

Lab 06 Perform straight drilling to calculate Material removal rate and machining time.

Required:

1. Plot a relationship between RPMs and Feed Rate.
2. Plot a relationship between RPMs and Material Removal Rate.
3. Plot a relationship between RPMs and Machining time.
4. Plot a relationship between RPMs and Actual Machining time.
5. Plot a relationship between machining time and actual time.

MATLAB CODE:

```
% Student: (Barira Qasim - F2022031016)
```

```
% Given Data
```

```
L = [23.3, 25.15, 25.15, 25.15, 25.15, 25.15]; % Depth of hole in mm
```

```
D = [2, 16, 16, 16, 16, 16]; % Diameter of drill bit in mm
```

```
RPMs = [420, 660, 660, 660, 660, 660]; % RPMs
```

```
feed_rate = [43, 43, 43, 43, 43, 43]; % Feed Rate in mm/min
```

```
MRR = [135, 8646, 8646, 8646, 8646, 8646]; % Material Removal Rate in mm3/min
```

```
machining_time = [0.561162791, 0.604186047, 0.604186047, 0.604186047, 0.604186047,  
0.604186047]; % Machining Time in min
```

```
actual_machining_time = [1.37, 0.67, 0.68, 0.61, 0.72, 0.77]; % Actual Machining Time in min
```

```
% Plotting Relationships
```

```
% 1. Plot: RPMs vs Feed Rate
```

```
figure;
```

```
plot(RPMs, feed_rate, '-x', 'LineWidth', 2);
```

```
xlabel('RPM (rev/min)');
```

```
ylabel('Feed Rate (mm/min)');
```

```
title('Lab 06: RPMs vs Feed Rate (Barira Qasim - F2022031016)');
```

```
legend('Feed Rate vs RPMs');
```

```

grid on;

% 2. Plot: RPMs vs Material Removal Rate
figure;
plot(RPMs, MRR, '-x', 'LineWidth', 2);
xlabel('RPM (rev/min)');
ylabel('Material Removal Rate (mm^3/min)');
title('Lab 06: RPMs vs Material Removal Rate (Barira Qasim - F2022031016)');
legend('Material Removal Rate vs RPMs');
grid on;

```

```

% 3. Plot: RPMs vs Machining Time
figure;
plot(RPMs, machining_time, '-x', 'LineWidth', 2);
xlabel('RPM (rev/min)');
ylabel('Machining Time (min)');
title('Lab 06: RPMs vs Machining Time (Barira Qasim - F2022031016)');
legend('Machining Time vs RPMs');
grid on;

```

```

% 4. Plot: RPMs vs Actual Machining Time
figure;
plot(RPMs, actual_machining_time, '-x', 'LineWidth', 2);
xlabel('RPM (rev/min)');
ylabel('Actual Machining Time (min)');
title('Lab 06: RPMs vs Actual Machining Time (Barira Qasim - F2022031016)');
legend('Actual Machining Time vs RPMs');
grid on;

```

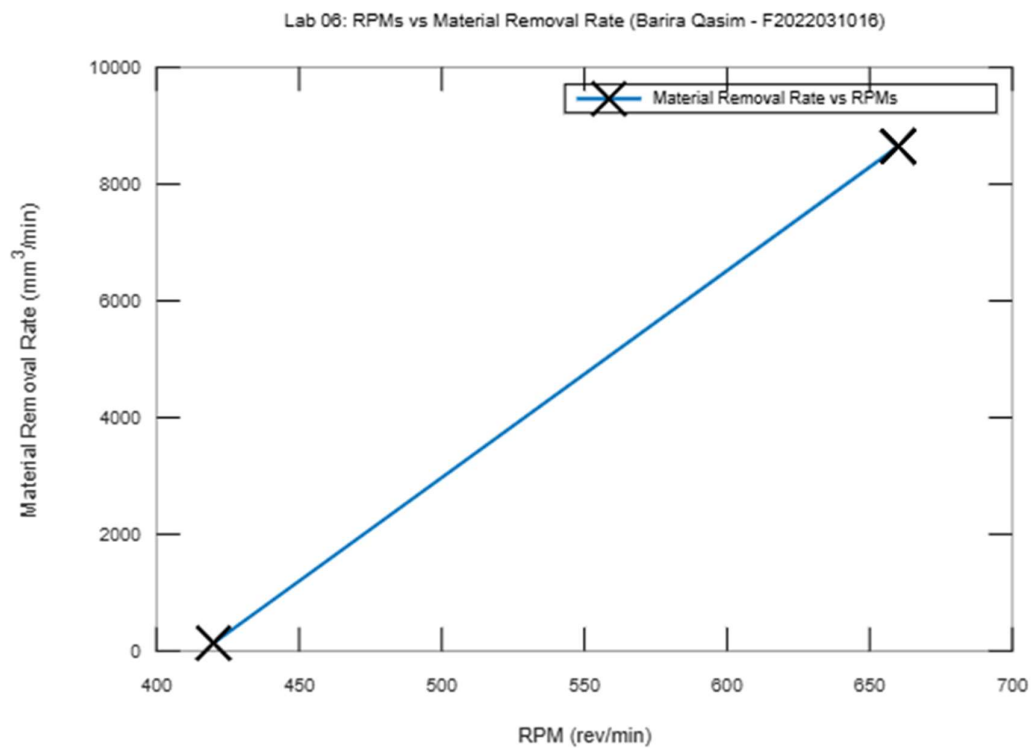
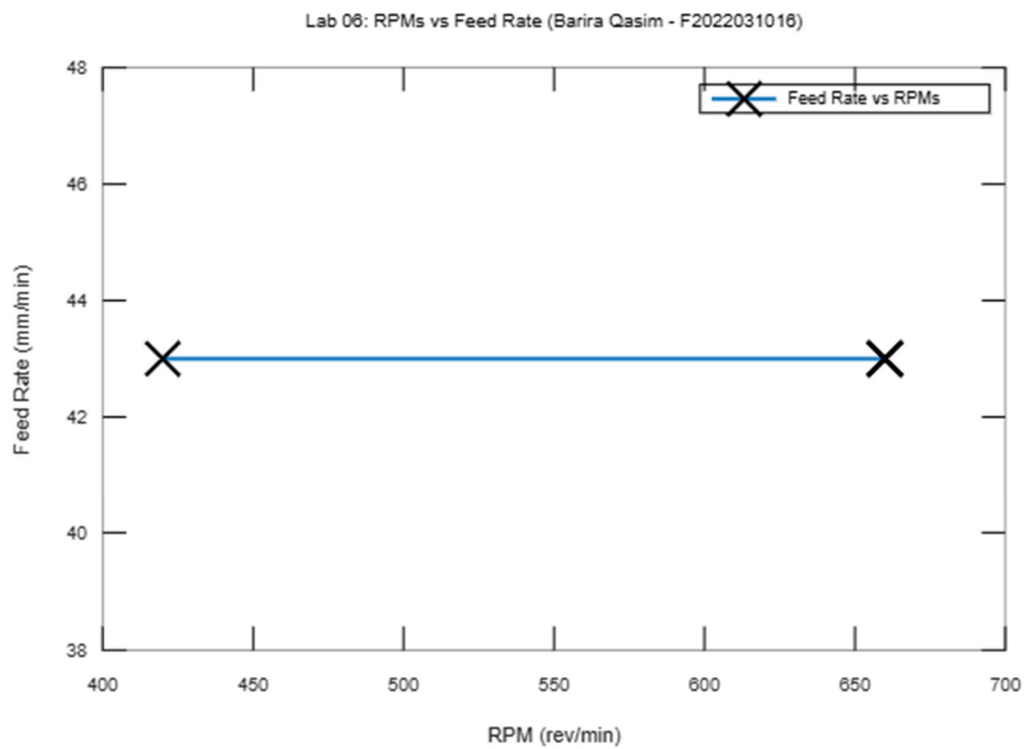
```

% 5. Plot: Machining Time vs Actual Machining Time
figure;

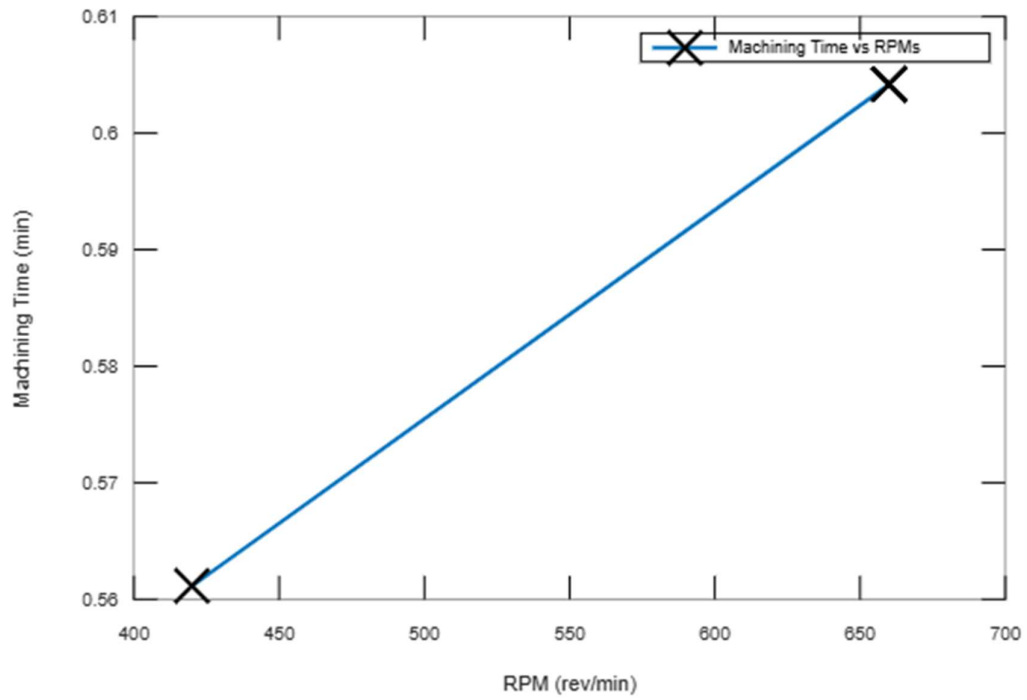
```

```
plot(machining_time, actual_machining_time, '-x', 'LineWidth', 2);  
xlabel('Machining Time (min)');  
ylabel('Actual Machining Time (min)');  
title('Lab 06: Machining Time vs Actual Machining Time (Barira Qasim - F2022031016)');  
legend('Actual Time vs Machining Time');  
grid on;
```

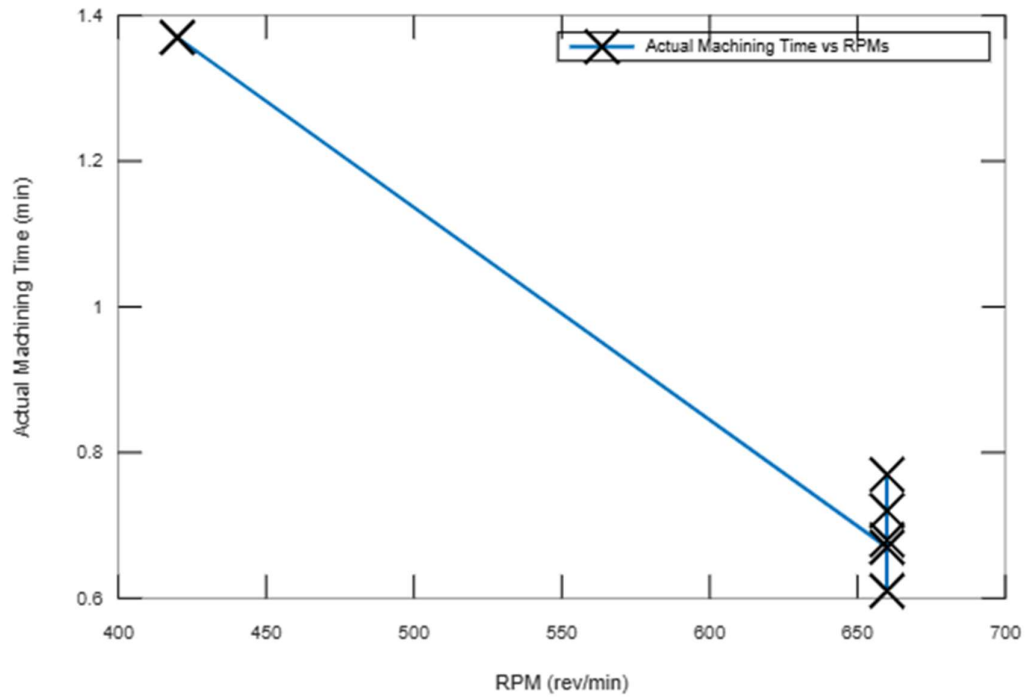
Graphs

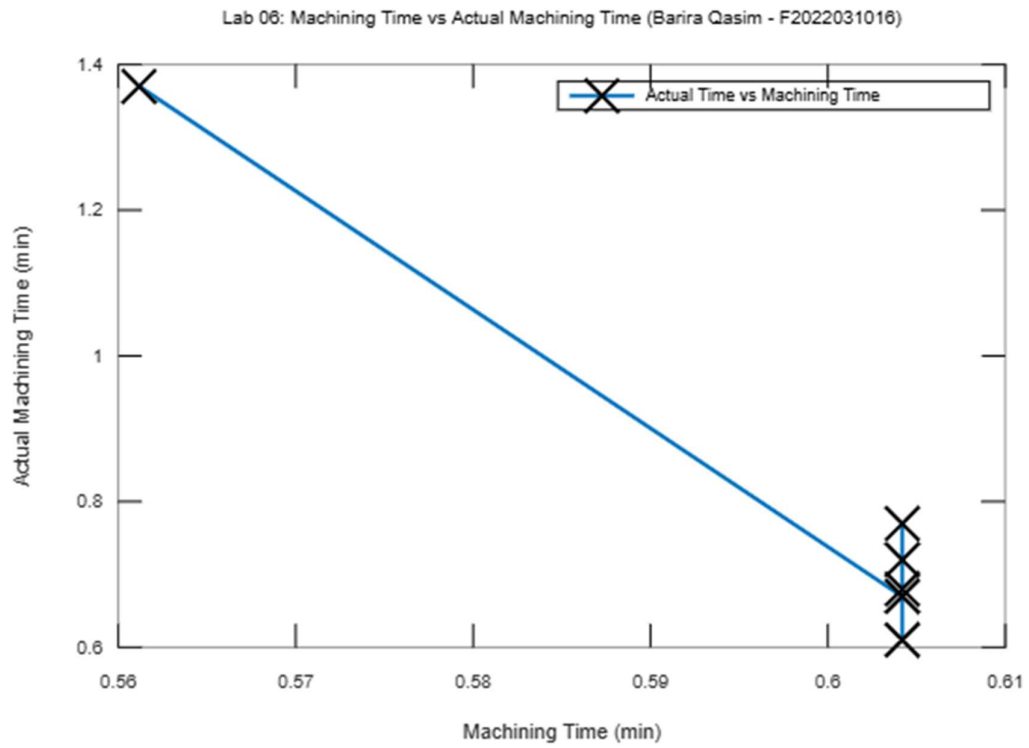


Lab 06: RPMs vs Machining Time (Barira Qasim - F2022031016)



Lab 06: RPMs vs Actual Machining Time (Barira Qasim - F2022031016)





Comments:
