

Код программы расчета выхода березового угля из древесины горельников

App.config:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <configSections>
    <sectionGroup name="userSettings" type="System.Configuration.UserSettingsGroup, System,
Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089">
      </sectionGroup>
    </configSections>
  <startup>
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.0"/></startup>
</configuration>
```

App.xaml:

```
<Application x:Class="YurevUgol2.App"
  xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
  xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
  StartupUri="TitulniyList.xaml">
  <Application.Resources>
    <ResourceDictionary>
      <ResourceDictionary.MergedDictionaries>
        <!-- MahApps.Metro resource dictionaries. Make sure that all file names are Case Sensitive! -->
        <ResourceDictionary
Source="pack://application:,,,/MahApps.Metro;component/Styles/Controls.xaml" />
        <ResourceDictionary
Source="pack://application:,,,/MahApps.Metro;component/Styles/Fonts.xaml" />
        <ResourceDictionary
Source="pack://application:,,,/MahApps.Metro;component/Styles/Colors.xaml" />
        <!-- Accent and AppTheme setting -->
        <ResourceDictionary
Source="pack://application:,,,/MahApps.Metro;component/Styles/Accents/Cyan.xaml" />
        <ResourceDictionary
Source="pack://application:,,,/MahApps.Metro;component/Styles/Accents/BaseLight.xaml" />
      </ResourceDictionary.MergedDictionaries>
      <Style x:Key="SelectFolderButton" TargetType="Button">
        <Setter Property="OverridesDefaultStyle" Value="True"/>
        <Setter Property="Margin" Value="5"/>
        <Setter Property="Template">
          <Setter.Value>
            <ControlTemplate TargetType="Button">
              <Border Name="border"
                BorderThickness="0"
                BorderBrush="Transparent"
                Background="{TemplateBinding Background}">
                <ContentPresenter />
              </Border>
              <ControlTemplate.Triggers>
                <Trigger Property="IsMouseOver" Value="True">
                  <Setter Property="Cursor" Value="Hand"/>
                </Trigger>
              </ControlTemplate.Triggers>
            </ControlTemplate>
          </Setter.Value>
        </Setter>
      </Style>
    </ResourceDictionary>
  </Application.Resources>
</Application>
```

```

        </Style>
    </ResourceDictionary>
</Application.Resources>
</Application>

```

App.xaml.cs:

```

using System.Windows;
namespace YurevUgol2 { public partial class App : Application { } }

```

GUIScaling.cs:

```

using System;
using System.Globalization;
using System.Windows.Data;
using System.Windows.Markup;
namespace MyApp.GUIScaling {
    [ValueConversion(typeof(string), typeof(string))]
    public class RatioConverter : MarkupExtension, IValueConverter {
        private static RatioConverter _instance;
        public RatioConverter() { }
        public object Convert(object value, Type targetType, object parameter, CultureInfo culture) { // do
not let the culture default to local to prevent variable outcome re decimal syntax
            double size = System.Convert.ToDouble(value) * System.Convert.ToDouble(parameter,
CultureInfo.InvariantCulture);
            return size.ToString("G0", CultureInfo.InvariantCulture);
        }
        public object ConvertBack(object value, Type targetType, object parameter, CultureInfo culture) { //
read only converter...
            throw new NotImplementedException();
        }
        public override object ProvideValue(IServiceProvider serviceProvider) {
            return _instance ?? (_instance = new RatioConverter());
        }
    }
}

```

IshodnieDannie.xaml:

```

<Controls:MetroWindow x:Class="YurevUgol2.IshodnieDannie"
    xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
    xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
    xmlns:d="http://schemas.microsoft.com/expression/blend/2008"
    xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
    xmlns:Controls="clr-namespace:MahApps.Metro.Controls;assembly=MahApps.Metro"
    xmlns:tools="clr-namespace:MyApp.GUIScaling"
    mc:Ignorable="d"
    SizeToContent="WidthAndHeight"
    MaxHeight="{Binding Source={x:Static SystemParameters.PrimaryScreenHeight},
Converter={tools:RatioConverter}, ConverterParameter='0.6' }"
    MaxWidth="{Binding Source={x:Static SystemParameters.PrimaryScreenWidth},
Converter={tools:RatioConverter}, ConverterParameter='0.6' }"
    Title="Ввод исходных данных" ResizeMode="CanMinimize" WindowTransitionsEnabled="False"
WindowStartupLocation="CenterScreen">
    <Viewbox>
        <Grid>

```

```

    <Menu x:Name="menu" HorizontalAlignment="Left" VerticalAlignment="Top" FontFamily="Times
New Roman" FontSize="18.667" Margin="0" Background="#FFA2A2A2">
    <MenuItem Header="Выход" Foreground="White" Margin="0" FontFamily="Times New
Roman" FontSize="14" Click="MenuItem_Click_2" Background="{x:Null}"/>
    <MenuItem Header="Условия" Foreground="White" Margin="0" FontFamily="Times New
Roman" FontSize="14" Click="Usloviya_Click" Background="{x:Null}"/>
    <MenuItem Header="О программе" Foreground="White" Margin="0" FontFamily="Times New
Roman" FontSize="14" Click="Oprogramme_Click" Background="{x:Null}"/>
    </Menu>
    <RichTextBox HorizontalAlignment="Left" Height="66" Margin="10,43,10,0"
VerticalAlignment="Top" Width="394" IsReadOnly="True" FontFamily="Times New Roman"
FontSize="16">
    <FlowDocument>
    <Paragraph>
    <Run Text="Выход древесного угля (Y, %) из горелой березовой древесины при
температуре пиролиза (T, °C) в диапазоне 400...700°C"/>
    </Paragraph>
    </FlowDocument>
    </RichTextBox>
    <Label Content="T" HorizontalAlignment="Left" Margin="26,118,0,0" VerticalAlignment="Top"
FontFamily="Times New Roman" FontSize="18"/>
    <TextBox x:Name="t1" HorizontalAlignment="Left" Height="23" Margin="71,123,0,0"
TextWrapping="Wrap" VerticalAlignment="Top" Width="120" FontFamily="Times New Roman"
FontSize="16" PreviewTextInput="NumberValidationTextBox"
CommandManager.PreviewExecuted="TextBox_PreviewExecuted" ContextMenu="{x:Null}"/>
    <Label Content="Y = " HorizontalAlignment="Left" Margin="238,118,0,0"
VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="18"/>
    <Button x:Name="f1" Content="Рассчитать" HorizontalAlignment="Left" Margin="255,165,0,0"
VerticalAlignment="Top" Width="139" Click="F1_Click" FontSize="12" FontFamily="Times New Roman"
/>
    <Label x:Name="y" Content="" HorizontalAlignment="Left" Margin="291,118,0,0"
VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="18" Width="112"/>
    <RichTextBox HorizontalAlignment="Left" Height="62" Margin="10,209,10,0"
VerticalAlignment="Top" Width="394" IsReadOnly="True" FontFamily="Times New Roman"
FontSize="16">
    <FlowDocument>
    <Paragraph>
    <Run Text="Содержание нелетучего углерода (НУ, %) в древесном угле (основной
показатель качества) в зависимости от температуры пиролиза, при которой получен уголь."/>
    </Paragraph>
    </FlowDocument>
    </RichTextBox>
    <Label Content="T" HorizontalAlignment="Left" Margin="26,284,0,0" VerticalAlignment="Top"
FontFamily="Times New Roman" FontSize="18"/>
    <TextBox x:Name="t2" HorizontalAlignment="Left" Height="23" Margin="71,289,0,0"
TextWrapping="Wrap" VerticalAlignment="Top" Width="120" FontFamily="Times New Roman"
FontSize="16" PreviewTextInput="NumberValidationTextBox"
CommandManager.PreviewExecuted="TextBox_PreviewExecuted" ContextMenu="{x:Null}"/>
    <Label Content="НУ = " HorizontalAlignment="Left" Margin="238,284,0,0"
VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="18"/>
    <Button x:Name="f2" Content="Рассчитать" HorizontalAlignment="Left" Margin="255,334,0,10"
VerticalAlignment="Top" Width="139" Click="F2_Click" FontFamily="Times New Roman"
FontSize="12"/>

```

```

        <Label x:Name="nu" Content="" HorizontalAlignment="Left" Margin="291,284,0,0"
VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="18" Width="112"/>
    </Grid>
</Viewbox>
</Controls:MetroWindow>

```

IshodnieDannie.cs:

```

using System;
using System.Linq;
using System.Text.RegularExpressions;
using System.Windows;
using System.Windows.Input;
using MahApps.Metro.Controls;
namespace YurevUgol2 {
    public partial class IshodnieDannie : MetroWindow {
        public IshodnieDannie() {
            InitializeComponent();
        }
        public static bool IsWindowOpen<T>(string title = "") where T : Window {
            return string.IsNullOrEmpty(title)
                ? Application.Current.Windows.OfType<T>().Any()
                : Application.Current.Windows.OfType<T>().Any(w => w.Title.Equals(title));
        }
        private void Oprogramme_Click(object sender, RoutedEventArgs e) {
            if (IsWindowOpen<Window>("О программе")) {
                MessageBox.Show("Окно с информацией о программе уже открыто.");
            }
            else {
                Oprogramme oproge = new Oprogramme();
                oproge.Show();
            }
        }
        private void Usloviya_Click(object sender, RoutedEventArgs e) {
            if (IsWindowOpen<Window>("Условия")) {
                MessageBox.Show("Окно уже открыто.");
            }
            else {
                Usloviya usloviya = new Usloviya();
                usloviya.Show();
            }
        }
        private void MenuItem_Click_2(object sender, RoutedEventArgs e) {
            MessageBoxResult result = MessageBox.Show("Вы уверены, что хотите завершить работу с программой?", "Завершить работу", MessageBoxButton.YesNo, MessageBoxImage.Question);
            if (result == MessageBoxResult.Yes) { Application.Current.Shutdown(); }
        }
        private void F1_Click(object sender, RoutedEventArgs e) {
            if (string.IsNullOrWhiteSpace(t1.Text)) {
                MessageBox.Show("Необходимо ввести исходные данные.", "Ошибка", MessageBoxButton.OK, MessageBoxImage.Error);
            }
            else {
                y.Content = "";
                double f1result = 3621.7 * Math.Pow(Convert.ToDouble(t1.Text), -0.81);
            }
        }
    }
}

```

```

        y.Content = f1result.ToString("f1");
    }
}
private void F2_Click(object sender, RoutedEventArgs e) {
    if (string.IsNullOrWhiteSpace(t2.Text)) {
        MessageBox.Show("Необходимо ввести исходные данные.", "Ошибка",
        MessageBoxButton.OK, MessageBoxImage.Error);
    }
    else {
        nu.Content = "";
        double f2result = Convert.ToDouble(t2.Text) / (1.6 + 0.008 * Convert.ToDouble(t2.Text));
        nu.Content = f2result.ToString("f1");
    }
}
private void NumberValidationTextBox(object sender, TextCompositionEventArgs e) {
    Regex regex = new Regex("[^,0-9]+");
    e.Handled = regex.IsMatch(e.Text);
}
private void TextBox_PreviewExecuted(object sender, ExecutedRoutedEventArgs e) {
    if (e.Command == ApplicationCommands.Copy ||
        e.Command == ApplicationCommands.Cut ||
        e.Command == ApplicationCommands.Paste) {
        e.Handled = true;
    }
}
}
}
}
}
}

```

Oprogramme.xaml:

```

<Controls:MetroWindow x:Class="YurevUgol2.Oprogramme"
    xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
    xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
    xmlns:d="http://schemas.microsoft.com/expression/blend/2008"
    xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
    xmlns:Controls="clr-namespace:MahApps.Metro.Controls;assembly=MahApps.Metro"
    xmlns:tools="clr-namespace:MyApp.GUIscaling"
    mc:Ignorable="d"
    SizeToContent="WidthAndHeight"
    MaxHeight="{Binding Source={x:Static SystemParameters.PrimaryScreenHeight},
    Converter={tools:RatioConverter}, ConverterParameter='0.6' }"
    MaxWidth="{Binding Source={x:Static SystemParameters.PrimaryScreenWidth},
    Converter={tools:RatioConverter}, ConverterParameter='0.6' }"
    Title="O programme" ResizeMode="CanMinimize" WindowTransitionsEnabled="False"
    WindowStartupLocation="CenterScreen">
    <Viewbox>
        <Grid>
            <TextBox HorizontalAlignment="Left" Height="106" Margin="10,274,10,10"
            TextWrapping="Wrap" Text="Программа предназначена для расчёта выхода березового угля."
            VerticalAlignment="Top" Width="542" FontFamily="Times New Roman" FontSize="16"
            IsReadOnly="True" Background="White" HorizontalScrollBarVisibility="Visible" AllowDrop="False"
            Focusable="False" IsHitTestVisible="False"/>
            <Label Content="YurevUgol2" HorizontalAlignment="Left" Margin="10,16,0,0"
            VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="16" Width="155" Height="35"/>

```

```

        <Label Content="Версия:" HorizontalAlignment="Left" Margin="10,49,0,0"
VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="16" Width="155" Height="35"
FontWeight="Bold"/>
        <Label Content="Авторские права принадлежат:" HorizontalAlignment="Left"
Margin="10,84,0,0" VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="16"
Width="337" Height="35" FontWeight="Bold"/>
        <Label Content="Юрьеву Юрию Леонидовичу" HorizontalAlignment="Left"
Margin="10,154,0,0" VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="16"
Width="375" Height="35"/>
        <Label Content="Побединскому Егору Владимировичу" HorizontalAlignment="Left"
Margin="10,119,0,0" VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="16"
Width="355" Height="35"/>
        <Label Content="ФГБОУ ВО "Уральский государственный лесотехнический
университет"," HorizontalAlignment="Left" Margin="10,229,10,0" VerticalAlignment="Top"
FontSize="16" FontFamily="Times New Roman" Height="44" Width="542"/>
        <Label Content="Название организации:" HorizontalAlignment="Left" Margin="10,194,0,0"
VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="16" Width="286" Height="35"
FontWeight="Bold"/>
        <Label Content="1.0" HorizontalAlignment="Left" Margin="80,49,0,0" VerticalAlignment="Top"
FontFamily="Times New Roman" FontSize="16"/>
        <Image HorizontalAlignment="Right" Height="211" Margin="0,10,10,0" VerticalAlignment="Top"
Width="130" Source="Emblema.png" RenderTransformOrigin="0.657,0.488"/>
    </Grid>
</Viewbox>
</Controls:MetroWindow>

```

Oprogramme.xaml.cs:

```

using MahApps.Metro.Controls;
namespace YurevUgol2 {
    public partial class Oprogramme : MetroWindow {
        public Oprogramme() {
            InitializeComponent();
        }
    }
}

```

Packages.config:

```

<?xml version="1.0" encoding="utf-8"?>
<packages>
    <package id="ControlzEx" version="3.0.2.4" targetFramework="net40" />
    <package id="MahApps.Metro" version="1.6.5" targetFramework="net40" />
</packages>

```

Settings.cs:

```

namespace YurevUgol2.Properties {
    // Этот класс позволяет обрабатывать определенные события в классе параметров:
    // Событие SettingChanging возникает перед изменением значения параметра.
    // Событие PropertyChanged возникает после изменения значения параметра.
    // Событие SettingsLoaded возникает после загрузки значений параметров.
    // Событие SettingsSaving возникает перед сохранением значений параметров.
    internal sealed partial class Settings {
        public Settings() {
            /// Для добавления обработчиков событий для сохранения и изменения параметров
            раскомментируйте приведенные ниже строки:

```

```

//
// this.SettingChanging += this.SettingChangingEventHandler;
//
// this.SettingsSaving += this.SettingsSavingEventHandler;
//
}
private void SettingChangingEventHandler(object sender,
System.Configuration.SettingChangingEventArgs e) {
    // Добавьте здесь код для обработки события SettingChangingEvent.
}
private void SettingsSavingEventHandler(object sender, System.ComponentModel.CancelEventArgs
e) {
    // Добавьте здесь код для обработки события SettingsSaving.
}
}
}
}

```

TitulniyList.xaml:

```

<Controls:MetroWindow x:Class="YurevUgol2.TitulniyList"
    xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
    xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
    xmlns:d="http://schemas.microsoft.com/expression/blend/2008"
    xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
    xmlns:Controls="clr-namespace:MahApps.Metro.Controls;assembly=MahApps.Metro"
    xmlns:tools="clr-namespace:MyApp.GUIscaling"
    mc:Ignorable="d"
    SizeToContent="WidthAndHeight"
    MaxHeight="{Binding Source={x:Static SystemParameters.PrimaryScreenHeight},
Converter={tools:RatioConverter}, ConverterParameter='0.7'}"
    MaxWidth="{Binding Source={x:Static SystemParameters.PrimaryScreenWidth},
Converter={tools:RatioConverter}, ConverterParameter='0.7'}"
    Title="Расчет выхода березового угля" ResizeMode="CanMinimize"
    WindowTransitionsEnabled="False" WindowStartupLocation="CenterScreen">
    <Viewbox>
        <Grid>
            <Image Source="TitulniyList.png" Stretch="Fill"/>
            <Button Content="Начать работу" HorizontalAlignment="Left" Margin="133,411,0,0"
VerticalAlignment="Top" Width="186" Click="NachatRabotu_Click" Height="32" FontFamily="Times
New Roman" FontSize="14" FontWeight="Bold" RenderTransformOrigin="1.23,0.553"/>
            <Label Content="ПРОГРАММА РАСЧЕТА ВЫХОДА &#xD;&#xA;БЕРЕЗОВОГО УГЛЯ"
HorizontalAlignment="Left" Margin="227,216,10,0" VerticalAlignment="Top" FontFamily="Times New
Roman" FontSize="20" Foreground="White" FontWeight="Bold" Height="57"/>
            <Label Content="Разработчики программы:&#xD;&#xA;Юрьев Ю. Л.&#xA;Побединский Е.
В.&#xA;&#xA;" HorizontalAlignment="Left" Margin="427,383,10,0" VerticalAlignment="Top"
FontFamily="Times New Roman" FontSize="16" FontWeight="Normal" Height="66"/>
            <Label Content="Екатеринбург&#xA; 2019&#xA;" HorizontalAlignment="Center"
Margin="0,488,0,10" VerticalAlignment="Bottom" FontFamily="Times New Roman" FontSize="15"
FontWeight="Normal" Height="43"/>
            <Label Content="&#x9;&#x9;&#x9; МИНОБРНАУКИ РФ&#xA; ФГБОУ ВО «Уральский
государственный лесотехнический университет»&#xD;&#xA; Кафедра химической технологии
древесины, биотехнологии и наноматериалов" HorizontalAlignment="Left" Height="74"
Margin="10,12,0,0" VerticalAlignment="Top" FontFamily="Times New Roman" FontSize="15"
FontWeight="Normal"/>
        </Grid>
    </Viewbox>
</Controls:MetroWindow>

```

```
</Viewbox>
</Controls:MetroWindow>
```

TitulniyList.xaml.cs:

```
using MahApps.Metro.Controls;
using System.IO;
using System.Linq;
using System.Windows;
namespace YurevUgol2 {
    public partial class TitulniyList : MetroWindow {
        public TitulniyList() {
            // Проверка, запущена ли программа
            if
(System.Diagnostics.Process.GetProcessesByName(Path.GetFileNameWithoutExtension(System.Reflection.Assembly.GetEntryAssembly().Location)).Count() > 1) {
                MessageBoxResult resultt = MessageBox.Show("Программа уже запущена.", "Ошибка",
                MessageBoxButton.OK, MessageBoxImage.Error);
                // Если запущена, то закрыть программу и остановить выполнение кода
                if (resultt == MessageBoxResult.OK) {
                    Application.Current.Shutdown();
                    return;
                }
            }
            InitializeComponent();
        }
        private void NachatRabotu_Click(object sender, RoutedEventArgs e) {
            IshodnieDannie ishodniedannie = new IshodnieDannie();
            ishodniedannie.Show();
            Close();
        }
    }
}
```

Usloviya.xaml:

```
<Controls:MetroWindow x:Class="YurevUgol2.Usloviya"
    xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
    xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
    xmlns:d="http://schemas.microsoft.com/expression/blend/2008"
    xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
    xmlns:Controls="clr-namespace:MahApps.Metro.Controls;assembly=MahApps.Metro"
    xmlns:tools="clr-namespace:MyApp.GUIscaling"
    mc:Ignorable="d"
    SizeToContent="WidthAndHeight"
    MaxHeight="{Binding Source={x:Static SystemParameters.PrimaryScreenHeight},
    Converter={tools:RatioConverter}, ConverterParameter='0.45' }"
    MaxWidth="{Binding Source={x:Static SystemParameters.PrimaryScreenWidth},
    Converter={tools:RatioConverter}, ConverterParameter='0.45' }"
    Title="Условия" ResizeMode="CanMinimize" WindowTransitionsEnabled="False"
    WindowStartupLocation="CenterScreen">
    <Viewbox>
        <Grid>
            <TextBox HorizontalAlignment="Left" Height="100" Margin="10" TextWrapping="Wrap"
            Text="Объект – березовый уголь из березовой древесины горельников (после пожара)."
            VerticalAlignment="Top" Width="500" FontFamily="Times New Roman" FontSize="16"
```



```
IsReadOnly="True" Background="White" HorizontalScrollBarVisibility="Visible" AllowDrop="False"  
Focusable="False" IsHitTestVisible="False"/>  
    </Grid>  
    </Viewbox>  
</Controls:MetroWindow>
```

Usloviya.cs:

```
using MahApps.Metro.Controls;  
namespace YurevUgol2 {  
    public partial class Usloviya : MetroWindow {  
        public Usloviya() {  
            InitializeComponent();  
        }  
    }  
}
```