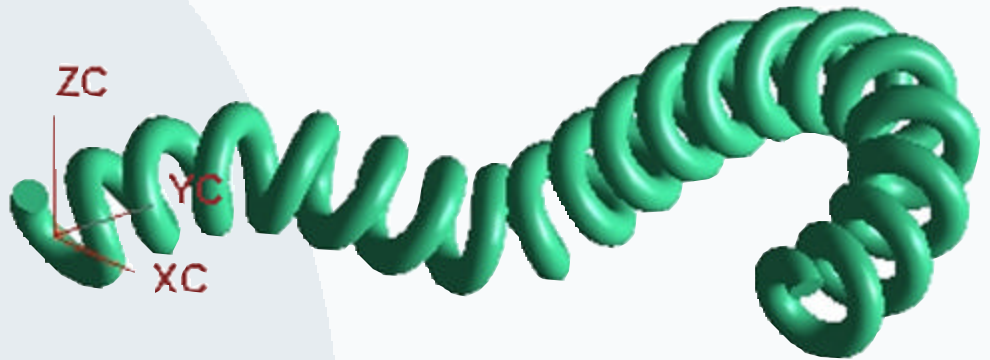


Creating a Helical Shape Along a 3D Path

- Here is a handy method for creating a swept freeform feature representing a coiled tube or cable similar to a telephone cord.



TFR TRI WORK

Generate a 3D spline that represents the path of the cable.

Create a datum plane at the end of the spline:

- Choose Datum Plane
- Select the spline
- Select the end of the spline
- Cycle the Plane Normal until it is tangent to the spline

Create a sketch on the datum plane:

- Choose Create New
- Select the datum plane
- Choose OK until the sketch is created

Create a line in the sketch that represents the radius of the helical shape. Start the line at the endpoint of the spline and end at some radial distance away from it.

Create the following expressions in the part file:

- $t = 1$
- $\text{number_of_turns} = x$ (where x represents the number of desired turns)
- $\text{ft} = t * \text{number_of_turns} * 360$ (this is the equation for angular control)

Create a Swept freeform feature (this will create a sheet body whose outer edge defines the centerline of the helical shape):

- Use the 3D spline as the guide string
- Use the sketch line as the section string
- Use the default Alignment Method and Tolerance
- Use Angular Law for Orientation Method
- Use By Equation for the Angular Law Option
- Use 't' as the Parameter Expression
- Use 'ft' as the Function Expression
- Use a Constant for the Scaling Method
- Use 1 for the Scale Factor

Create a Tube using the outer edge of the sheet body as the guide string.

Once the tube is created, run Examine Geometry to be sure there are no self-intersecting faces.

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