

Korrekturen

Kapitel 3

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Codeblatte 3.1 Prozeduren in Tabelle tblMassenTM

```
Option Explicit
'Prozedur zur Erstellung eines Formblatts
Sub Formblatt()
'
'Tabelle löschen
    Worksheets("Massenträgheitsmomente").Activate
    Worksheets("Massenträgheitsmomente").Cells.Clear
'
'Formblatt
    Range("A1") = "Form"
    Range("B1:D1").MergeCells = True
    Range("B1") = "Maße"
    Range("C1") = "Maße"
    Range("D1") = "Maße"
    Range("B2") = "a/R [mm]"
    Range("C2") = "b/r[mm]"
    Range("D2") = "h [mm]"
    Range("E1") = "Dichte"
    Range("E2") = "[kg/dm" + Chr(179) + "]"
    Range("F1") = "Masse m"
    Range("F2") = "[kg]"
    Range("G1") = "Moment Id"
    Range("G2") = "[kgm" + Chr(178) + "]"
    Range("H1") = "Abstand x"
    Range("H2") = "[mm]"
    Range("I1") = "Moment Ix"
    Range("I2") = "[kgm" + Chr(178) + "]"
    Range("J1") = "Gesamt Ix"
    Range("J2") = "[kgm" + Chr(178) + "]"
    Range("A:F").ColumnWidth = 10
    Range("G:G").ColumnWidth = 20
    Range("H:H").ColumnWidth = 10
    Range("I:J").ColumnWidth = 20
```

```
Columns("A:J").Select
Selection.NumberFormat = "0.00"
Zeile = 3
Gesamt = 0
Zelle
End Sub

Sub Quader()
Load frmQuader
frmQuader.Show
End Sub

Sub Zylinder()
Load frmZylinder
frmZylinder.Show
End Sub

Sub Kugel()
Load frmKugel
frmKugel.Show
End Sub

Sub Kegel()
Load frmKegel
frmKegel.Show
End Sub

Sub Ring()
Load frmRing
frmRing.Show
End Sub
```

Codeliste 3.2 Prozeduren im Formblatt frmKegel

```
Option Explicit
Private Sub cmdKegel_Click()
Kegel
End Sub

Private Sub UserForm_Activate()
TextBox1.SetFocus
End Sub

Sub Kegel()
```

```
Dim r1, r2, h, d, x As Double
Dim m, Id, Ix As Double
r1 = Val(TextBox1)
r2 = Val(TextBox2)
h = Val(TextBox3)
d = Val(TextBox4)
x = Val(TextBox5)
m = 3.1415926 / 3 * h * (r1 * r1 + r1 * r2 + r2 * r2) / 1000000 * d
Id = 0.3 * m * (r1 ^ 5 - r2 ^ 5) / (r1 ^ 3 - r2 ^ 3) / 1000000
Ix = Id + m * x * x / 1000000
Gesamt = Gesamt + Ix
If Zeile = 0 Then Zeile = 3
Cells(Zeile, 1) = "Kegel"
Cells(Zeile, 2) = r1
Cells(Zeile, 3) = r2
Cells(Zeile, 4) = h
Cells(Zeile, 5) = d
Cells(Zeile, 6) = m
Cells(Zeile, 7) = Id
Cells(Zeile, 8) = x
Cells(Zeile, 9) = Ix
Cells(Zeile, 10) = Gesamt
Zeile = Zeile + 1
Zelle
Unload Me
End Sub
```

Codeliste 3.3 Prozeduren im Formblatt frmKugel

```
Option Explicit
Private Sub cmdKugel_Click()
    Kugel
End Sub

Private Sub UserForm_Activate()
    TextBox1.SetFocus
End Sub

Sub Kugel()
    Dim r1, r2, d, x As Double
    Dim m, Id, Ix As Double
    r1 = Val(TextBox1)
    r2 = Val(TextBox2)
    d = Val(TextBox4)
```

```
x = Val(TextBox5)
m = (r1 ^ 3 - r2 ^ 3) * 4 / 3 * 3.1415926 / 1000000 * d
Id = 0.4 * m * (r1 ^ 5 - r2 ^ 5) / (r1 ^ 3 - r2 ^ 3) / 1000000
Ix = Id + m * x * x / 1000000
Gesamt = Gesamt + Ix
If Zeile = 0 Then Zeile = 3
Cells(Zeile, 1) = "Kugel"
Cells(Zeile, 2) = r1
Cells(Zeile, 3) = r2
Cells(Zeile, 4) = ""
Cells(Zeile, 5) = d
Cells(Zeile, 6) = m
Cells(Zeile, 7) = Id
Cells(Zeile, 8) = x
Cells(Zeile, 9) = Ix
Cells(Zeile, 10) = Gesamt
Zeile = Zeile + 1
Zelle
Unload Me
End Sub
```

Codeliste 3.4 Prozeduren im Formblatt frmQuader

```
Option Explicit

Private Sub cmdQuader_Click()
    Quader
End Sub

Private Sub UserForm_Activate()
    TextBox1.SetFocus
End Sub

Sub Quader()
    Dim a, b, h, d, x As Double
    Dim m, Id, Ix As Double
    a = Val(TextBox1)
    b = Val(TextBox2)
    h = Val(TextBox3)
    d = Val(TextBox4)
    x = Val(TextBox5)
    m = a * b * h / 1000000 * d
    Id = m / 12 * (a * a + b * b) / 1000000
    Ix = Id + m * x * x / 1000000
```

```
Gesamt = Gesamt + Ix
If Zeile = 0 Then Zeile = 3
Cells(Zeile, 1) = "Quader"
Cells(Zeile, 2) = a
Cells(Zeile, 3) = b
Cells(Zeile, 4) = h
Cells(Zeile, 5) = d
Cells(Zeile, 6) = m
Cells(Zeile, 7) = Id
Cells(Zeile, 8) = x
Cells(Zeile, 9) = Ix
Cells(Zeile, 10) = Gesamt
Zeile = Zeile + 1
Zelle
Unload Me
End Sub
```

Code liste 3.5 Prozeduren im Formblatt frmRing

```
Option Explicit
Private Sub cmdRing_Click()
    Ring
End Sub

Private Sub UserForm_Activate()
    TextBox1.SetFocus
End Sub

Sub Ring()
    Dim r1, r2, d, x As Double
    Dim m, Id, Ix As Double
    r1 = Val(TextBox1)
    r2 = Val(TextBox2)
    d = Val(TextBox4)
    x = Val(TextBox5)
    m = 2 * 3.1415926 ^ 2 * r2 * r2 * r1 / 1000000 * d
    Id = m * (r1 * r1 + 3 / 4 * r2 * r2) / 1000000
    Ix = Id + m * x * x / 1000000
    Gesamt = Gesamt + Ix
    If Zeile = 0 Then Zeile = 3
    Cells(Zeile, 1) = "Ring"
    Cells(Zeile, 2) = r1
    Cells(Zeile, 3) = r2
    Cells(Zeile, 4) = ""
End Sub
```

```
Cells(Zeile, 5) = d
Cells(Zeile, 6) = m
Cells(Zeile, 7) = Id
Cells(Zeile, 8) = x
Cells(Zeile, 9) = Ix
Cells(Zeile, 10) = Gesamt
Zeile = Zeile + 1
Zelle
Unload Me
End Sub
```

Codeliste 3.6 Prozeduren im Formblatt frmZylinder

```
Option Explicit
Private Sub cmdRing_Click()
    Ring
End Sub

Private Sub UserForm_Activate()
    TextBox1.SetFocus
End Sub

Sub Ring()
    Dim r1, r2, d, x As Double
    Dim m, Id, Ix As Double
    r1 = Val(TextBox1)
    r2 = Val(TextBox2)
    d = Val(TextBox4)
    x = Val(TextBox5)
    m = 2 * 3.1415926 ^ 2 * r2 * r2 * r1 / 1000000 * d
    Id = m * (r1 * r1 + 3 / 4 * r2 * r2) / 1000000
    Ix = Id + m * x * x / 1000000
    Gesamt = Gesamt + Ix
    If Zeile = 0 Then Zeile = 3
    Cells(Zeile, 1) = "Ring"
    Cells(Zeile, 2) = r1
    Cells(Zeile, 3) = r2
    Cells(Zeile, 4) = ""
    Cells(Zeile, 5) = d
    Cells(Zeile, 6) = m
    Cells(Zeile, 7) = Id
    Cells(Zeile, 8) = x
    Cells(Zeile, 9) = Ix
    Cells(Zeile, 10) = Gesamt
```

```
Zeile = Zeile + 1
Calle Zelle
Unload Me
End Sub
```

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Codeblende 7.5 Prozeduren im Modul modLosgröße

```
Option Explicit
Public MyDoc As Object 'As Worksheet
Public DTitel, xTitel, yTitel As String
Sub Losgroesse_Datengrafik()
    Dim lngNumRows, lngNumCols As Long
    'Verweis auf Worksheet mit Daten
    Set MyDoc = ThisWorkbook.Worksheets("Losgroesse")
    'Übergabe der Anzahl der Spalten/Zeilen:
    lngNumRows = MyDoc.UsedRange.Rows.Count
    lngNumCols = MyDoc.UsedRange.Columns.Count
    'Neues Diagramm
    Charts.Add
    ActiveChart.ChartType = xlLineStacked100
    ActiveChart.SetSourceData Source:=Sheets("Losgroesse"). _
        Range("A1:E" + LTrim(Str(lngNumRows))), PlotBy:=xlColumns
    ActiveChart.Location Where:=xlLocationAsObject, Name:="Losgroesse"
    With ActiveChart
        .HasTitle = True
        .ChartTitle.Characters.Text = "KOSTENVERLAUF"
        .Axes(xlCategory, xlPrimary).HasTitle = True
        .Axes(xlCategory, xlPrimary).AxisTitle.Characters.Text = "Losgröße"
        .Axes(xlValue, xlPrimary).HasTitle = True
        .Axes(xlValue, xlPrimary).AxisTitle.Characters.Text = "Kosten"
    End With
End Sub
```

Die entsprechende Auswertung liefert:

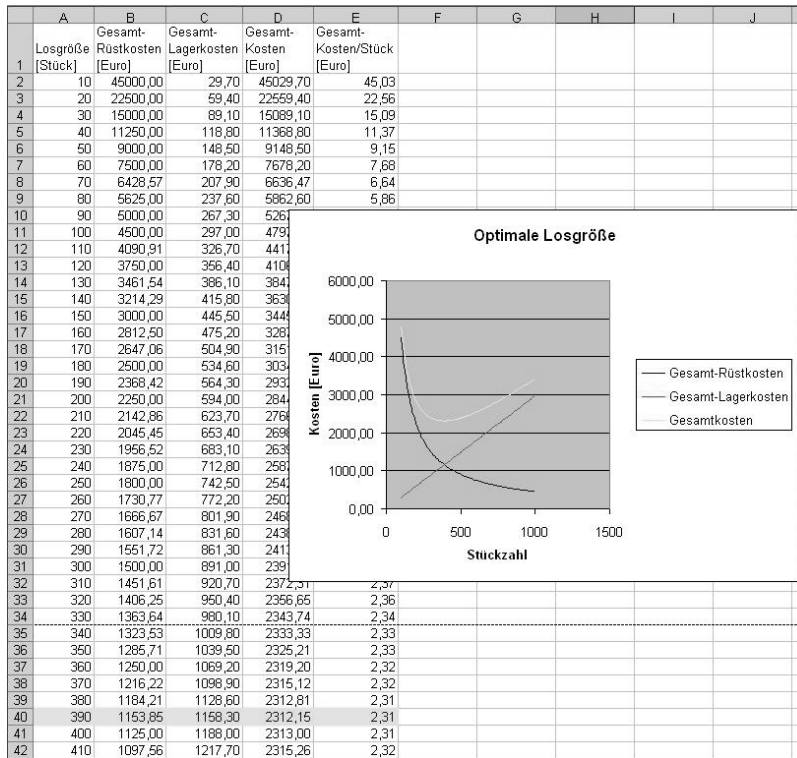


Bild 7-11
Testdatenauswertung

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Die Gaskonstante für Luft beträgt $287,05 \text{ J / (kg K)}$. Entsprechend liefert das Beispiel andere Werte. Entsprechend ist der Wert in der Codeliste 9.2 in der Prozedur Kreisprozesse_Testdaten abzuändern.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Masse m [kg]	1					->	v [m³/kg]	p [Pa]	W [J]	Wt [J]	Q [J]
2	Gaskonstante R [J/kg K]	287,05					1	1,511	19,000	1,473	-1,473	1,473
3	Adiabatenexponent x	1,4					1	1,595	18,000	1,553	-1,553	1,553
4	Schrittzahl	10					1	1,689	17,000	1,642	-1,642	1,642
5							1	1,794	16,000	1,741	-1,741	1,741
6							1	1,914	15,000	1,854	-1,854	1,854
7	Zustand Nr.	1	2	3	4		1	2,050	14,000	1,982	-1,982	1,982
8	Zustandsänderung	Is	Ad	Is	Ad		1	2,208	13,000	2,129	-2,129	2,129
9	p [Pa]	20	10	2	4		1	2,392	12,000	2,300	-2,300	2,300
10	v [m³/kg]	1,43525	2,8705	9,06195372	4,53097686		1	2,610	11,000	2,501	-2,501	2,501
11	T [grd K]	1000	1000	-125625,353	631,385036		1	2,871	10,000	2,740	-2,740	2,740
12							2	3,047	9,200	1,691	-2,367	
13							2	3,251	8,400	1,800	-2,519	
14							2	3,492	7,600	1,927	-2,697	
15							2	3,781	6,800	2,079	-2,909	
16							2	4,134	6,000	2,263	-3,166	
17							2	4,579	5,200	2,492	-3,486	
18							2	5,160	4,400	2,786	-3,896	
19							2	5,955	3,600	3,181	-4,446	
20							2	7,126	2,800	3,747	-5,232	
21							3	8,238	2,200	-1,730	1,730	-1,730
22							3	7,552	2,400	-1,579	1,579	-1,579
23							3	6,971	2,600	-1,452	1,452	-1,452
24							3	6,473	2,800	-1,344	1,344	-1,344
25							3	6,041	3,000	-1,251	1,251	-1,251
26							3	5,664	3,200	-1,171	1,171	-1,171
27							3	5,331	3,400	-1,099	1,099	-1,099
28							3	5,034	3,600	-1,036	1,036	-1,036
29							3	4,769	3,800	-0,980	0,980	-0,980
30							4	3,563	5,600	-4,646	6,475	
31							4	2,978	7,200	-3,747	5,232	
32							4	2,580	8,800	-3,181	4,446	
33							4	2,290	10,400	-2,786	3,896	
34							4	2,067	12,000	-2,492	3,486	
35							4	1,890	13,600	-2,263	3,166	
36							4	1,746	15,200	-2,079	2,909	
37							4	1,626	16,800	-1,927	2,697	
38							4	1,523	18,400	-1,800	2,519	
39							4	1,435	20,000	-1,691	2,367	
40												
41										3,625	-1,796	8,271

