

First Screen (Input and Output Data)

The screenshot shows a software window titled "CAD of Spur Gears". The window contains several sections for data entry and calculation:

- Input Data:** Transmitted Power, H (kW) is 75; Input Speed, n1 (RPM) is 1200; Gear Ratio, i is 3.
- Module:** A dropdown menu is set to 8.
- Dynamic Velocity Factor, Kv:** A dropdown menu is set to "Hobbing or Shaping Teeth", and the Kv value is 0.540.
- Output Data:** Pinion Diameter, d1 (mm) is 144; Gear Diameter, d2 (mm) is 432; Pinion Number of Teeth, N1 is 18; Gear Number of Teeth, N2 is 54; Gear Speed, n2 (RPM) is 400; Face Width, F (mm) is 100.00; Linear Velocity, v (m/s) is 9.05; Tangential Force, Wt (N) is 8289.30; Normal Force, Wr (N) is 18544.50; Lewis Form Factor, Y is 0.2933; Bending Stress, (MPa) is 65.39.

At the bottom of the window, there are two buttons: "Calculate" and "Exit".

Visual BASIC Code

Private Sub Command2\_Click()

' Input values

h = Val(Text1.Text) ' power  
n1 = Val(Text2.Text) ' pinion RPM  
i = Val(Text3.Text) ' velocity ratio  
m = Val(Combo2.Text) ' module  
z1 = 18 ' design decision  
z2 = 18 \* i ' number of teeth in gear  
d1 = m \* z1 ' pinion diameter  
d2 = d1 \* i ' gear diameter  
n2 = n1 / i ' gear speed RPM  
v = (2 \* 3.1416 \* n1 / 60) \* (d1 / 2) ' linear velocity  
v = v / 1000  
wt = h / v ' calculation of tangential force  
wt = wt \* 1000  
wr = wt \* Tan(20) ' calculation of normal force  
f = 4 \* 3.1416 \* m ' calculation of face width  
f = Fix(f)

' Selection of Kv

If Combo1.Text = "Cast Iron with Cast Teeth" Then kv = 3 / (3 + v)  
If Combo1.Text = "Milled Teeth" Then kv = 6 / (6 + v)  
If Combo1.Text = "Hobbing or Shaping Teeth" Then kv = 50 / (50 +  
(200 \* v) ^ 0.5)  
If Combo1.Text = "High Precision Shaved or Ground Teeth" Then kv  
= (78 / (78 + ((200 \* v) ^ 0.5))) ^ 0.5  
If Combo1.Text = "Very High Precision Teeth" Then kv = 1

y = 0.29327 'for Z1 = 18 teeth

' calculation of bending stress

segma = wt / (f \* m \* y \* kv)  
Text6.Text = d1  
Text7.Text = d2  
Text8.Text = z1  
Text9.Text = z2  
Text10.Text = n2  
Text11.Text = Format(v, "0.00")  
Text12.Text = Format(wt, "0.00")  
Text13.Text = Format(wr, "0.00")  
Text14.Text = Format(y, "0.0000")  
Text15.Text = Format(segma, "0.00")  
Text5.Text = Format(kv, "0.000")  
Text4.Text = Format(f, "0.00")

End Sub

```
Private Sub Command3_Click()  
    End  
End Sub
```

```
Private Sub Form_Load()
```

```
    ' Teeth finishing for the selection of Kv  
    Combo1.AddItem "Cast Iron with Cast Teeth"  
    Combo1.AddItem "Milled Teeth"  
    Combo1.AddItem "Hobbing or Shaping Teeth"  
    Combo1.AddItem "High Precision Shaved or Ground Teeth"  
    Combo1.AddItem "Very High Precision Teeth"
```

```
    ' standard values of module m
```

```
    Combo2.AddItem (1)  
    Combo2.AddItem (1.25)  
    Combo2.AddItem (1.5)  
    Combo2.AddItem (2)  
    Combo2.AddItem (2.5)  
    Combo2.AddItem (4)  
    Combo2.AddItem (5)  
    Combo2.AddItem (6)  
    Combo2.AddItem (8)  
    Combo2.AddItem (10)  
    Combo2.AddItem (12)  
    Combo2.AddItem (16)  
    Combo2.AddItem (20)  
    Combo2.AddItem (25)  
    Combo2.AddItem (32)  
    Combo2.AddItem (40)  
    Combo2.AddItem (50)
```

```
End Sub
```