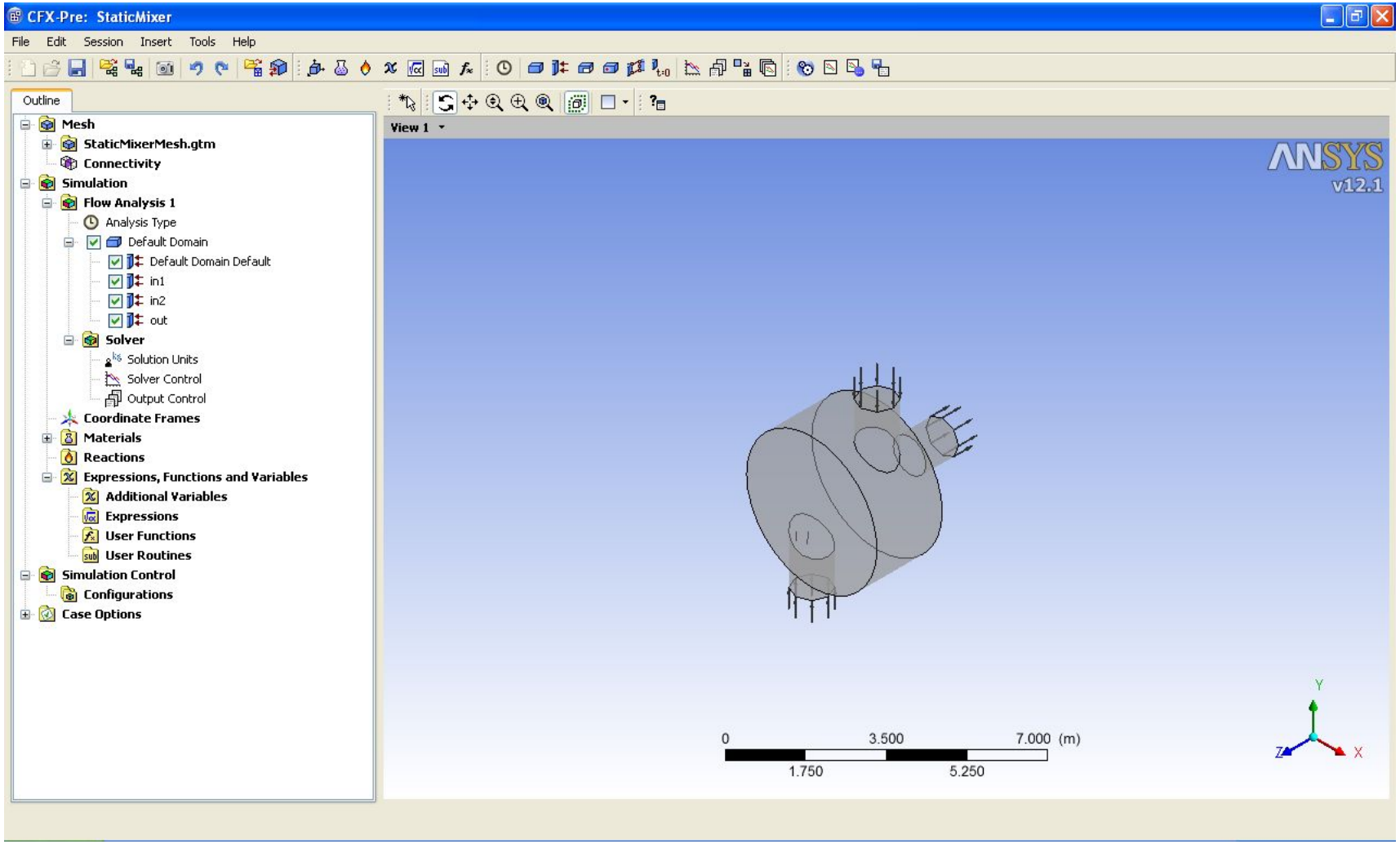
Рабочая директория



Открытие рабочего файла

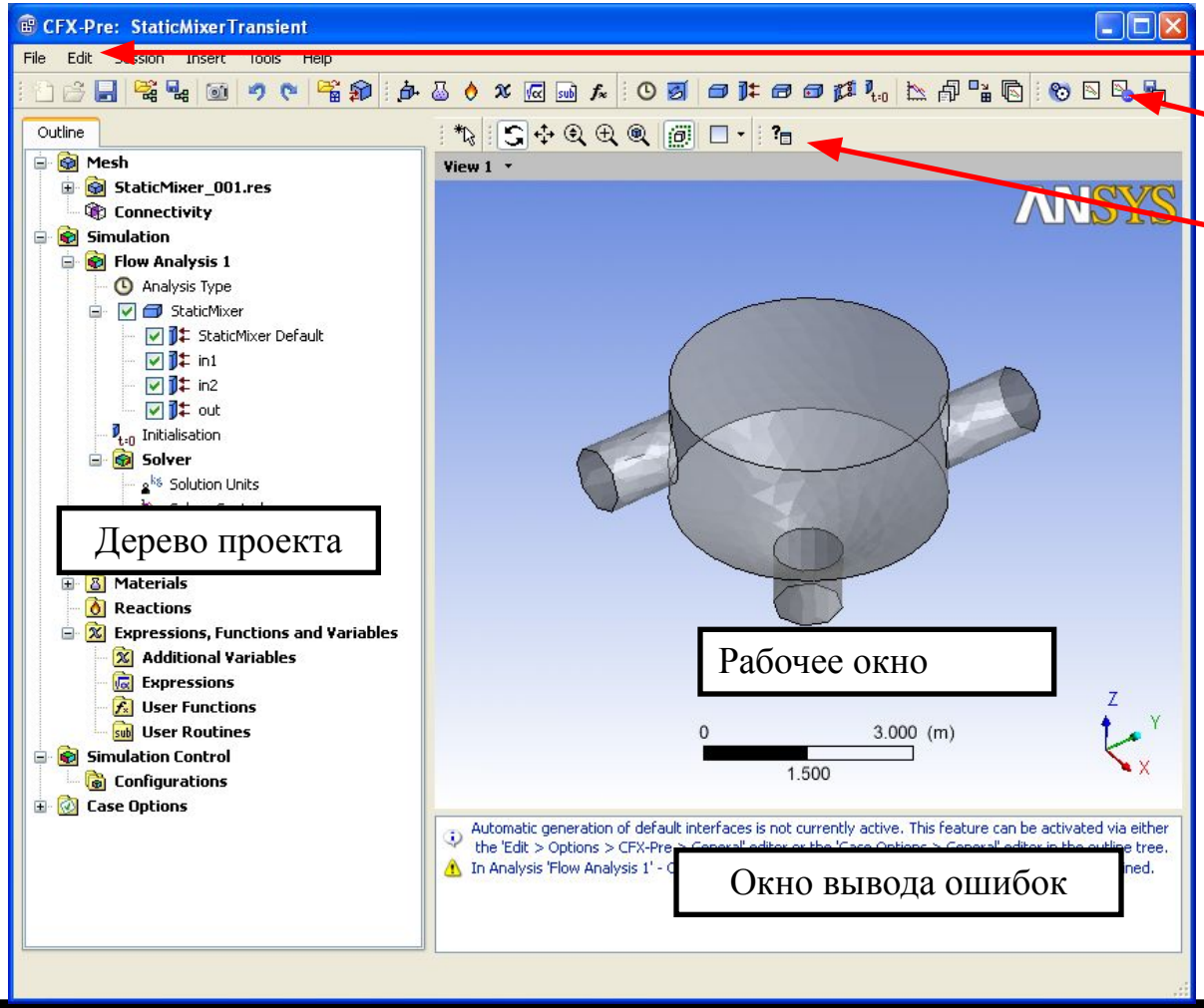


Начало работы



Интерфейс ANSYS CFX-Pre

C:\Program Files\ANSYS Inc\v121\CFX\examples/StaticMixer.def

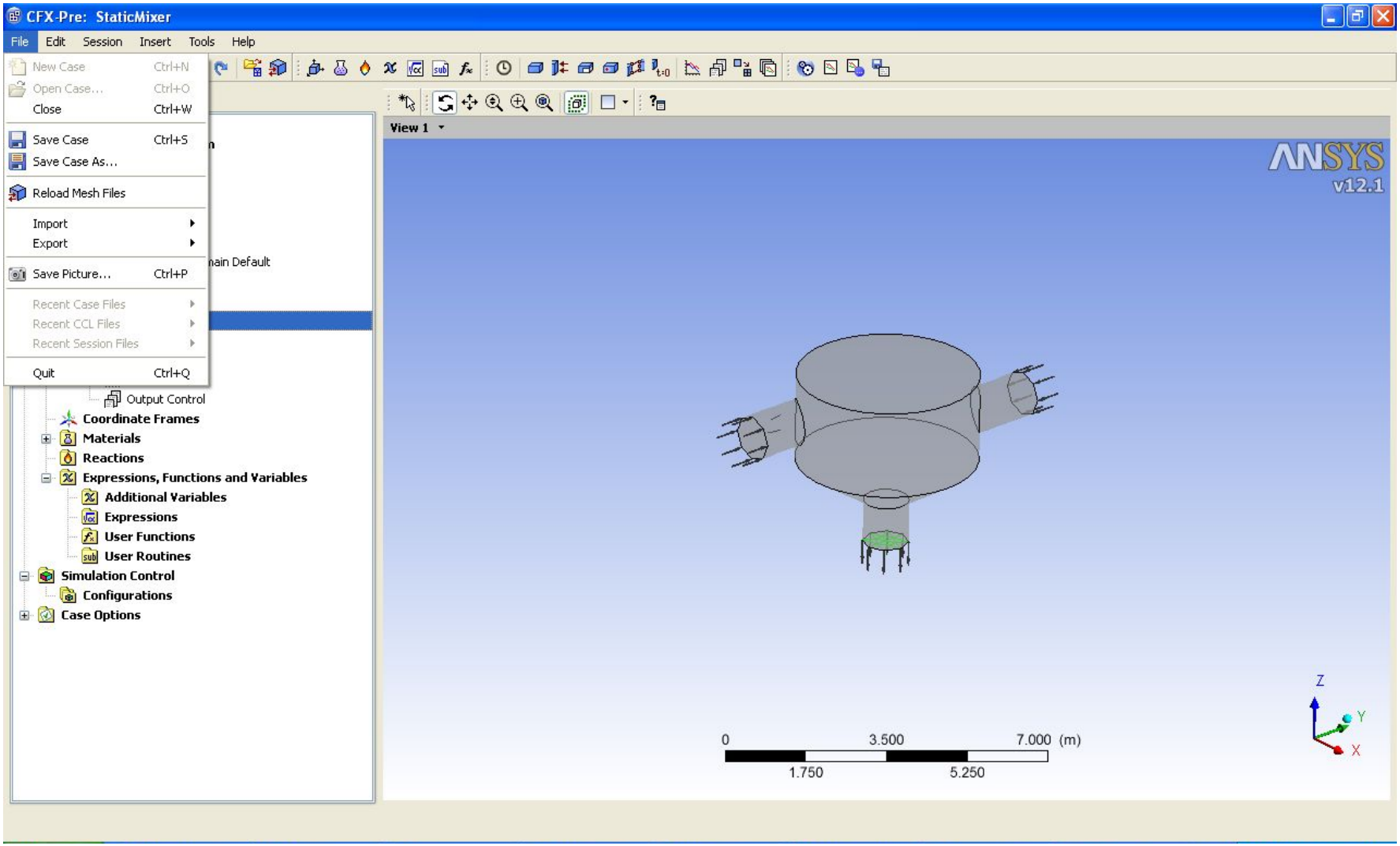


Основное меню

Панель инструментов

Инструменты просмотра

Меню File


CFX-Pre: StaticMixer
File
Edit
Session
Insert
Tools
Help
New Case Ctrl+N
Open Case... Ctrl+O
Close Ctrl+W
Save Case Ctrl+S
Save Case As...
Reload Mesh Files
Import
Export
Save Picture... Ctrl+P
Recent Case Files
Recent CCL Files
Recent Session Files
Quit Ctrl+Q
Output Control
Coordinate Frames
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Additional Variables
Expressions
User Functions
User Routines
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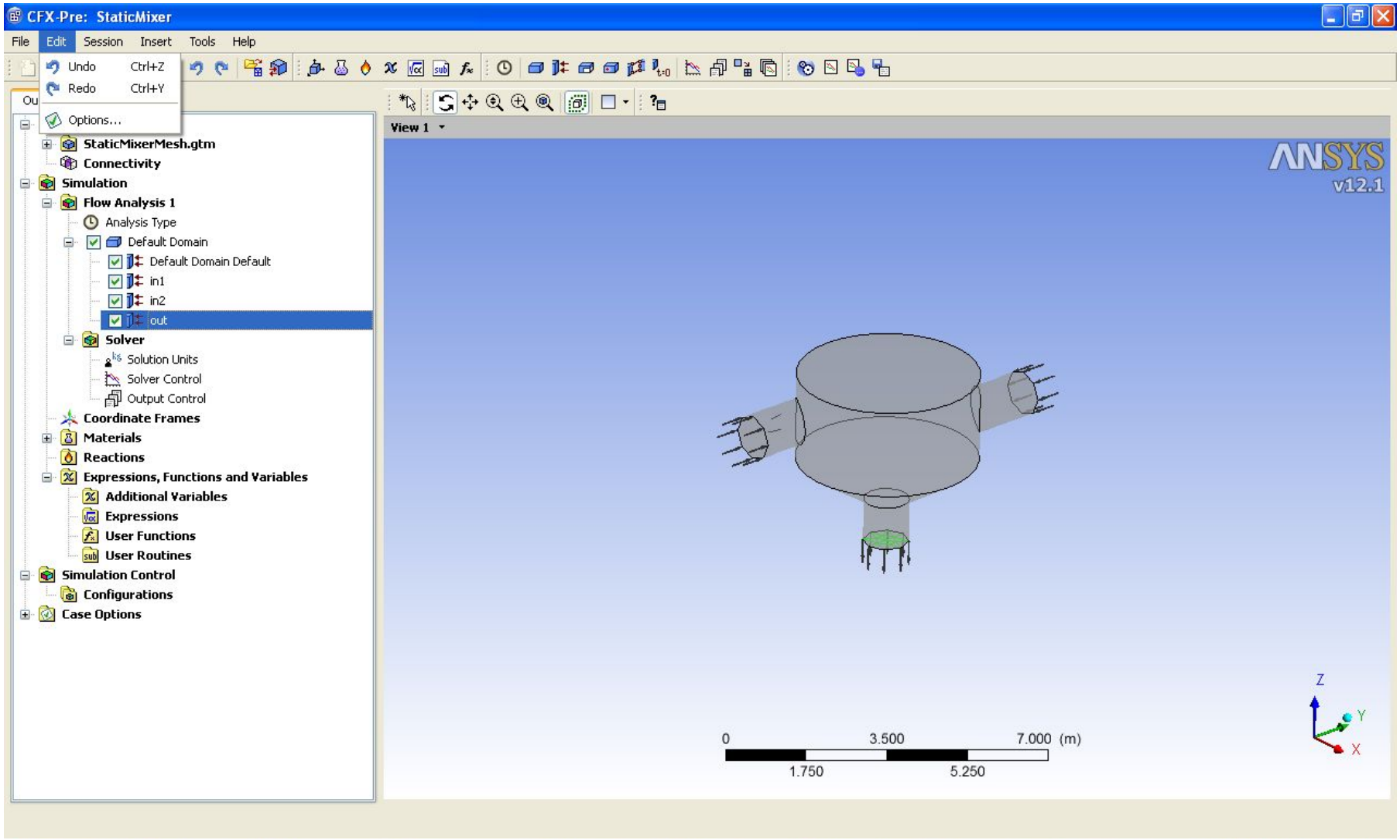
Configurations
Case Options
View 1
ANSYS
v12.1
0
3.500
7.000 (m)
1.750
5.250
Z
Y
X

Меню Edit


CFX-Pre: StaticMixer
File
Edit
Session
Insert
Tools
Help
Undo Ctrl+Z
Redo Ctrl+Y
Options...
StaticMixerMesh.gtm
Connectivity
Simulation
Flow Analysis 1
Analysis Type
Default Domain
Default Domain Default
in1
in2
out
Solver
Solution Units
Solver Control
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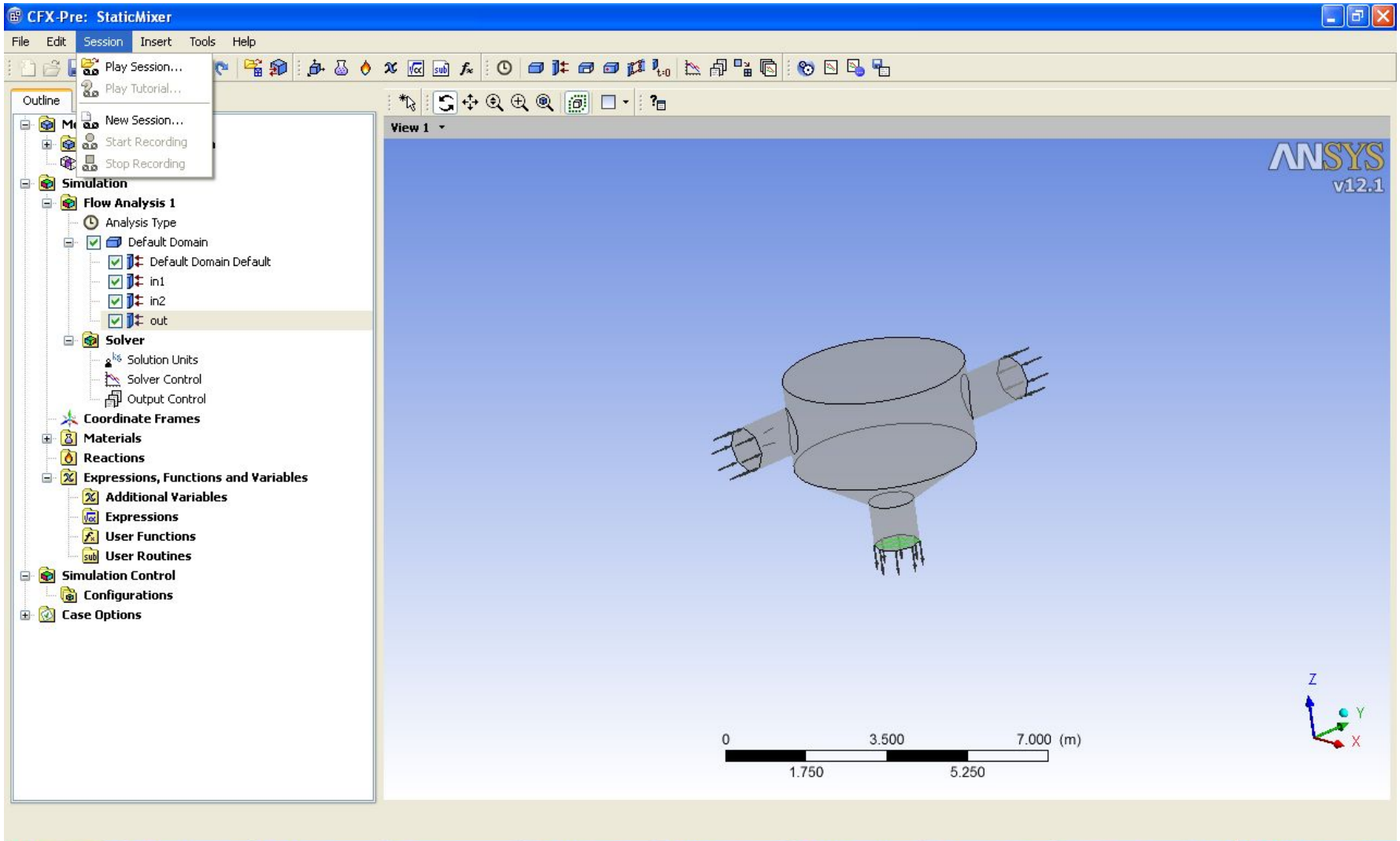
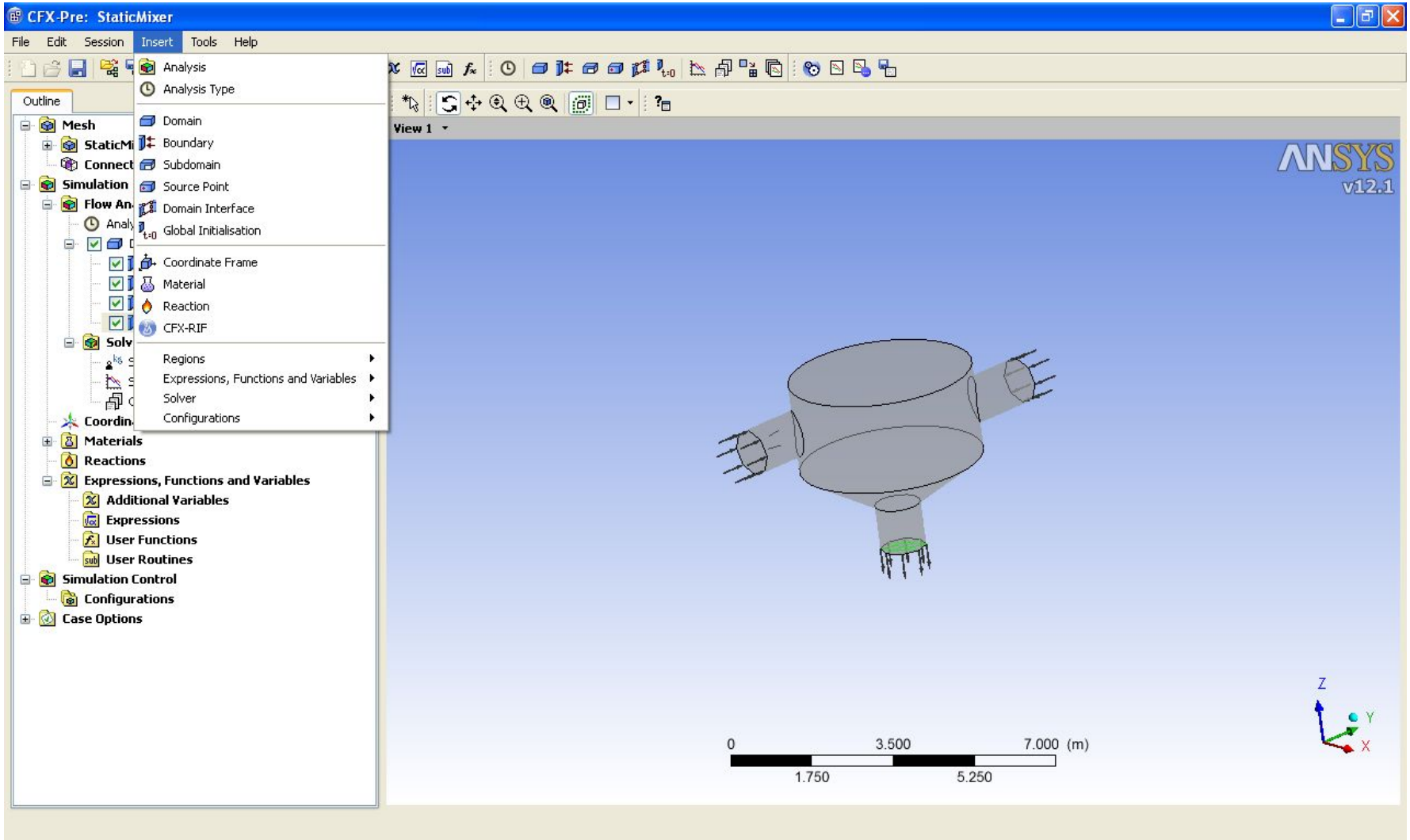
View 1
ANSYS
v12.1
0
3.500
7.000 (m)
1.750
5.250
Z
Y
X

Меню Session



Меню Insert


CFX-Pre: StaticMixer
File
Edit
Session
Insert
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Help
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Analysis Type
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Subdomain
Source Point
Domain Interface
Global Initialisation
Coordinate Frame
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0
3.500
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1.750
5.250
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Y
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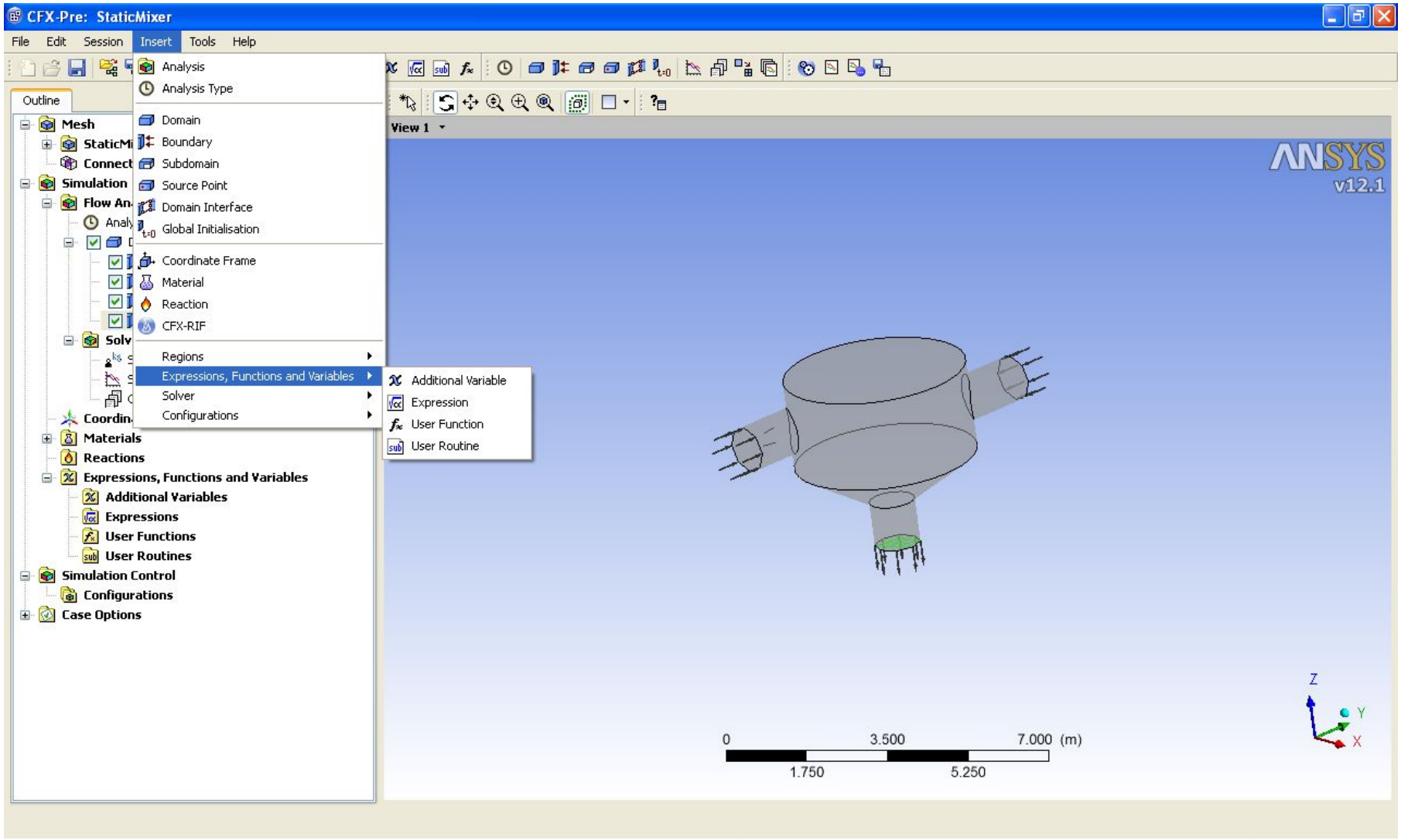
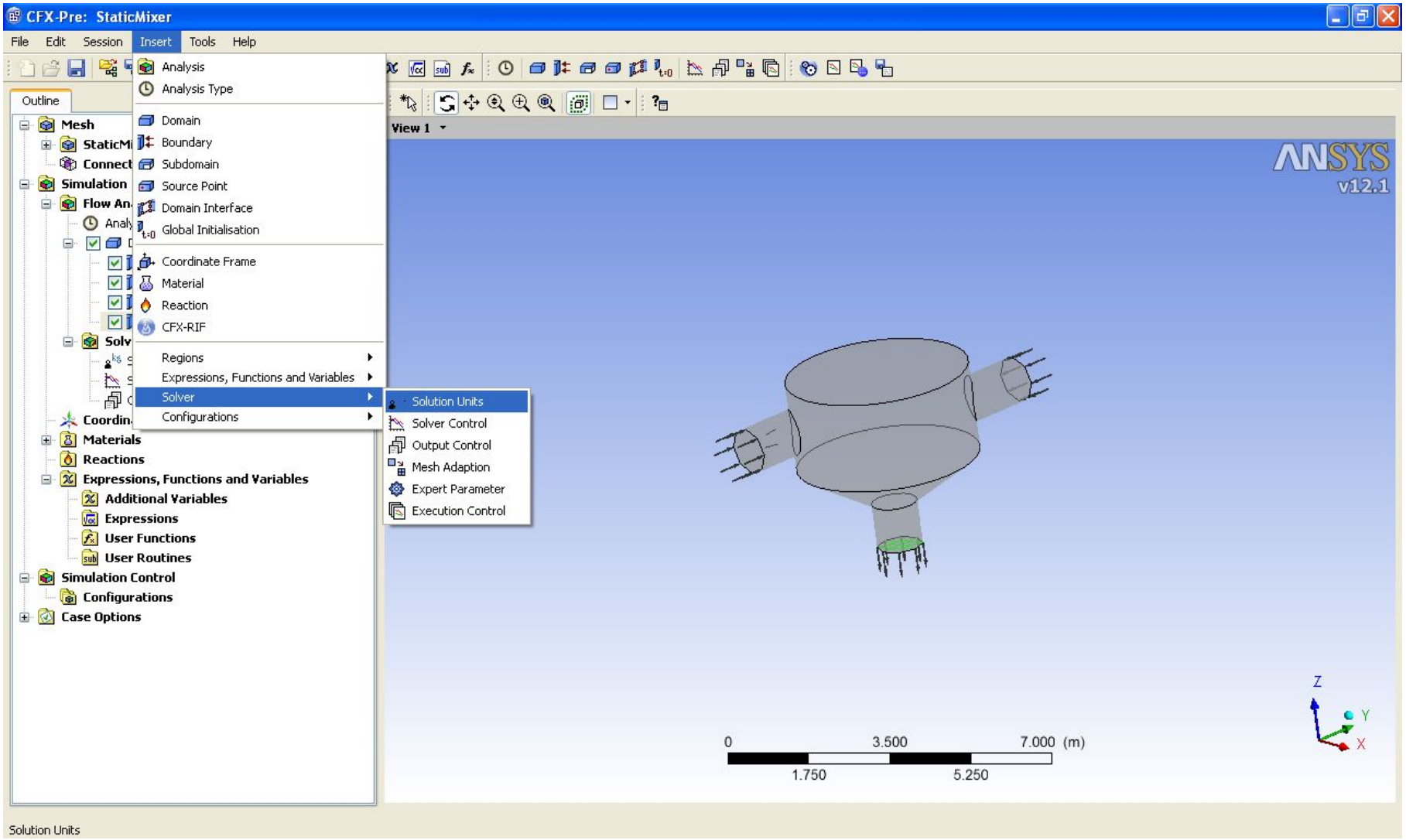
Меню Expressions, Functions and Variables



Основные понятия

- Регин (Region);
- Домен (Domain);
- Поддомен (Subdomain);
- Источник (Source Point);
- Граничные условия (Boundary Condition);
- Интерфейс (Domain Interface).

Меню Solver


CFX-Pre: StaticMixer
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7.000 (m)
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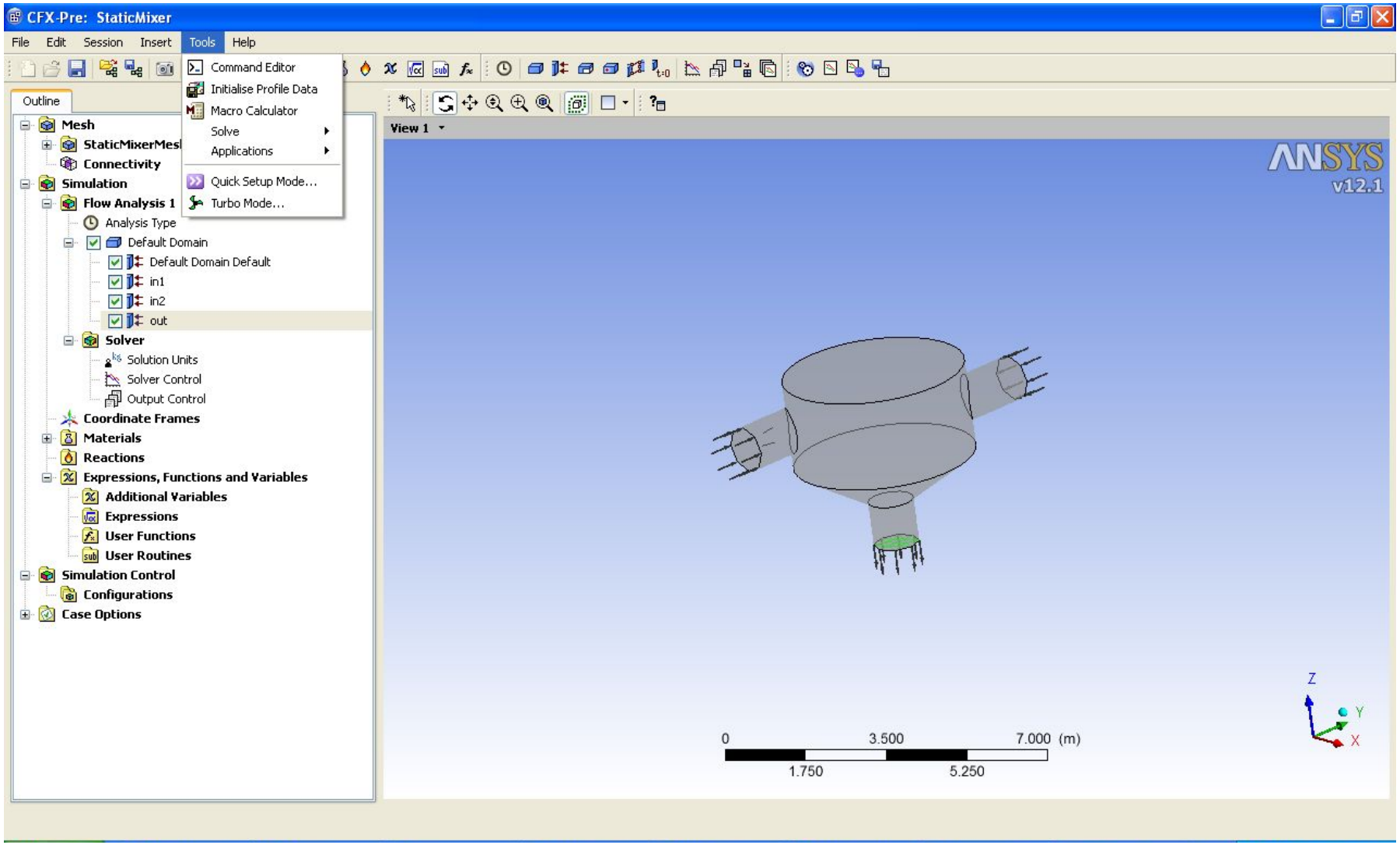
Solution Units

Меню Tools


CFX-Pre: StaticMixer
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Turbo Mode...
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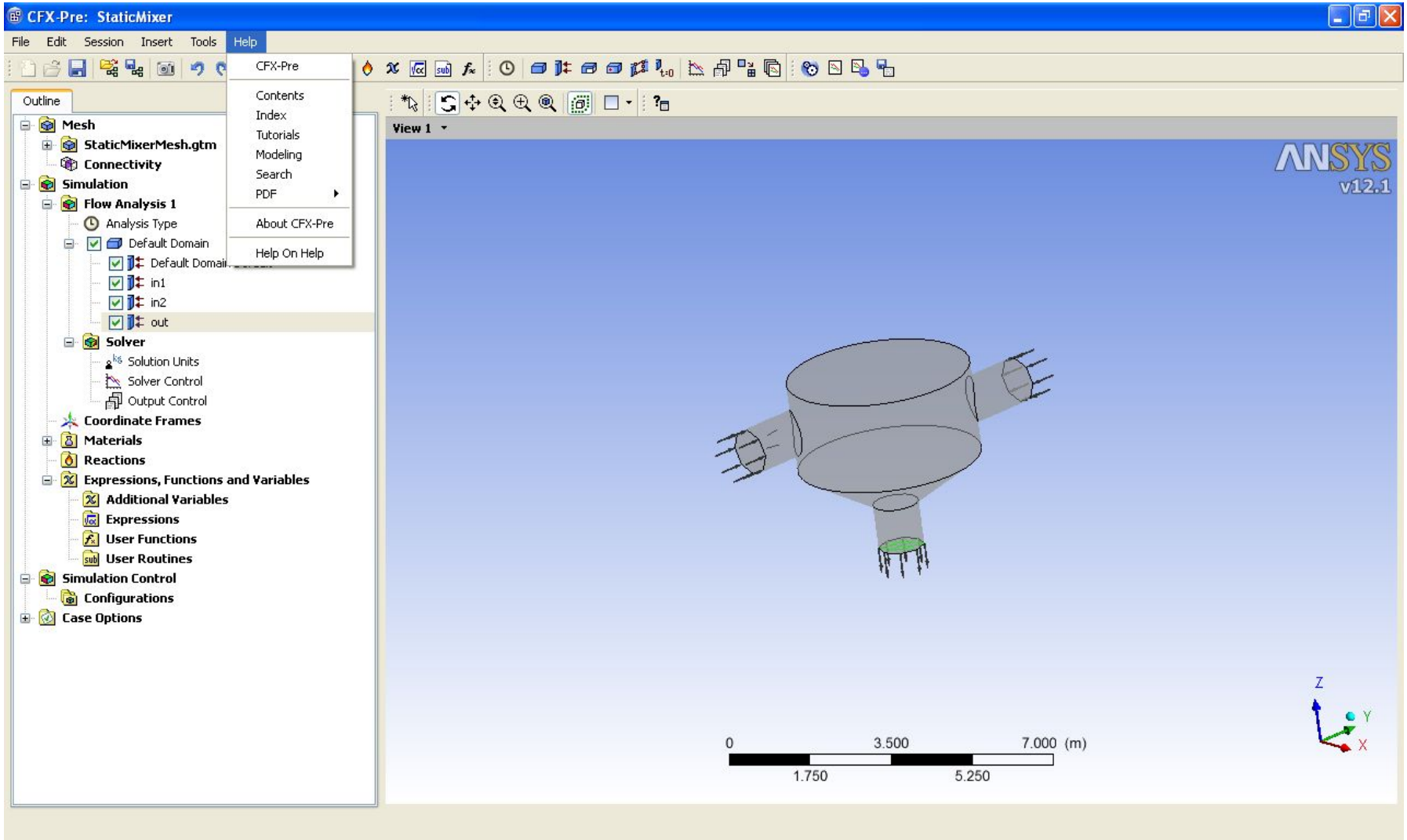
3.500
7.000 (m)
1.750
5.250
Z
Y
X

Меню Help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3.500
7.000 (m)
1.750
5.250
Z
Y
X

Панели инструментов

Введение

- Перед тем как запустить файл сессии, скопируйте файлы для примера из папки

  C:\Program Files\ANSYS Inc\v121\CFX\examples

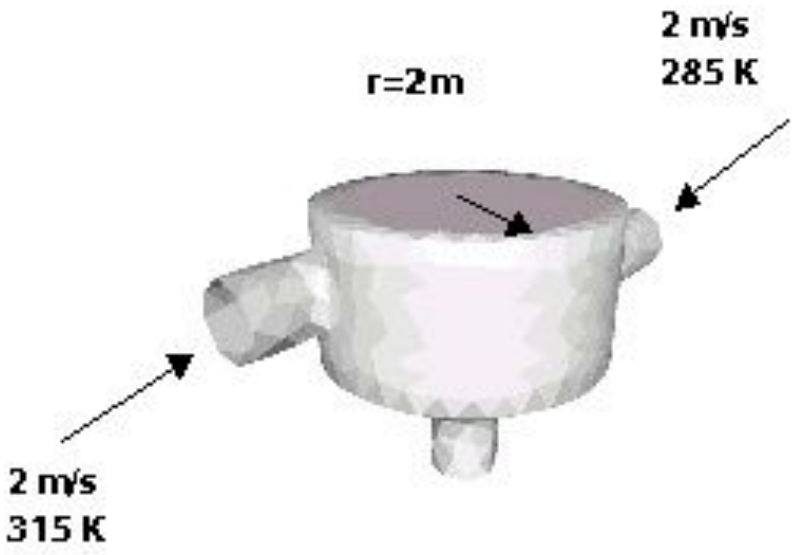
  в Вашу рабочую директорию.

- Вам потребуется скопировать следующие файлы:
  - StaticMixerMesh.gtm
  - StaticMixer.pre

Общий алгоритм работы

- Создание новой симуляции
- Импорт сетки
- Импорт CCL файла
- Просмотр настроек домена
- Просмотр настроек граничных условий
- Описание параметров решателя
- Запись файла для решателя (.def)

Static Mixer



Статический миксер состоит из двух входных труб и одной выходной. Вода, втекающая через входные трубы, имеет одинаковую скорость 2м/с, но разную температуру.

Через первую трубу подается вода при T=315K, через вторую – при T=285K. Радиус миксера 2м. Необходимо определить скорость и температуру потока на выходе.