Automated selection model of the metalworking machine based on the analysis drawing manufactured part using the database

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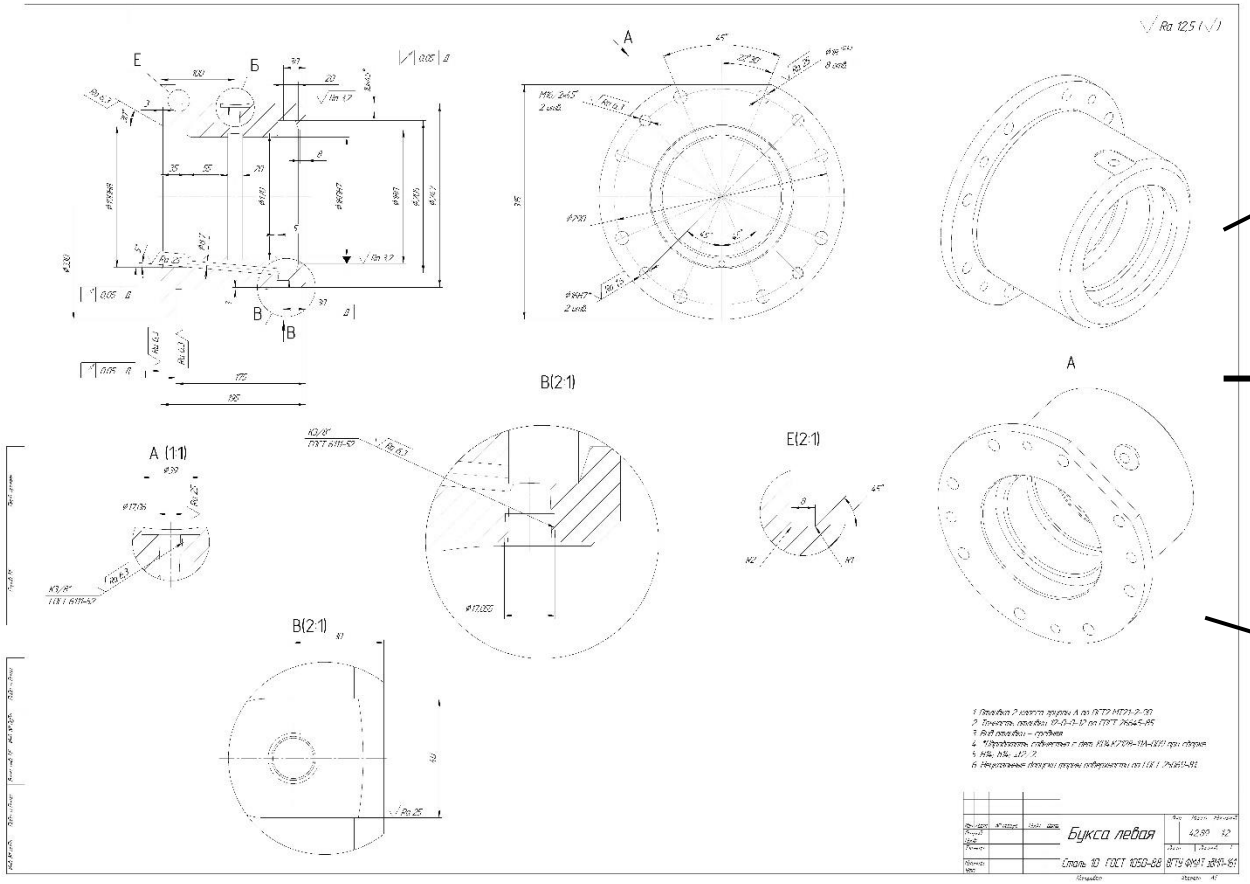
1 Introduction



part weight;

material of the part;

dimensions of the part.

1 Introduction

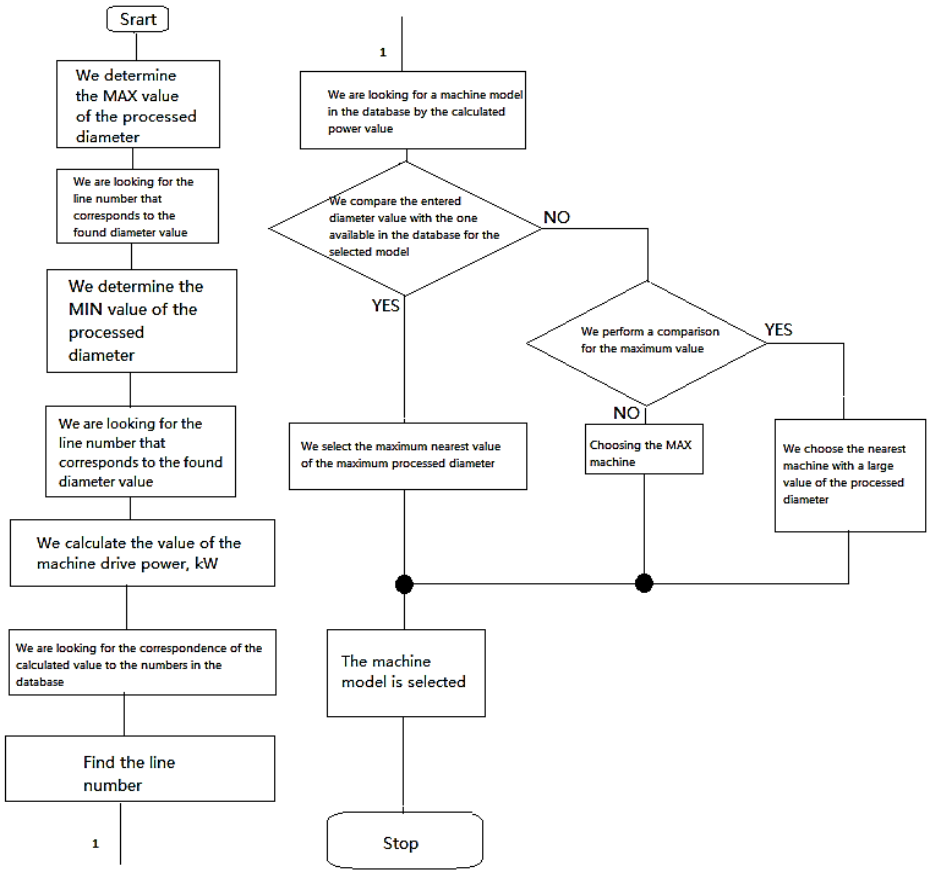
Characteristics of technological equipment:

- dimensions of the manufactured part;
- machine power;
- machine dimensions.
- nominal press force;
- forging weight;
- machine dimensions.

Metalworking-machine Forging and stamping equipment

2 Analysis of methods for solving the problem

METALWORKING MACHINE



Algorithm of the automated search database

	A	B	C	D	E
1	Maximum processed diameter, mm	Power, kW	The number of revolutions of the spindle, rpm	Maximum processing speed	Machine model
2	180	22	5000	20106,19298	QT-PRIMOS 50 SG
3	180	15	5000	20106,19298	QT-Primos 100
4	250	25	4000	16084,95439	QT-PRIMOS 150 SG
5	280	11	6000	24127,43158	QUICK TURN 100MS
6	300	4	3500	14074,33509	DMTG CKE 6130

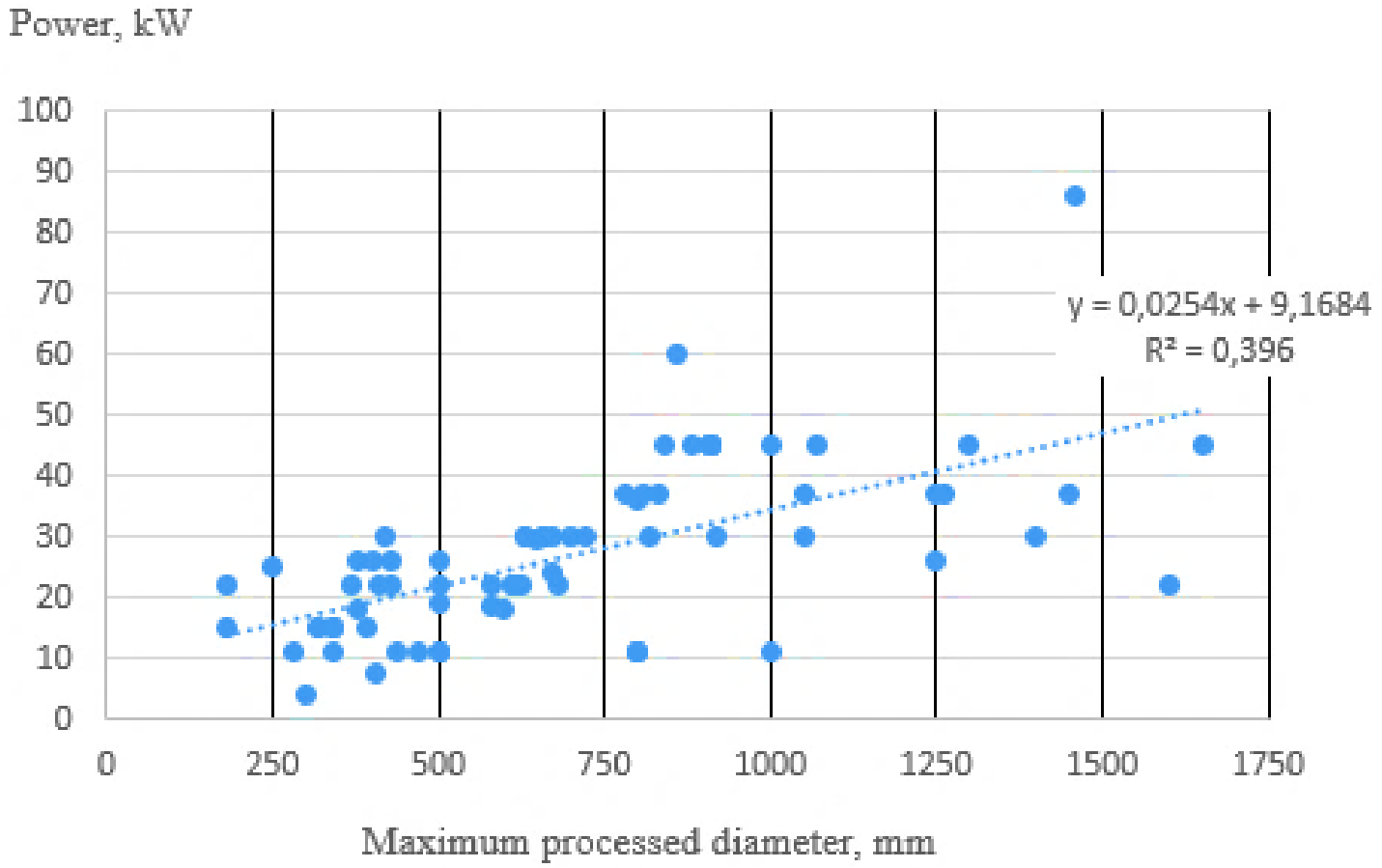
Structure of the database table

2 Analysis of methods for solving the problem

Data analysis shows that the first criterion for choosing a model can be dependence

$$P = f(D_{max})$$

METALWORKING MACHINE



3 Results of the study

METALWORKING MACHINE

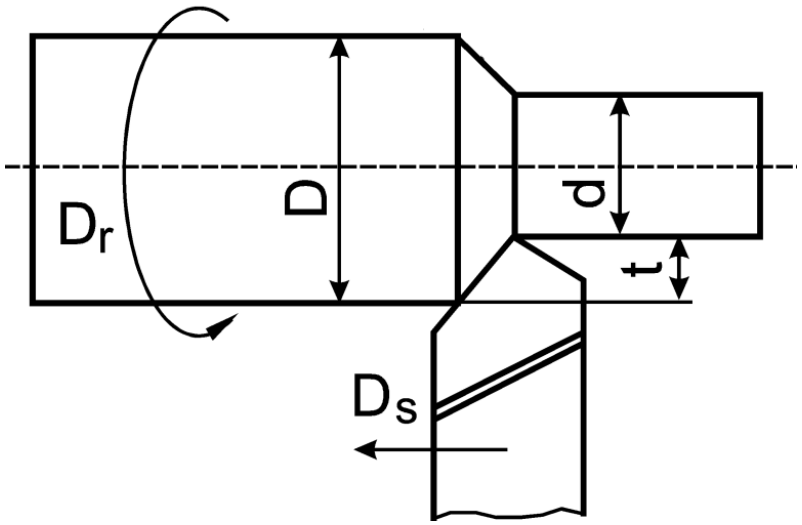
MAX		Machine model	MIN		Machine model
1650	76	Mega Turn 1600M	180	1	QT-PRIMOS 50 SG
The calculation is presented below					
Processed diameter			300		
Estimated power, kW			17		
Required machine model				UN-600/30H	

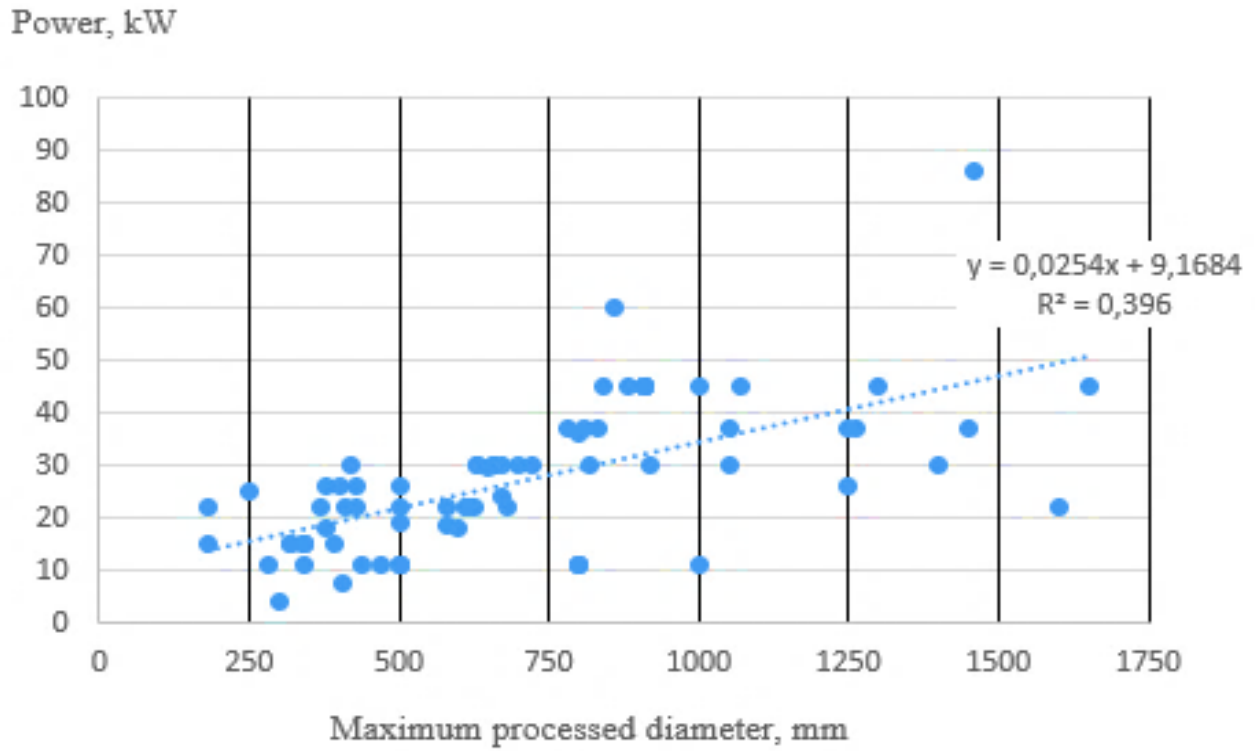
An example of the operation of the developed database algorithm

4 Automated search procedures

METALWORKING MACHINE

Source data and target function





D substitute instead of $x = 0{,}0254*D+9{,}1684 = P$

4 Automated search procedures

METALWORKING MACHINE

P

	A	B	C	D	E
1	Maximum processed diameter, mm	Power, kW	The number of revolutions of the spindle, rpm	Maximum processing speed	Machine model
2	180	22	5000	20106,19298	QT-PRIMOS 50 SG
3	180	15	5000	20106,19298	QT-Primos 100
4	250	25	4000	16084,95439	QT-PRIMOS 150 SG
5	280	11	6000	[illegible]	QUICK TURN 100MS
6	300	4	3500	14074,33509	DMTG CKE 6130

The desired metalworking machine model - ***QUICK TURN 100MS***

4 Automated search procedures

Forging and stamping equipment

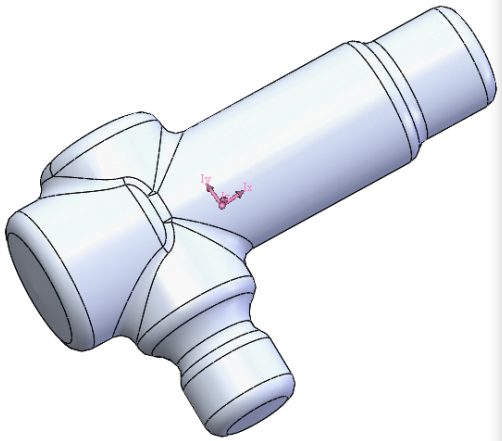
Forging weight, kg	Productivity pcs/h with press force (ts)												
	630	1000	1600	2000	2500	3150	4000	6300	8000	10000	12000	16000	20000
< 0,25	550												
0,25-0,4	530												
0,4-0,63	510	490											
0,63-1,0	490	470	450										
1,0-1,6		450	430										
1,6-2,5		430	410	390									
2,5-4,0			390	370	350								
4,0-6,3				350	330	310							
6,3-10					310	290	270						
10-16						270	250						
16-25							230	210					
25-40								190	170				
40-63								170	150	140			
63-100										130	120		
100-120											110	100	
120-140												90	80
140-160													70

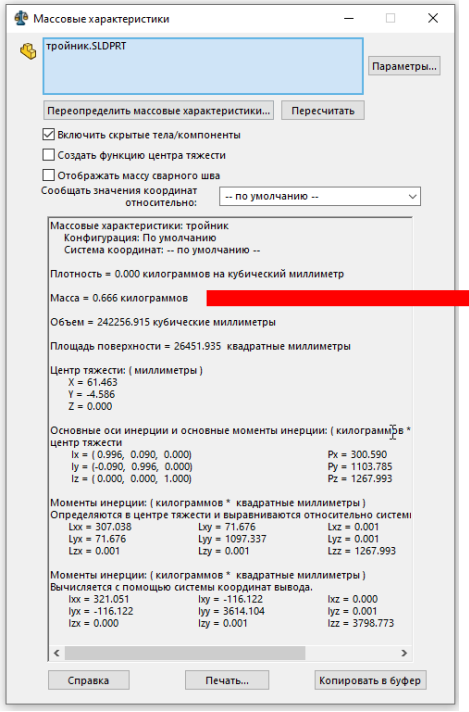
KGSHP performance during stamping

4 Automated search procedures

Forging and stamping equipment

Forging weight, kg





P

Forging weight, kg	Productivity pcs/h with press force (ts)												
	630	1000	1600	2000	2500	3150	4000	6300	8000	10000	12000	16000	20000
< 0,25	5[illegible]0												
0,25-0,4	[illegible]												
0,4-0,63	5[illegible]0	490											
0,63-1,0	4[illegible]0	470	450										
1,0-1,6		450	430										
1,6-2,5		430	410	390									
2,5-4,0			390	370	350								
4,0-6,3				350	330	310							
6,3-10					310	290	270						
10-16						270	250						
16-25							230	210					
25-40								190	170				
40-63								170	150	140			
63-100										130	120		
100-120											110	100	
120-140												90	80
140-160													70

4 Automated search procedures

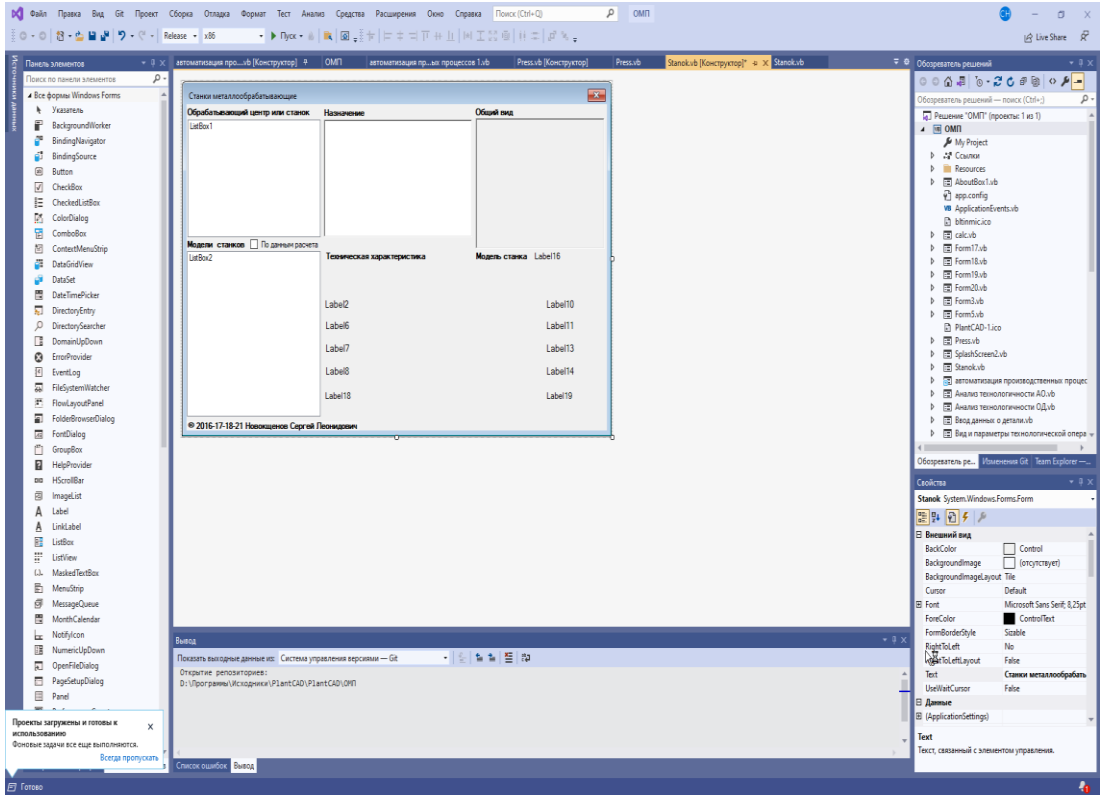
Forging and stamping equipment

P/100

	A	B	C	D	
1	Тяжмехпресс	КА8538			6,3
2	НКМЗ	КД8040Б	1360	Nominal force, t	10
3	Kurimoto	КД8040	1420	Nominal force, t	10
4	Smeral	КБ8042	1360	Nominal force, t	16
5		КГ8042А	1360	Nominal force, t	16
6		КБ8544А	1600	Nominal force, t	25
7		КБ8544Б	1600	Nominal force, t	25
8		КИ8044	1800	Nominal force, t	25
9		КД8044	1800	Nominal force, t	25
10		КБ8046	1700	Nominal force, t	40
11		КГ8048	1860	Nominal force, t	63
12		КА8549	1960	Nominal force, t	80
13		К04.086.851	2830	Nominal force, t	125
14		К8552	3000	Nominal force, t	140
15		К8052	3000	Nominal force, t	160

The desired metalworking machine model – ***KA8538***

5 Data bases software



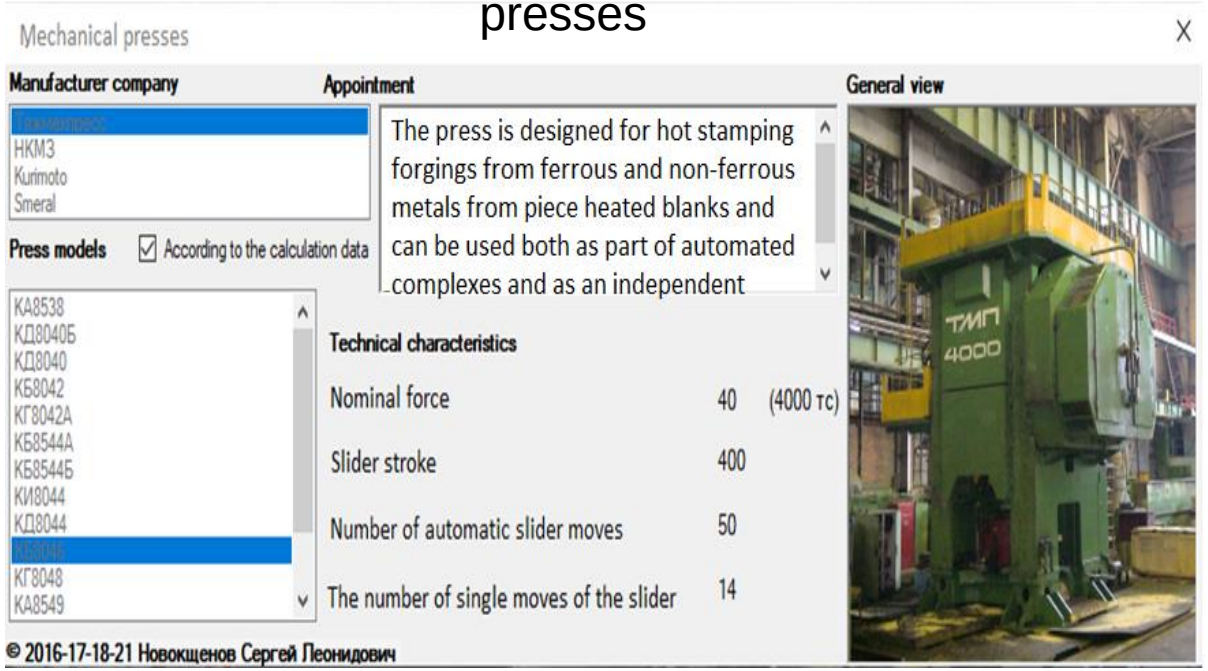

```
                    Case DialogResult.No
                        e.Cancel = True
                End Select
            Case "Rus" : Dim dr As DialogResult = MsgBox("Завершить просмотр?",
                                                         MsgBoxStyle.YesNo Or MsgBoxStyle.Question,
                                                         "PlantCAD - САПМП")
                Select Case dr
                    Case DialogResult.Yes
                        SplashScreen2.Close()
                        Excel_close()
                    Case DialogResult.No
                        e.Cancel = True
                End Select
        End Select
    End Sub
    Ссылок: 5
    Private Sub Excel_Open(path As String)
        Exc = CreateObject("Excel.Application")
        Exc.Workbooks.Open(path).Activate()
        Exc.Application.DisplayAlerts = False
        Exc.UserControl = True
        Exc.Visible = False
    End Sub
    Ссылок: 0
    Private Sub Form18_Load(sender As Object, e As EventArgs) Handles MyBase.Load
        Select Case Form22.Language
            Case "Rus" : Label1.Text = "Обрабатывающий центр или станок"
                Label5.Text = "Модели  станков"
                Label4.Text = "Назначение"
                Label9.Text = "Техническая характеристика"
                Label17.Text = "Модель станка"
                Label3.Text = "Общий вид"
                CheckBox1.Text = "По данным расчета"
            Case "Eng" : Label1.Text = "Machining center or machine"
                Label5.Text = "Machine models"
                Label4.Text = "Appointment"
                Label9.Text = "Technical characteristics"
                Label17.Text = "Machine model"
                Label3.Text = "General view"
                CheckBox1.Text = "According to the calculation data"
        End Select
        k = 0
        Label16.Text = " "
        Label9.Hide()
        Kat = False
        kategoriya = 1
        Try
            If IO.File.Exists("D:\Программы\PlantCAD\Данные PlantCAD\Станки\назначение.xlsx") Then
                Excel_Open("D:\Программы\PlantCAD\Данные PlantCAD\Станки\назначение.xlsx")
                For i = 1 To 20
                    s = Exc.Sheets(1).Range("A" + i.ToString).Value()
                    If s <> "" Then
```

Microsoft Visual Studio Community

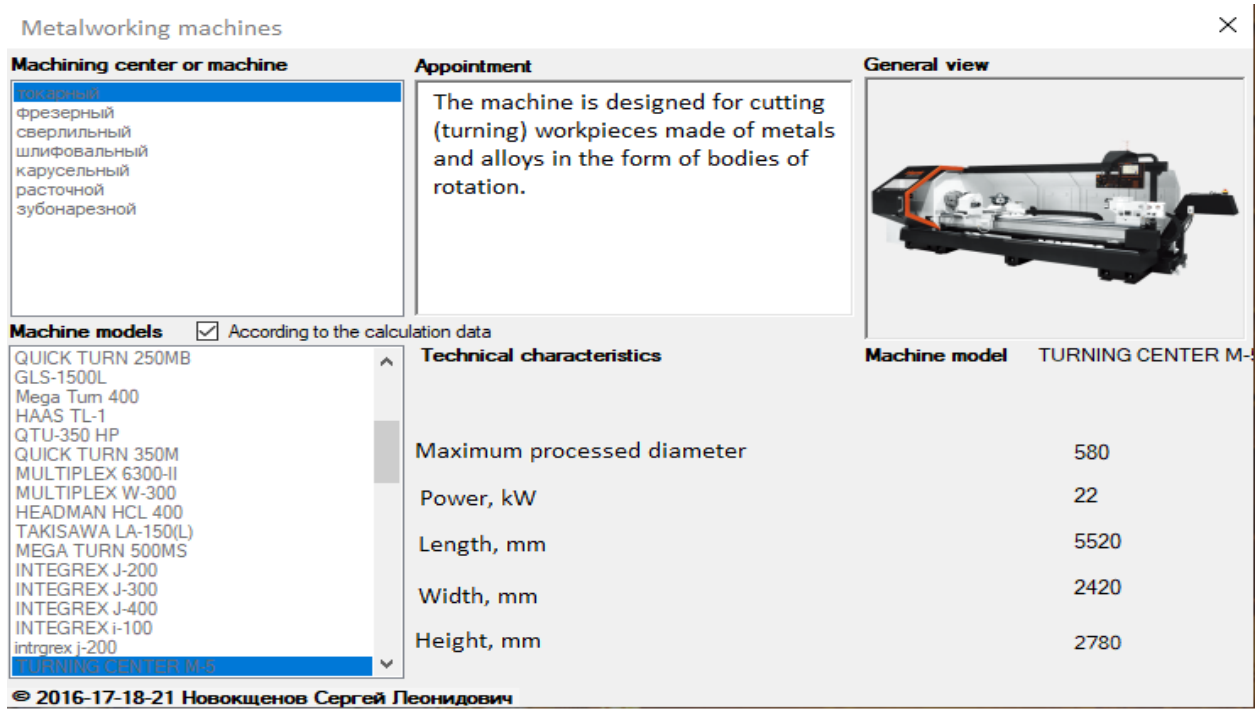
5 Data bases software

Automated selection

1) An example the search of the model mechanical presses



2) An example the search of the model metalworking machine



Thank you!

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