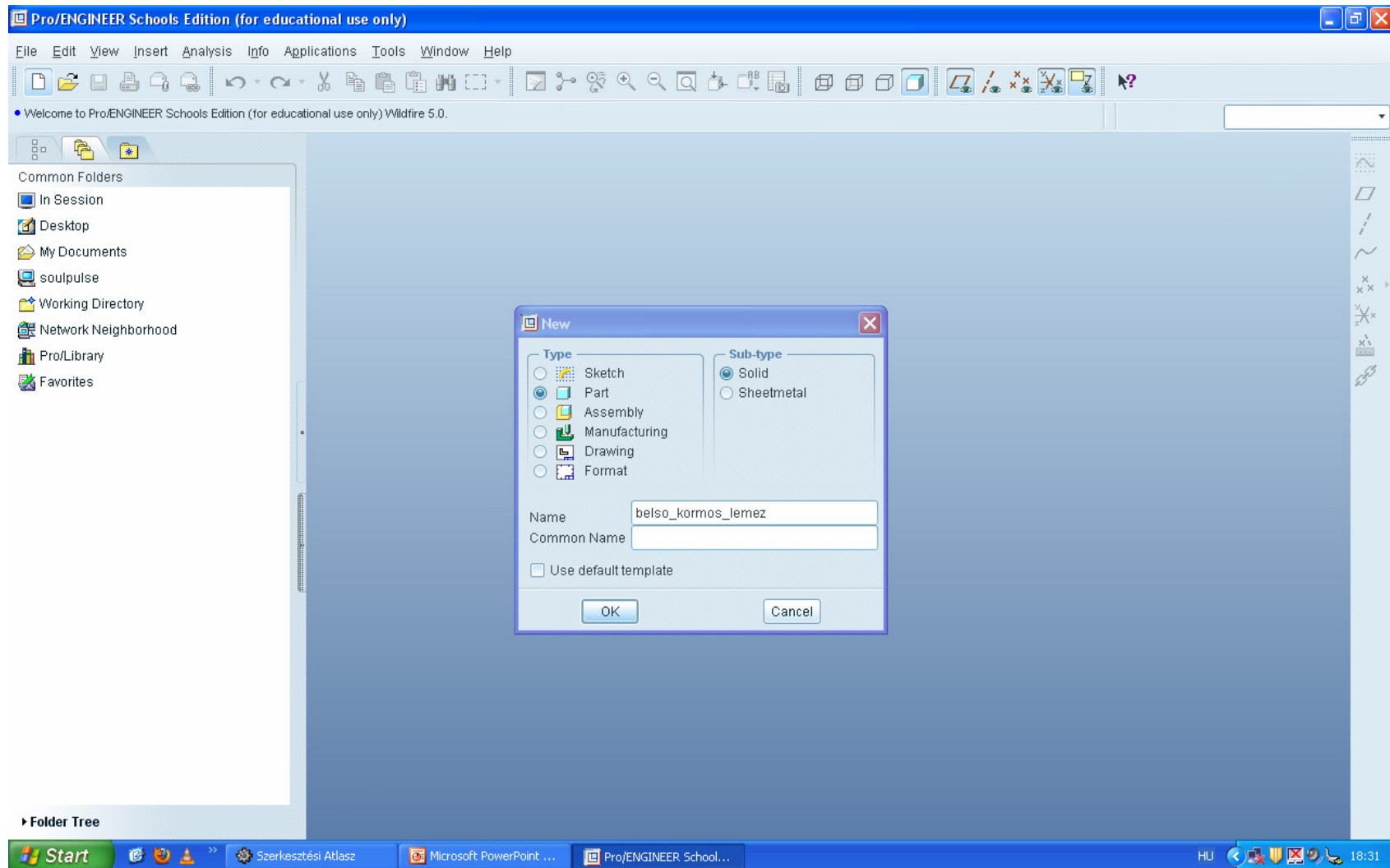
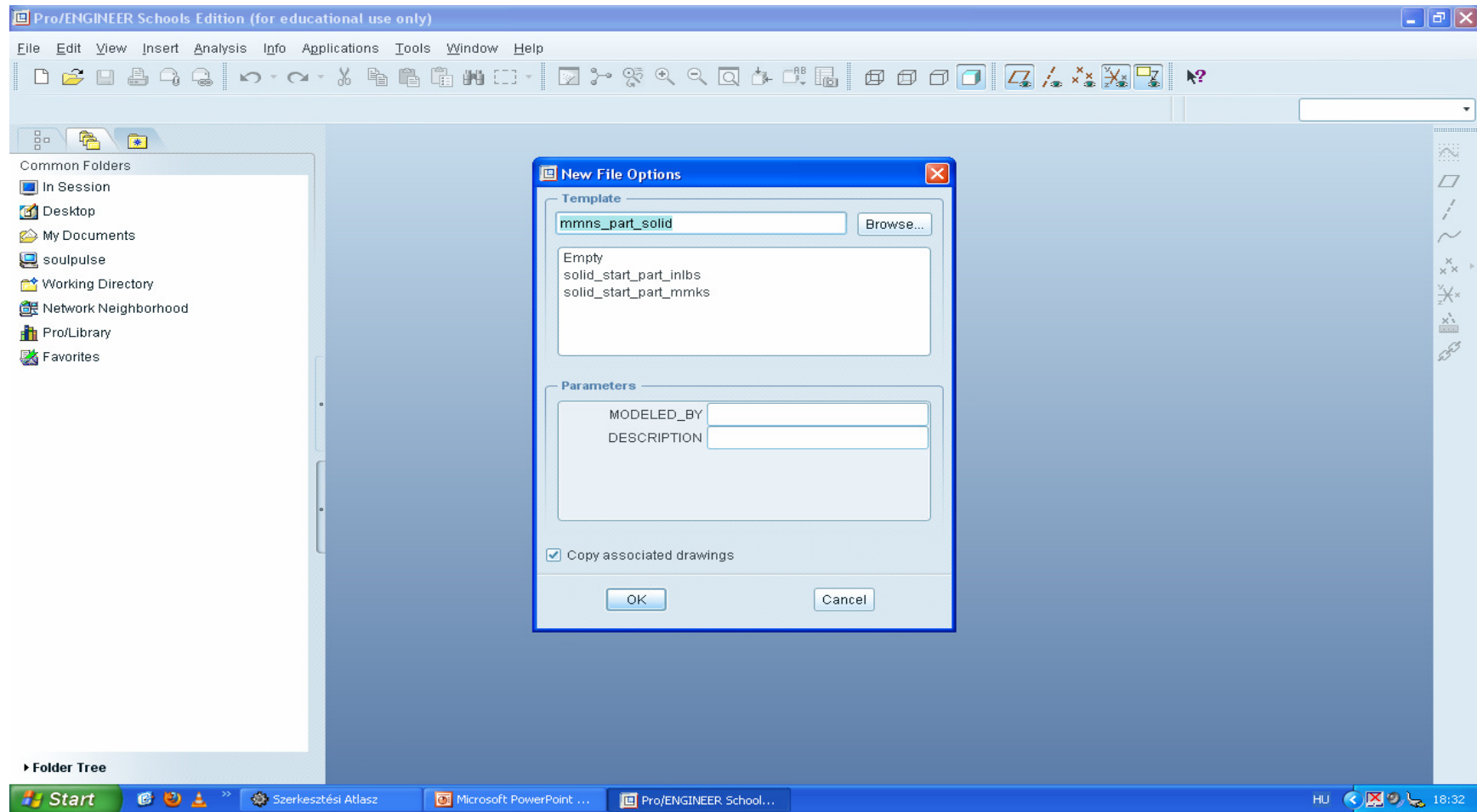


# Belso\_kormos\_lemesz



# mmns\_part\_solid !



Herczeg István : Szerkesztési atlasz

Atlasz Nagyítás Követés

Tartalomjegyzék

- Tengelykapcsolók
  - 206. oldal
  - 207. oldal
  - 208. oldal
  - 209. oldal
  - 210. oldal
  - 211. oldal
  - 212. oldal
  - 213. oldal
  - 214. oldal
  - 215. oldal
  - 216. oldal
  - 217. oldal
  - 218. oldal
  - 219. oldal
  - 220. oldal
  - 221. oldal
  - 222. oldal
  - 223. oldal
  - 224. oldal
  - 225. oldal
  - 226. oldal
  - 227. oldal
  - 228. oldal
  - 229. oldal
  - 230. oldal
  - 231. oldal

Kép

Belső fogaztató lemezek      Belső kórmós lemez      nyomótárcsa      Belső fogaztató

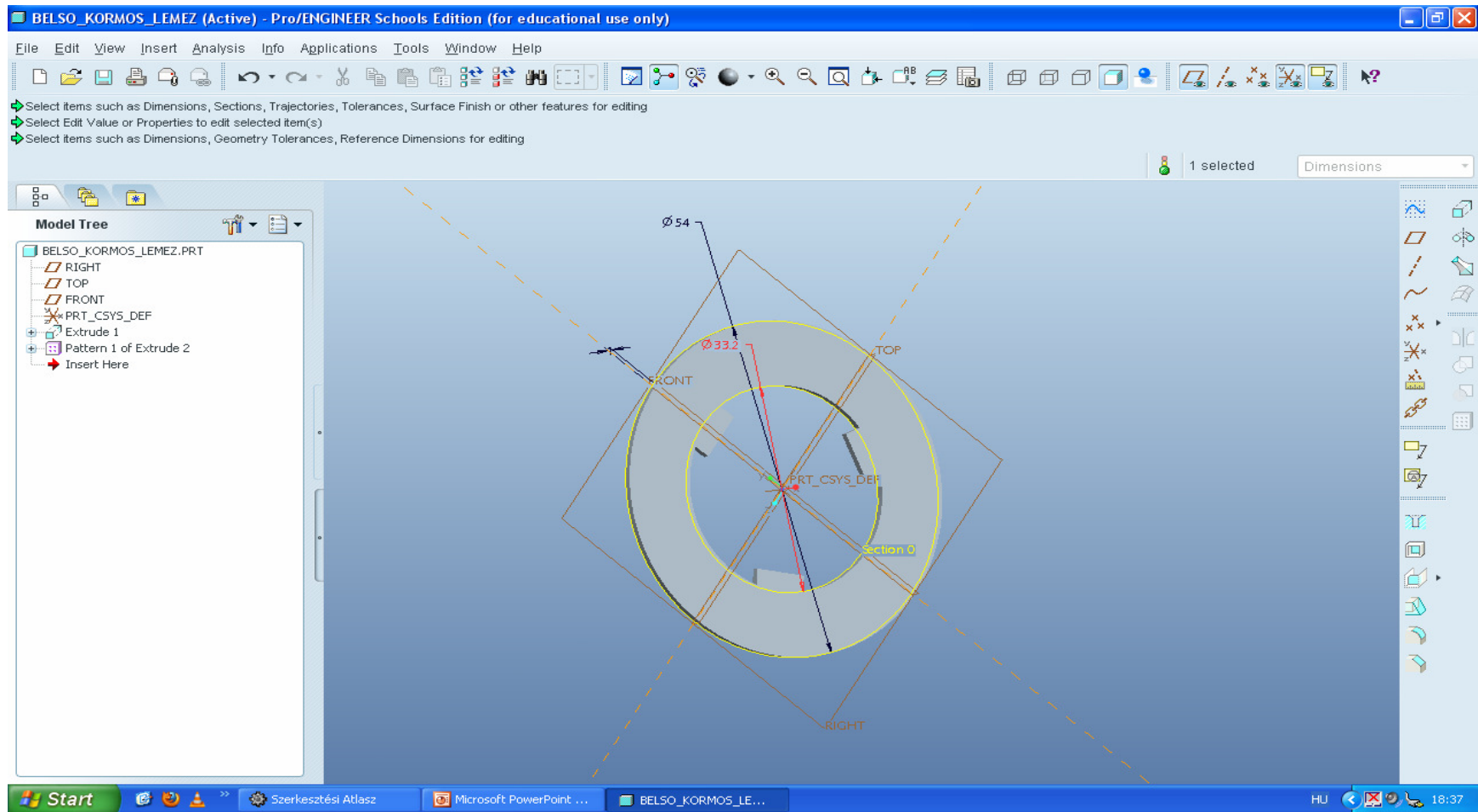
Konstant      Közös adatok      Acél      Acél      Közös adatok

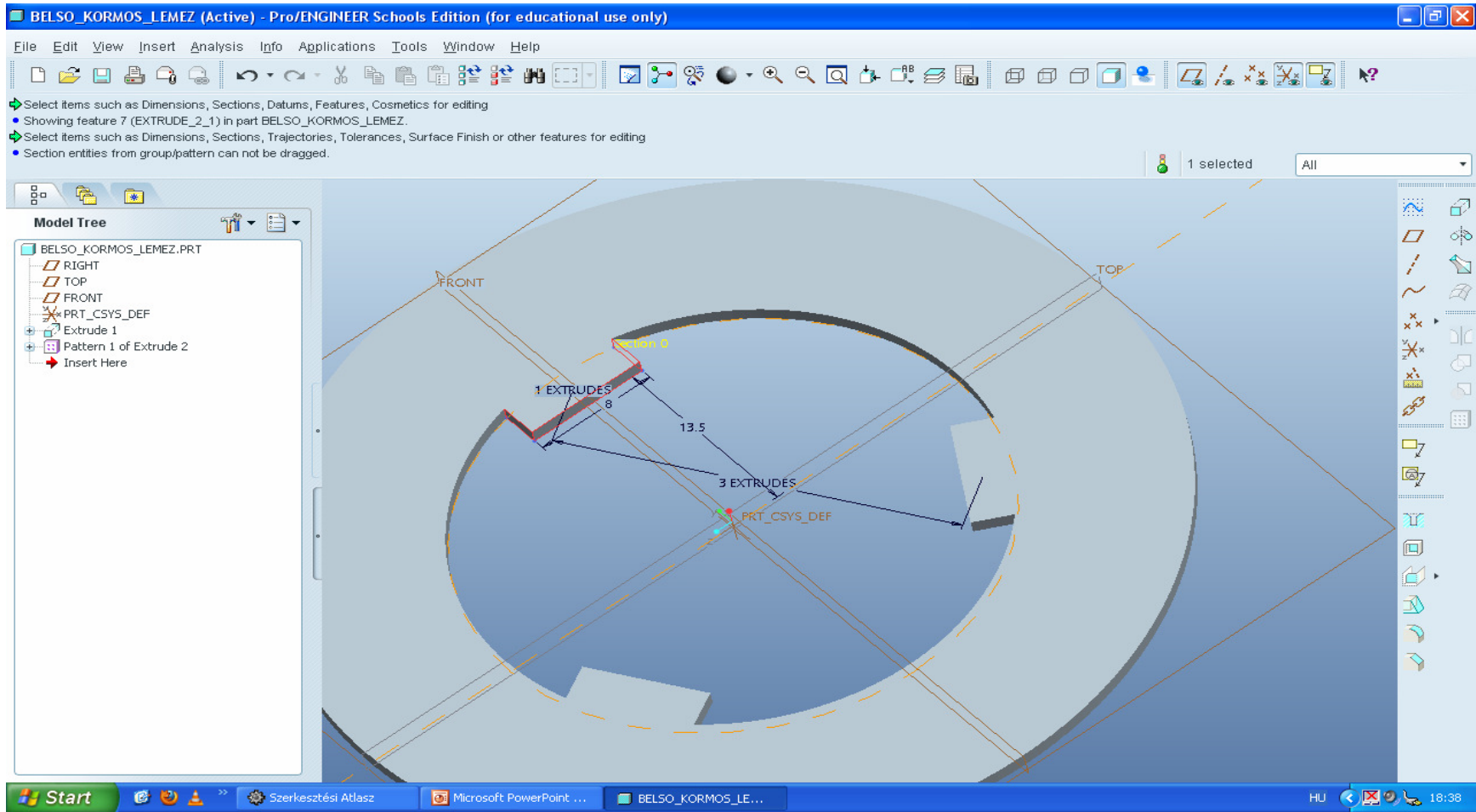
$f_2 \approx$	$k$	$b$	$d_b$	$b$	$f$	$c$	$D$	$d$	$H$	$B$	$i$	$b$	Ivelt-ség	$d_a'$	$d_i$	$B_a$	$b$	$z$	$m$	$d_o$	$d_i$
							54	33,2	13,5	8	3	1	0,25	39	27	8	2,5				
							67	48,2	19,6	9,75	3	1,45	0,16	-	39	-	4				
							78	58,2	24,4	9,75	3	1,45	0,18	-	48,8	-	4				
							88	65,2	27,9	9,75	3	1,45	0,25								
							98	70,2	30,1	9,75	3	1,45	0,2	78	60	12	3				
							110	70,2	30,1	9,75	3	1,45	0,25	78	60	12	3				

Nyomkövető

Start      Szerkesztési Atlasz      Microsoft PowerPoint ...      BELSO\_KORMOS\_LE...      HU      18:38

# 54x33.2x1





Tartalomjegyzék

Tengelykapcsolók

- 206. oldal
- 207. oldal
- 208. oldal
- 209. oldal
- 210. oldal
- 211. oldal
- 212. oldal
- 213. oldal
- 214. oldal
- 215. oldal
- 216. oldal
- 217. oldal
- 218. oldal
- 219. oldal
- 220. oldal**
- 221. oldal
- 222. oldal
- 223. oldal
- 224. oldal
- 225. oldal
- 226. oldal
- 227. oldal
- 228. oldal
- 229. oldal
- 230. oldal
- 231. oldal
- 232. oldal

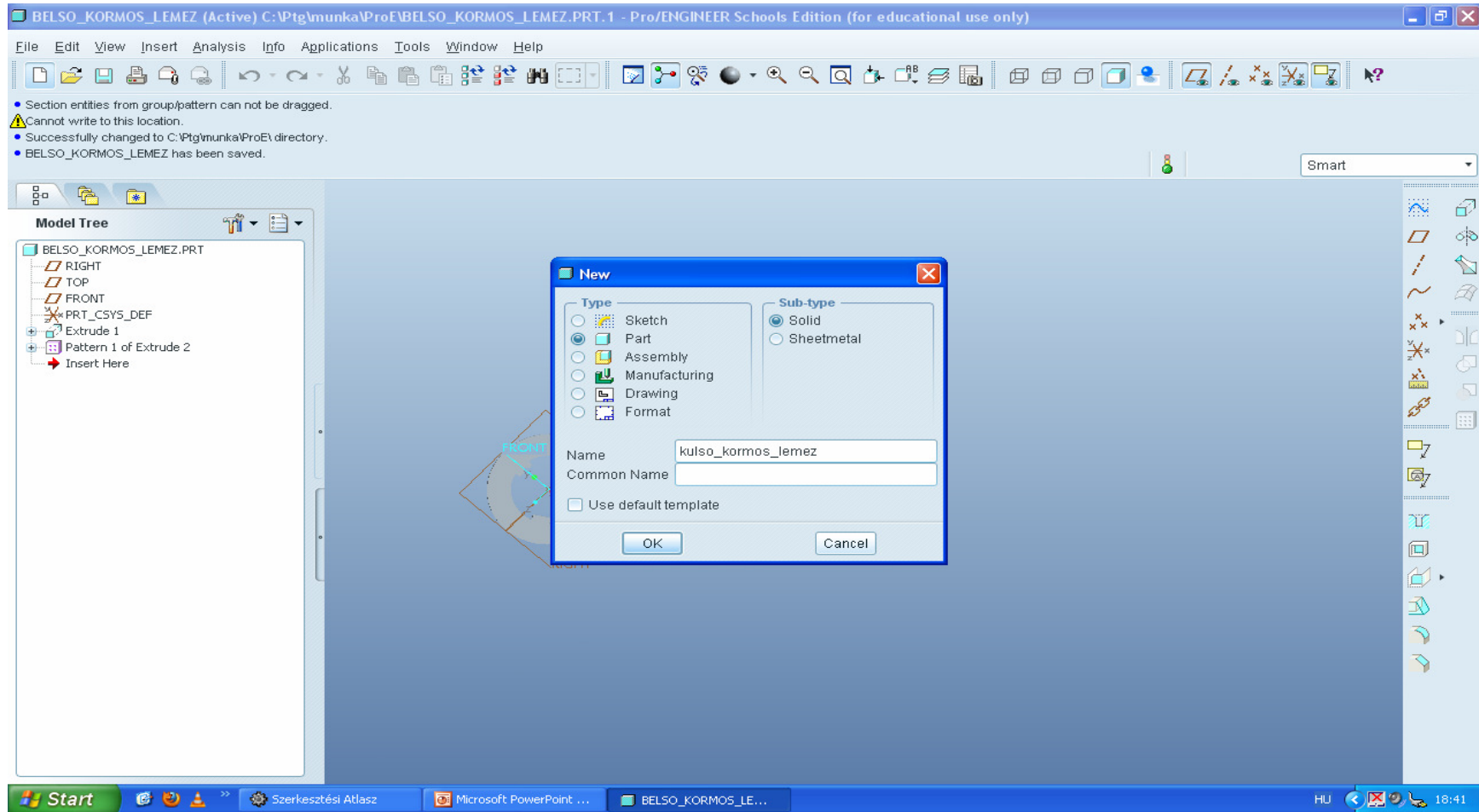
Nyomkövető

44	
49,5	
55	

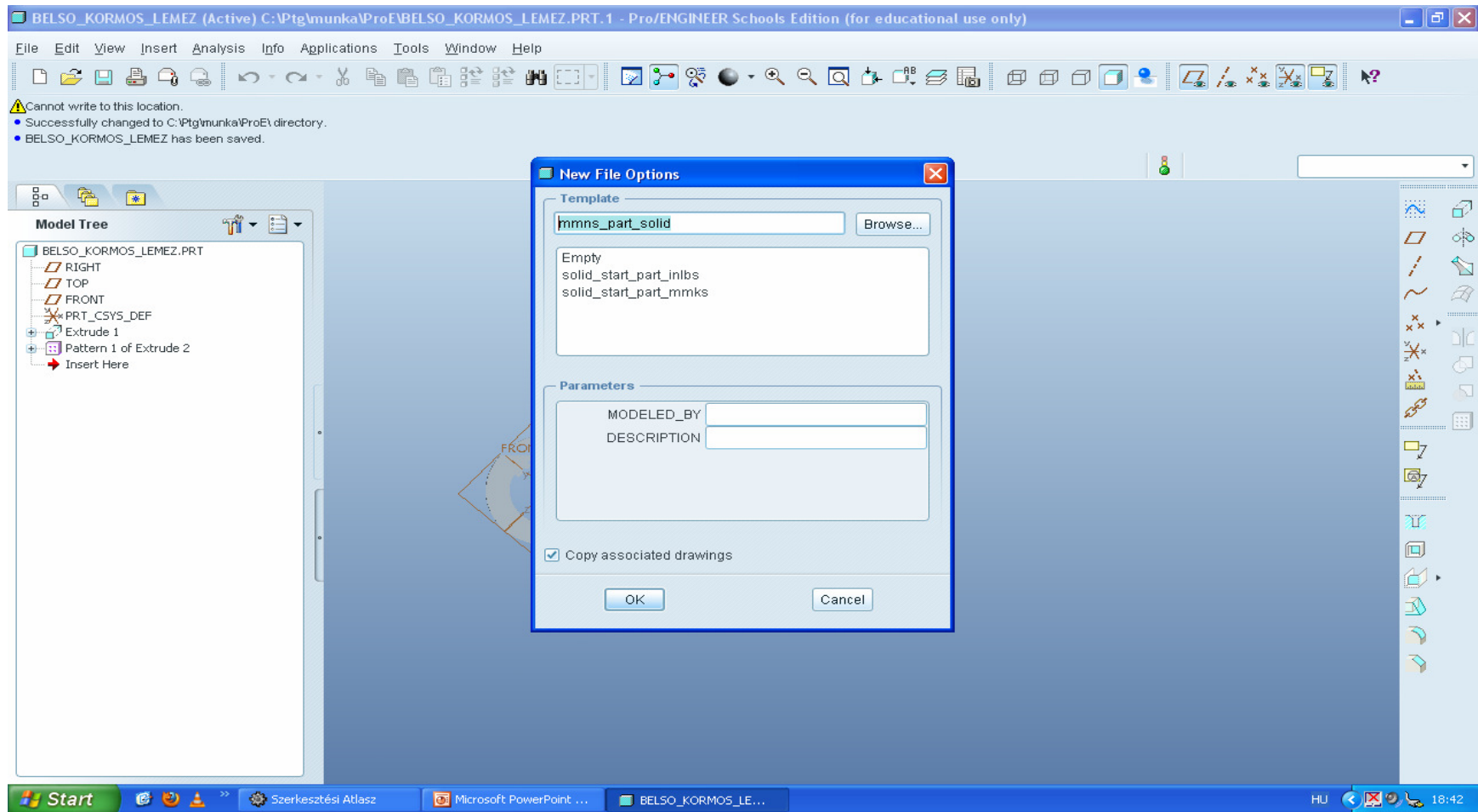
**Külső körmős lemezek**

Jelölés	Közös adatok							Acél	Ortex					Konstant			
	D	d	B	H	H <sub>1</sub>	r	i	b	D <sub>0</sub>	d <sub>B</sub>	b	c	f <sub>≈</sub>	b	D <sub>B</sub>	b	c
07	54,5	34	10	31	25,8	1,2	3	1						1,5			
11	60,8	50	12	38,5	33,3	1,2	3	1,45	67	52	3,2	1,2	1	1,5	65	2,2	1,2
15	79,8	60	12	44	38,3	1,2	3	1,45	77	62	3,2	1,2	1	1,5	76	2,2	1,2
19	89,8	68	12	49,5	43,3	1,2	3	1,45						1,5			
23	100	72	12	55	48,5	1,2	8	1,45	97	74	3,4	1,45	1	1,5	96	2,4	1,45
25	111,5	72	19	61	53,8	1,2	6	1,45	108	74	3,4	1,45	1	1,5	108	2,4	1,45
27	109,8	78	12	61	53,2	1,2	6	1,45						1,5			

# Kulso\_kormos\_lemesz

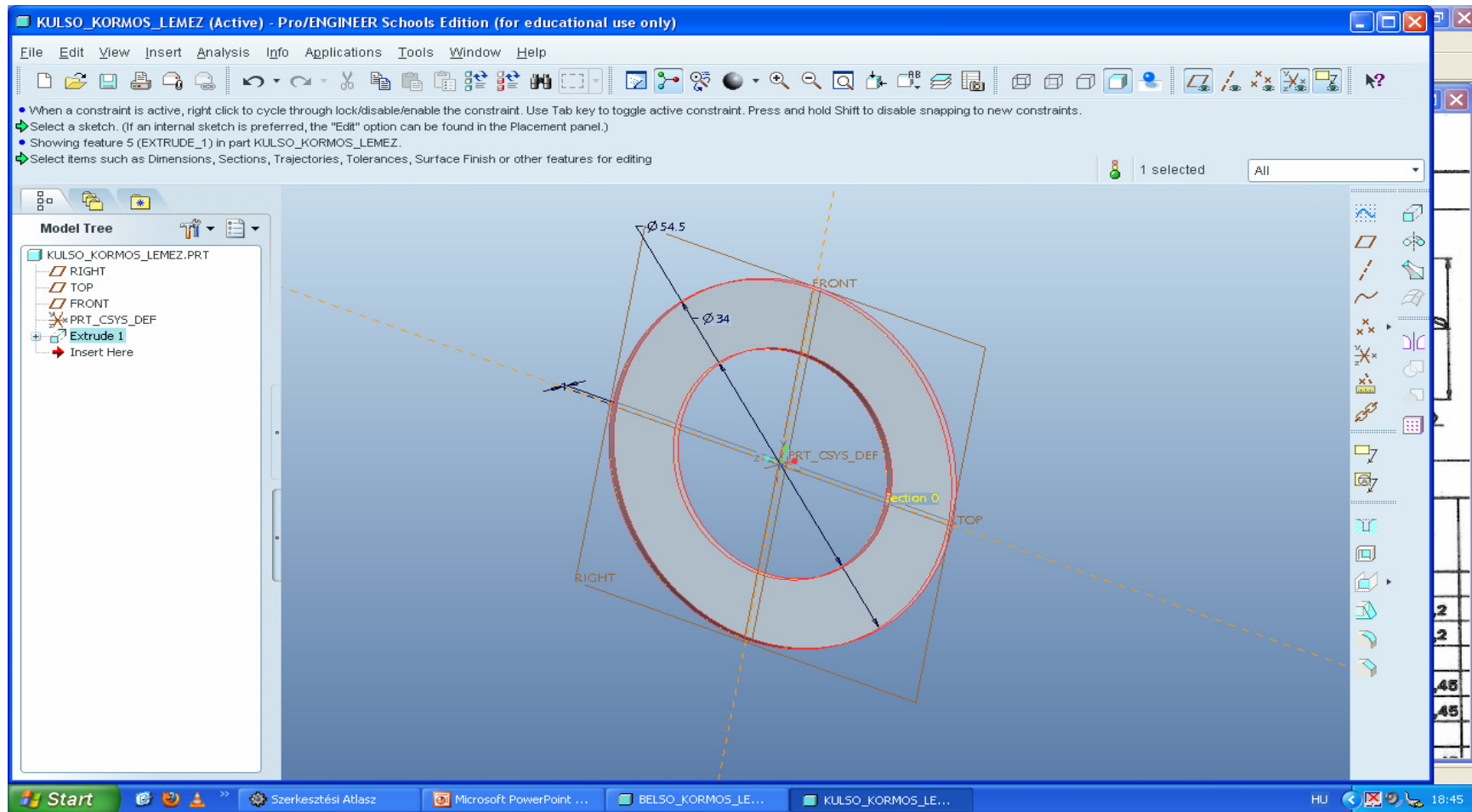


# Mmns\_part\_solid

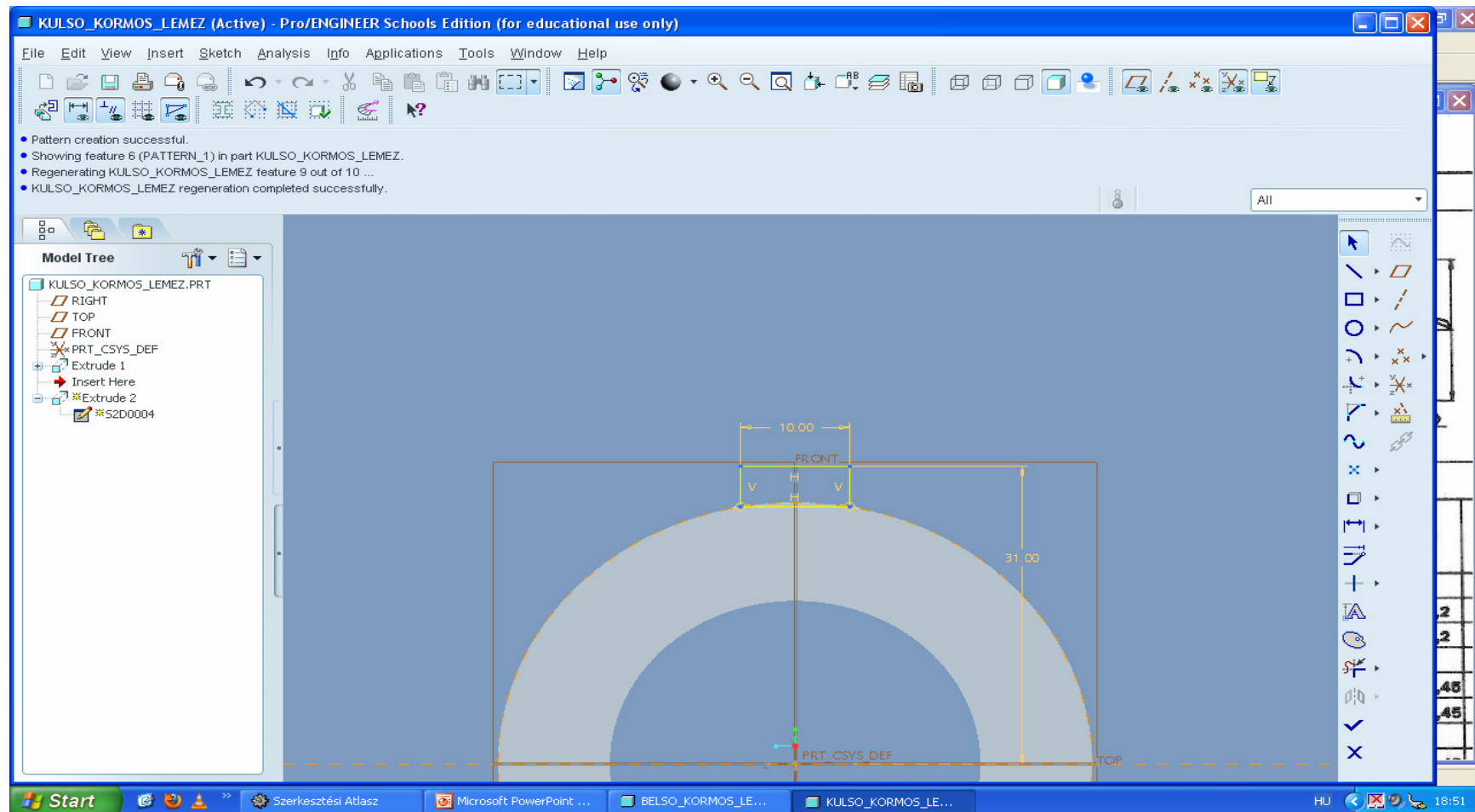




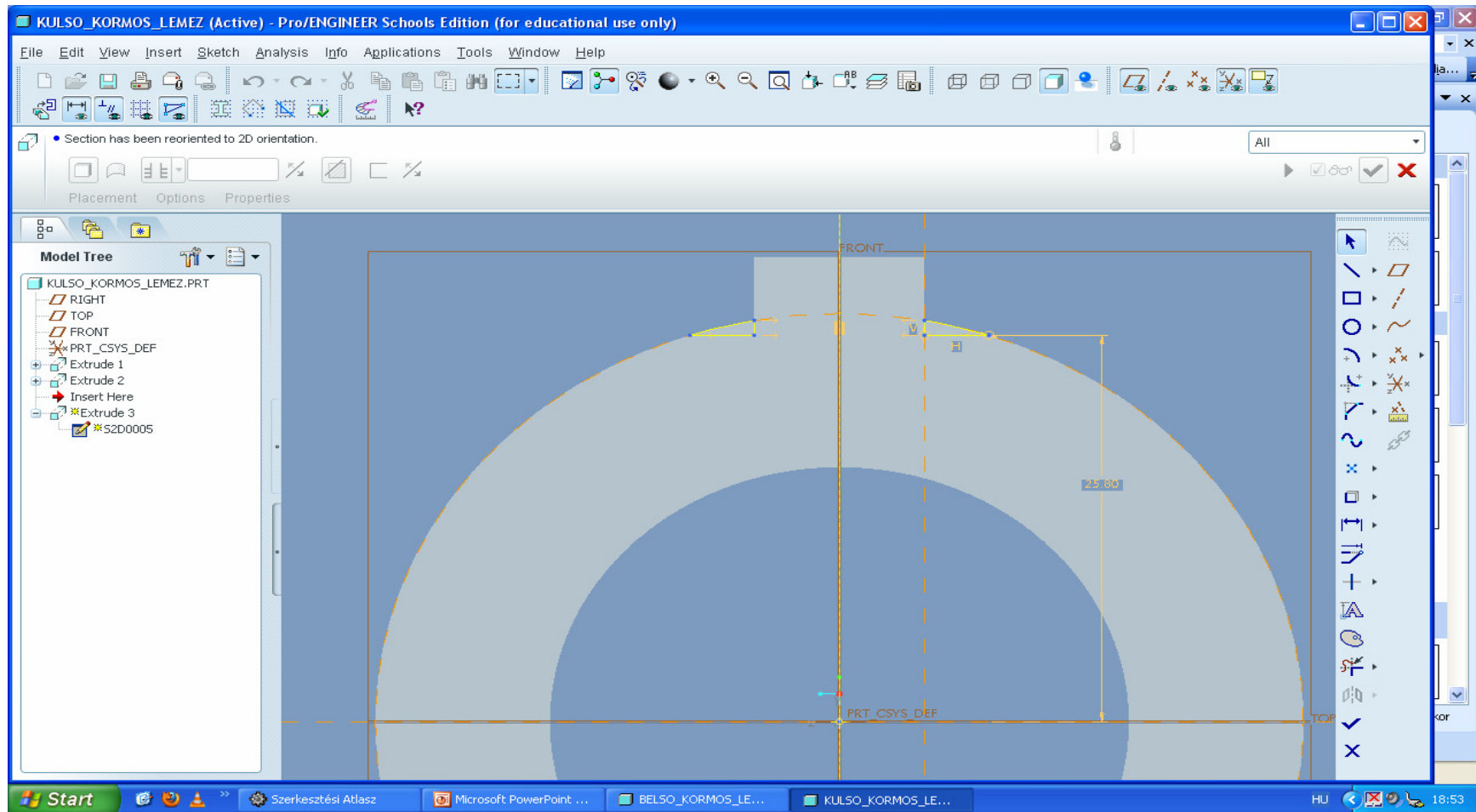
# 54.5x34x1

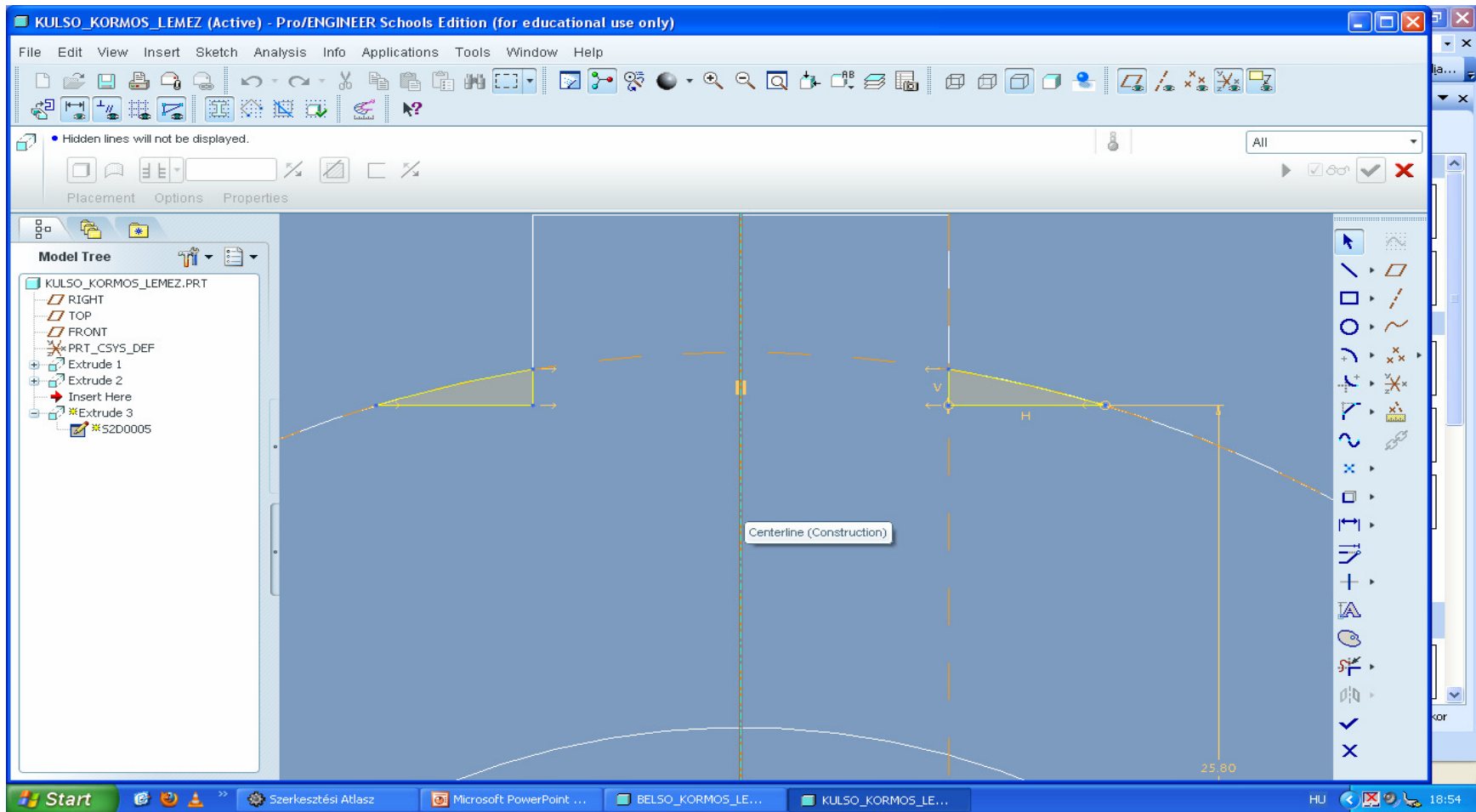


# Korom 10, 31 extrude to selected

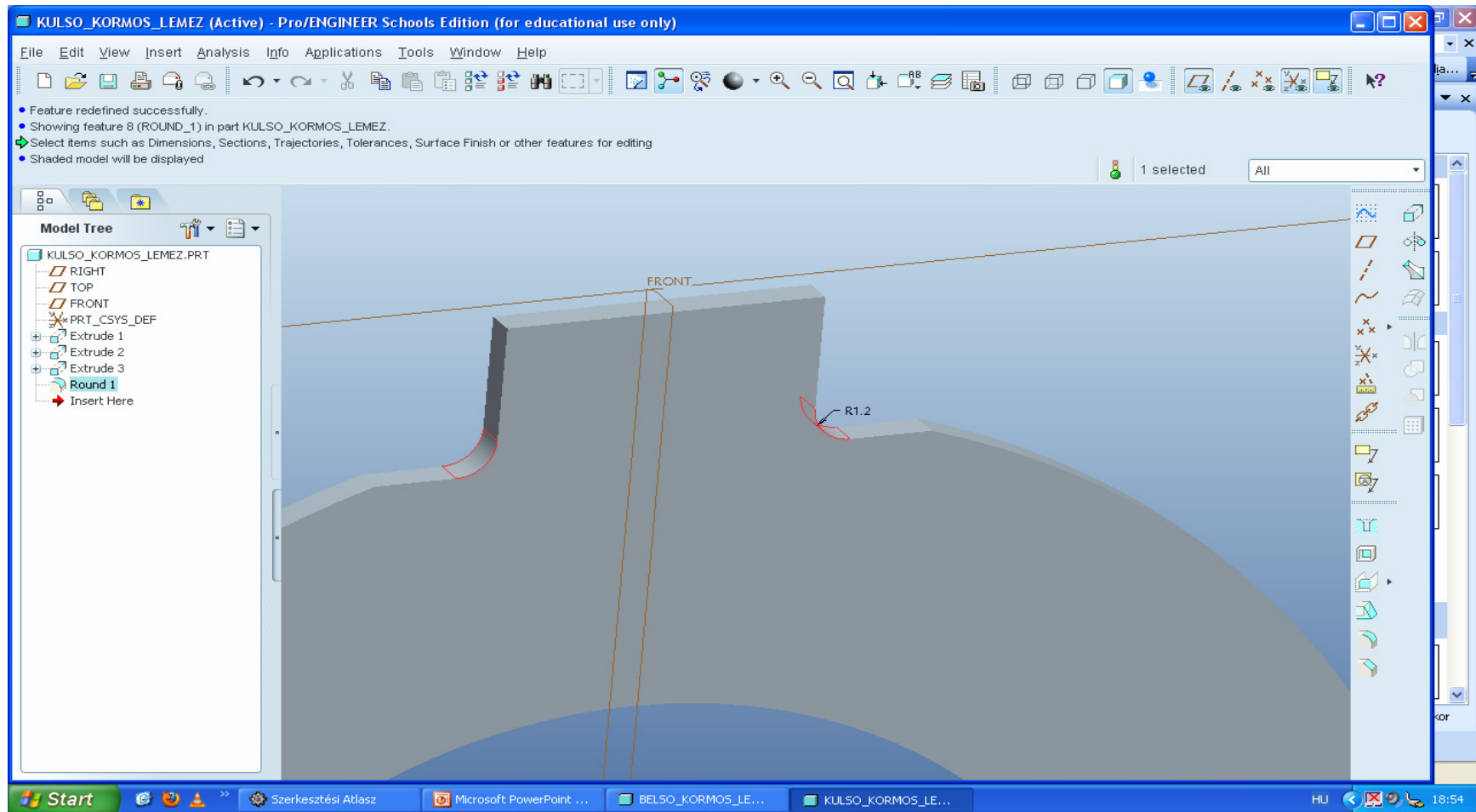


# 25.8

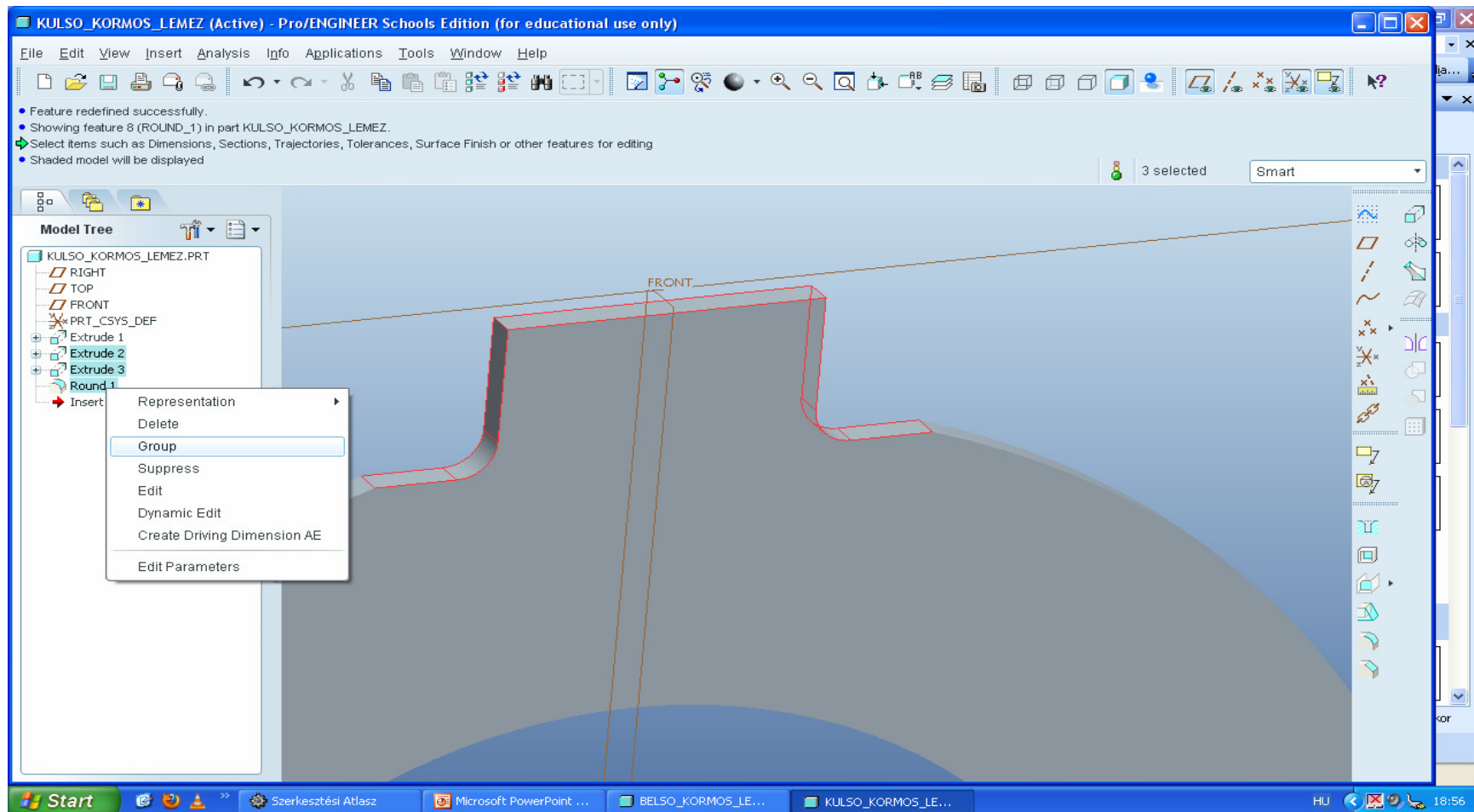


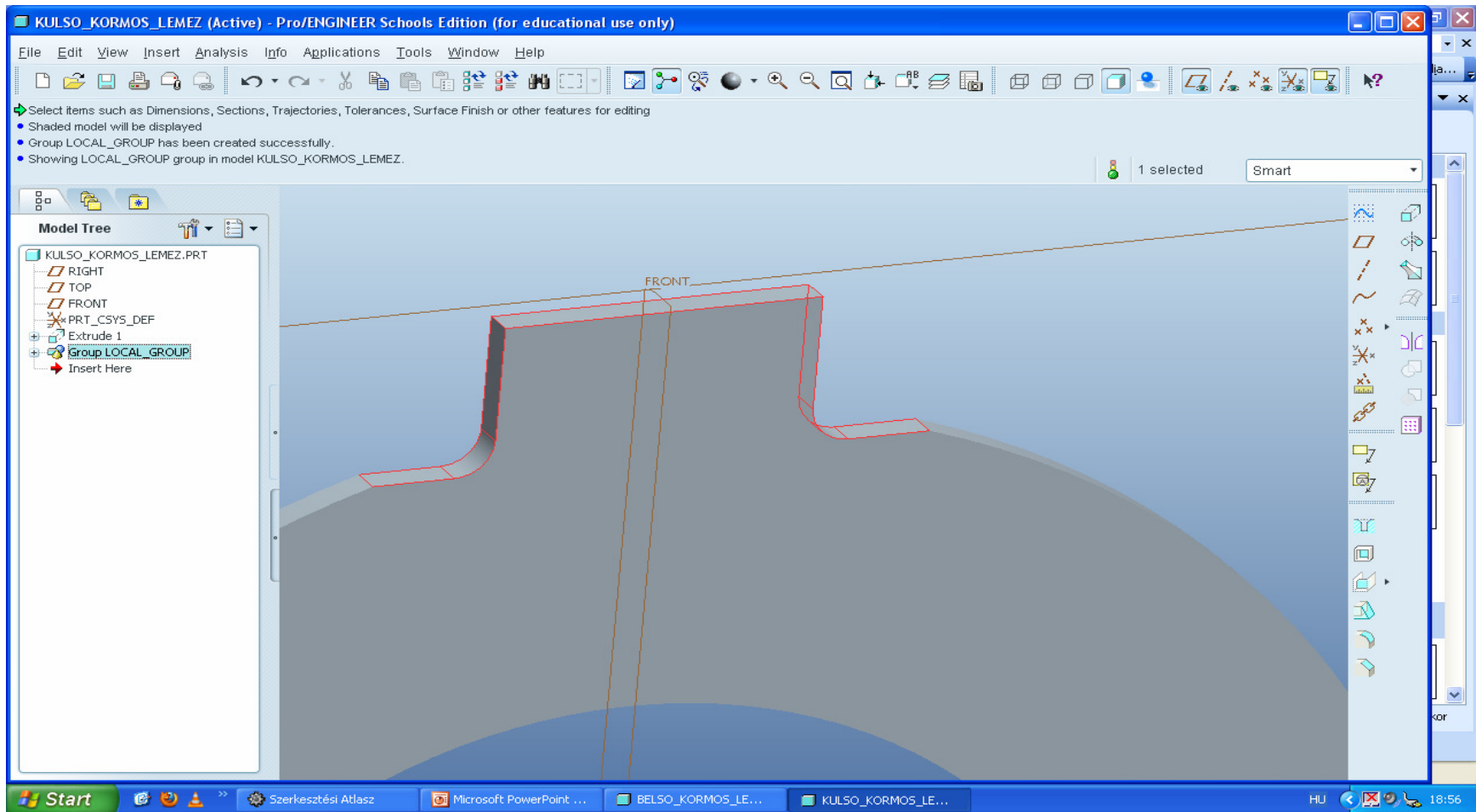


# R=1.2

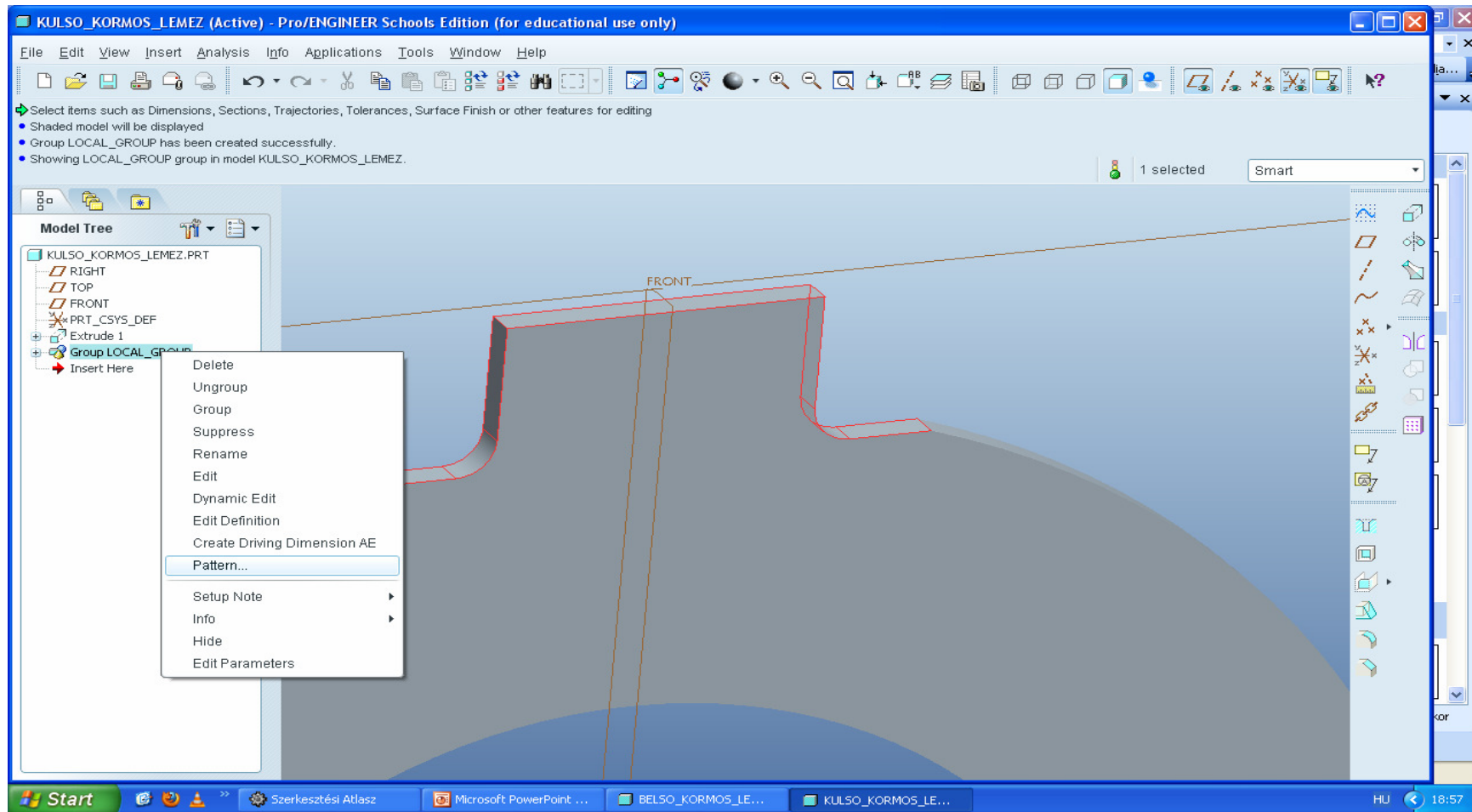


# Csoportba rendezés (kijeloles majd JobbEgér->Group)



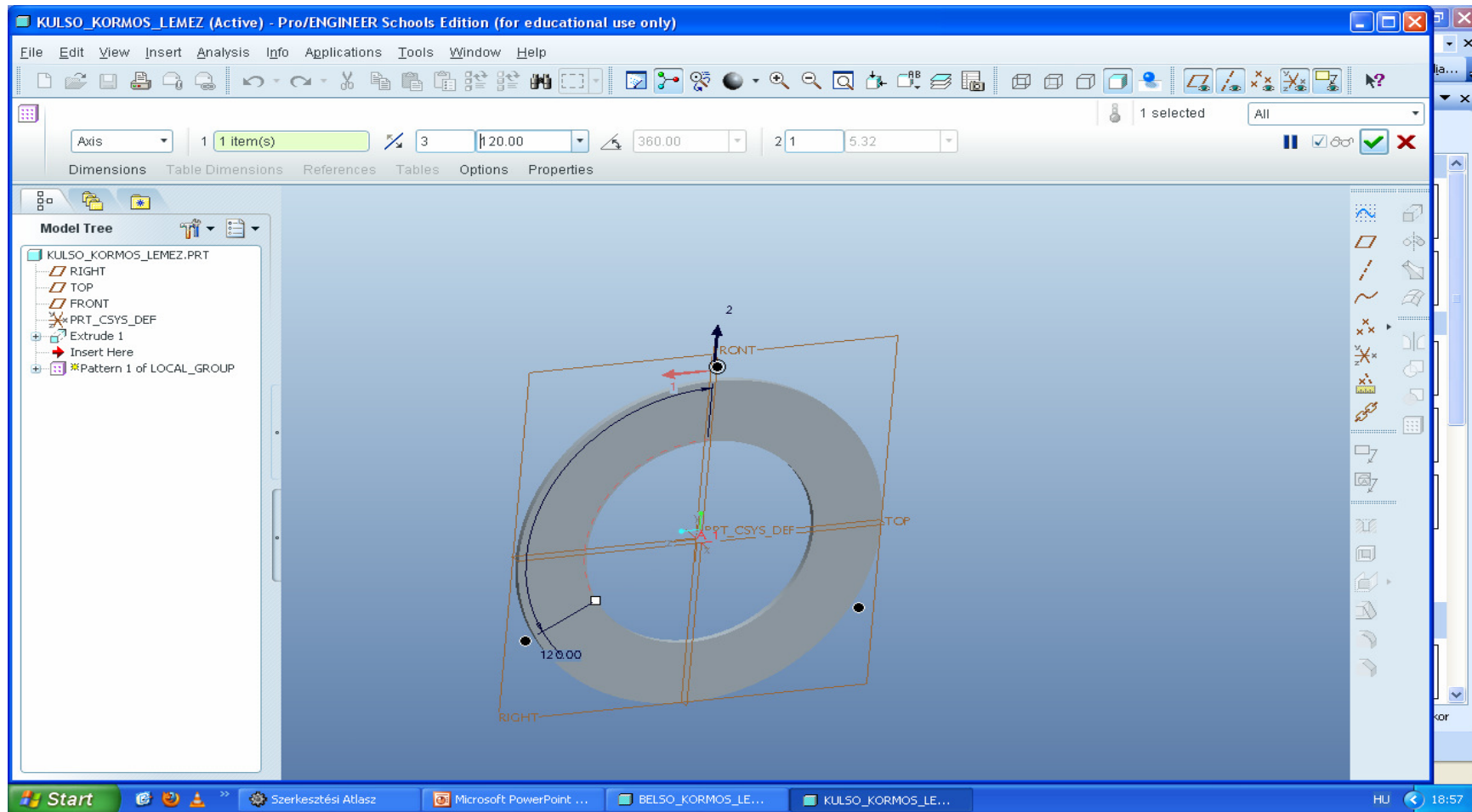


# JE pattern

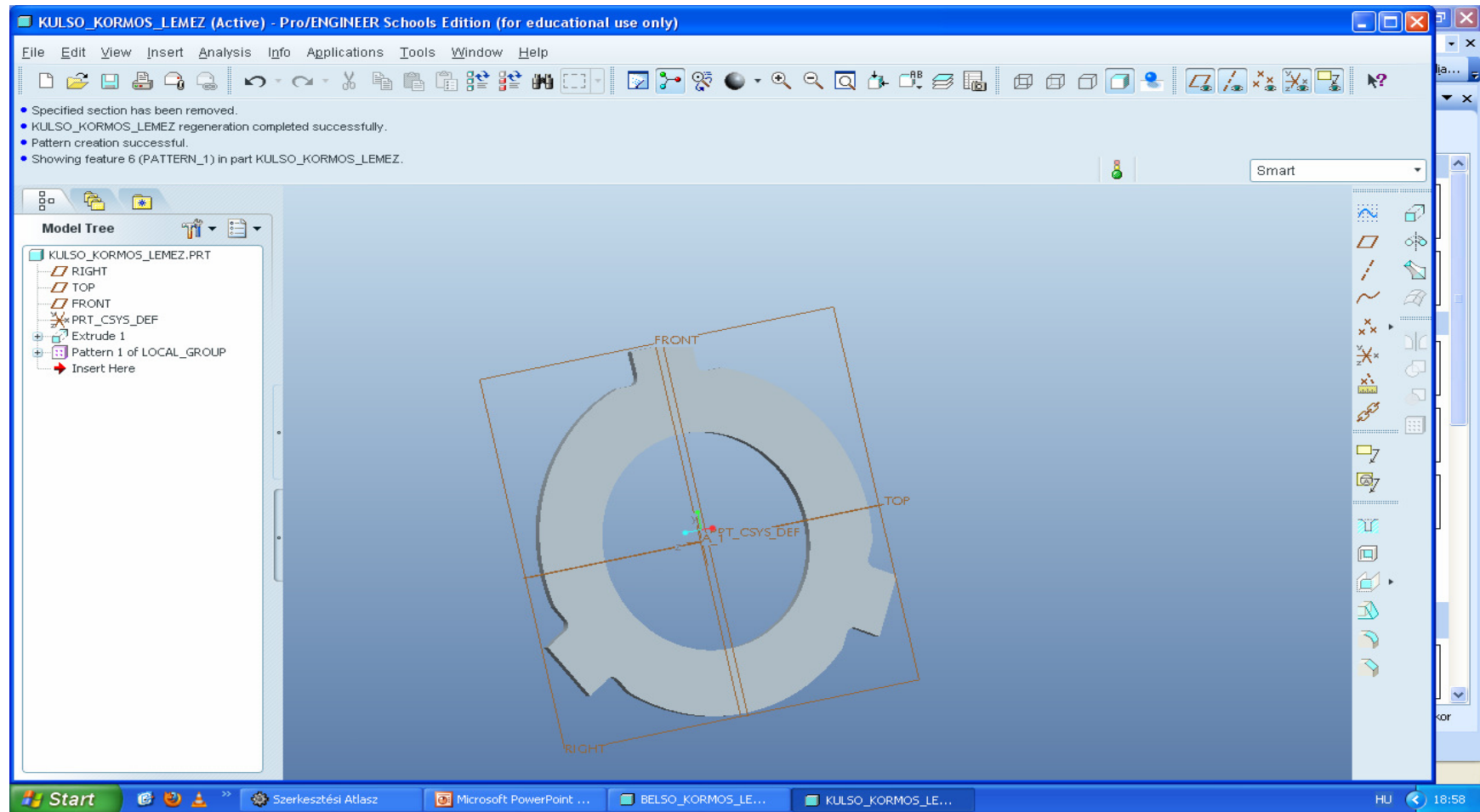




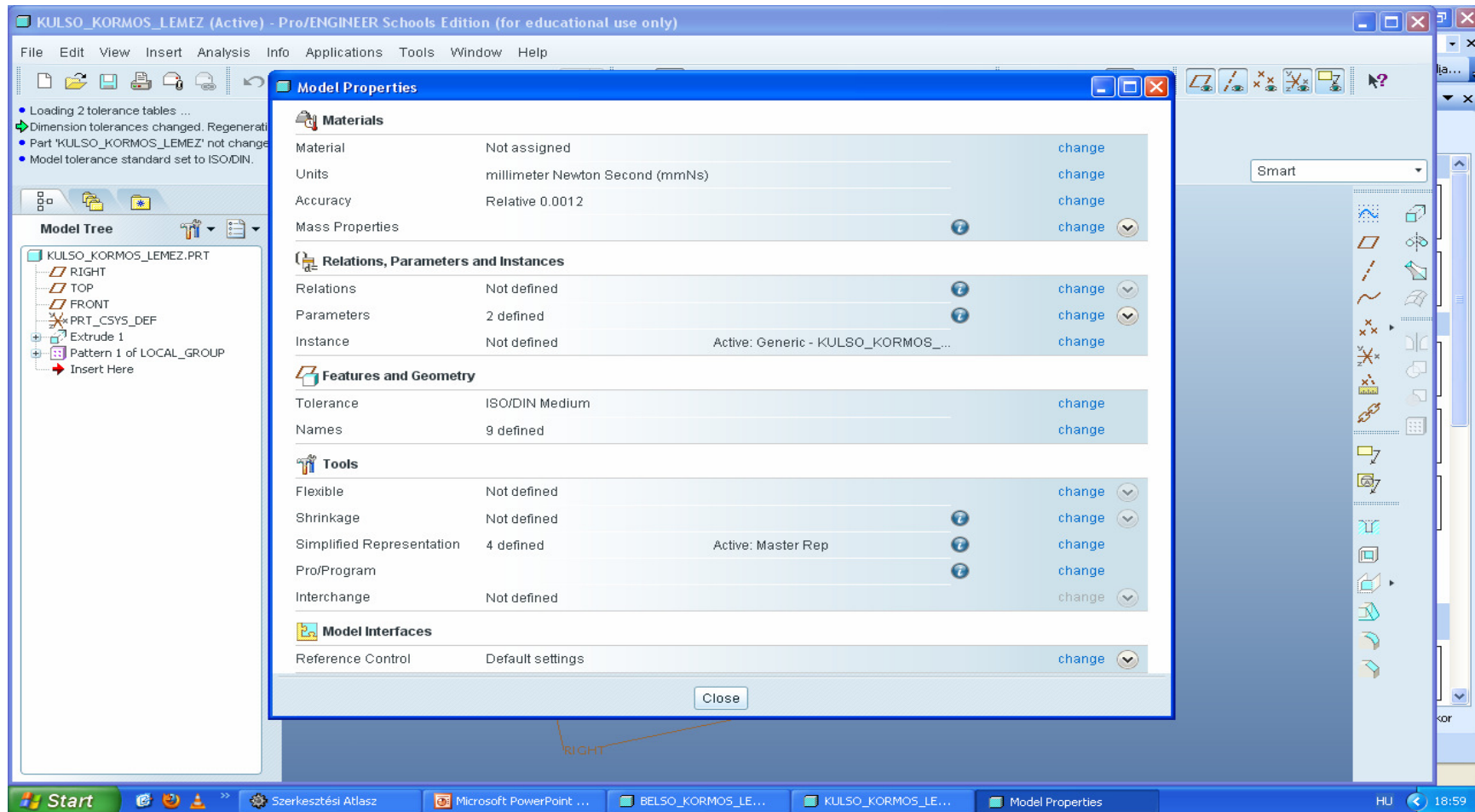
# Axis 3 120°



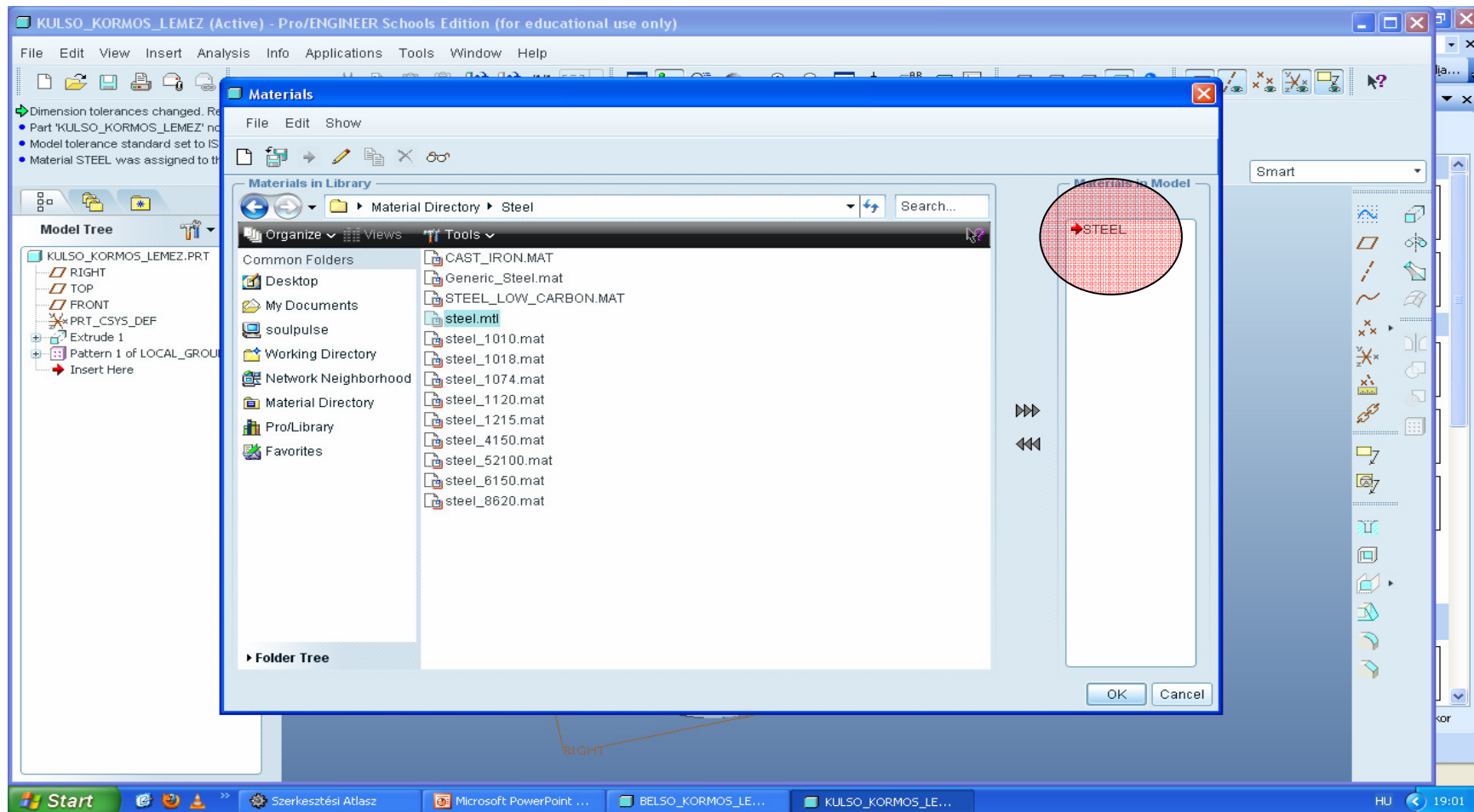
# kesz



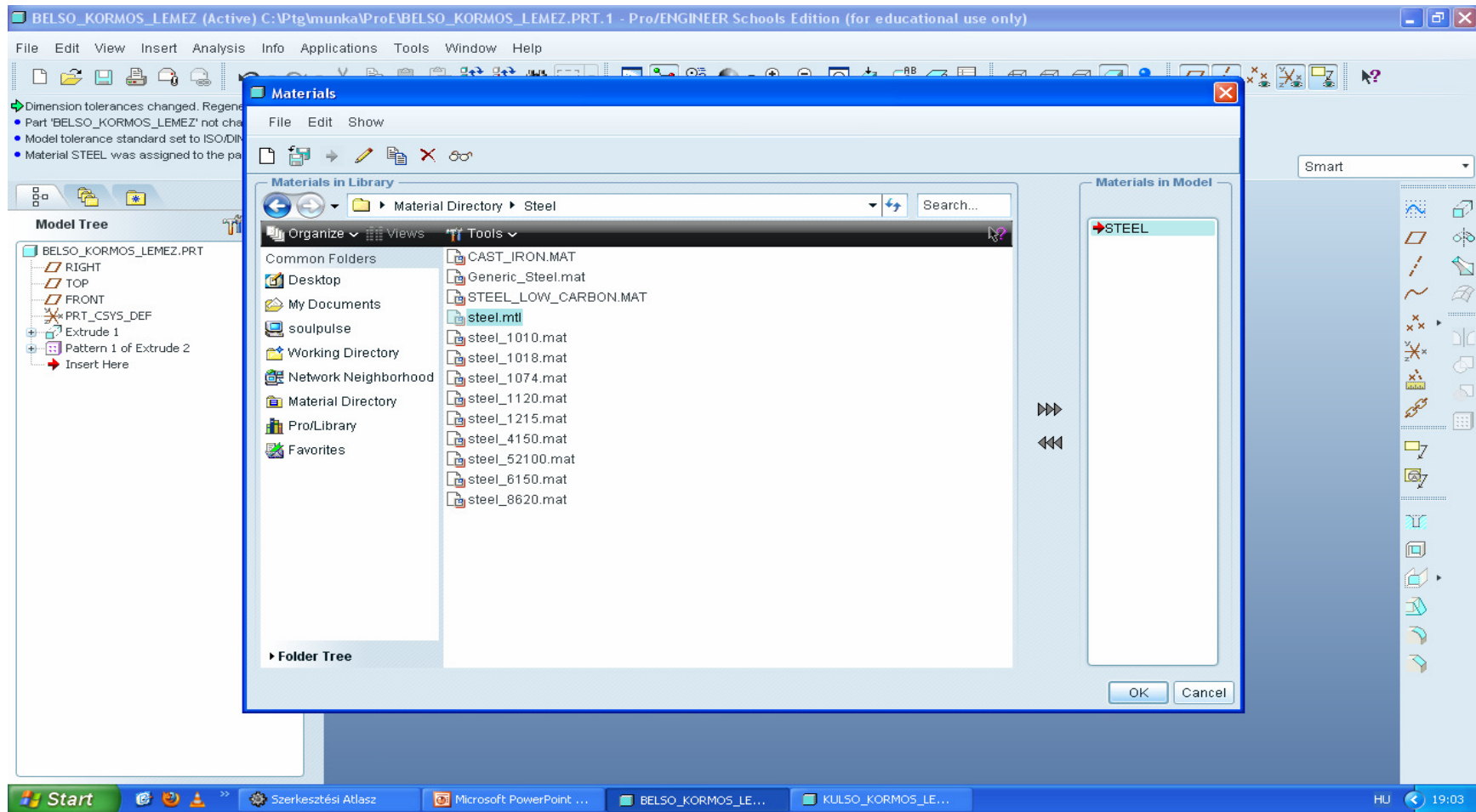
# Anyagok! File/Properties



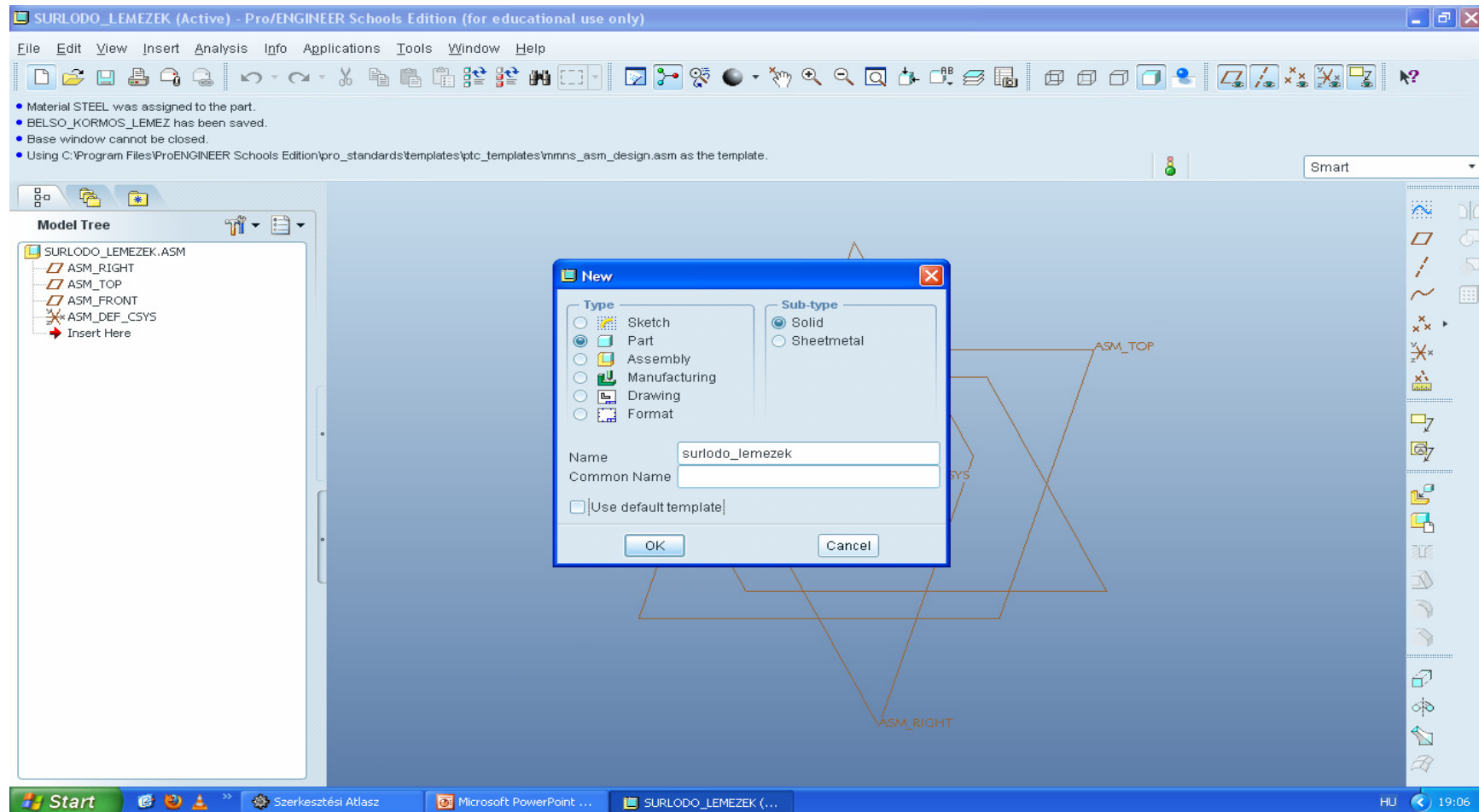
Material -> CHANGE majd Steel-re  
dupla katt, és jobbra bekerül



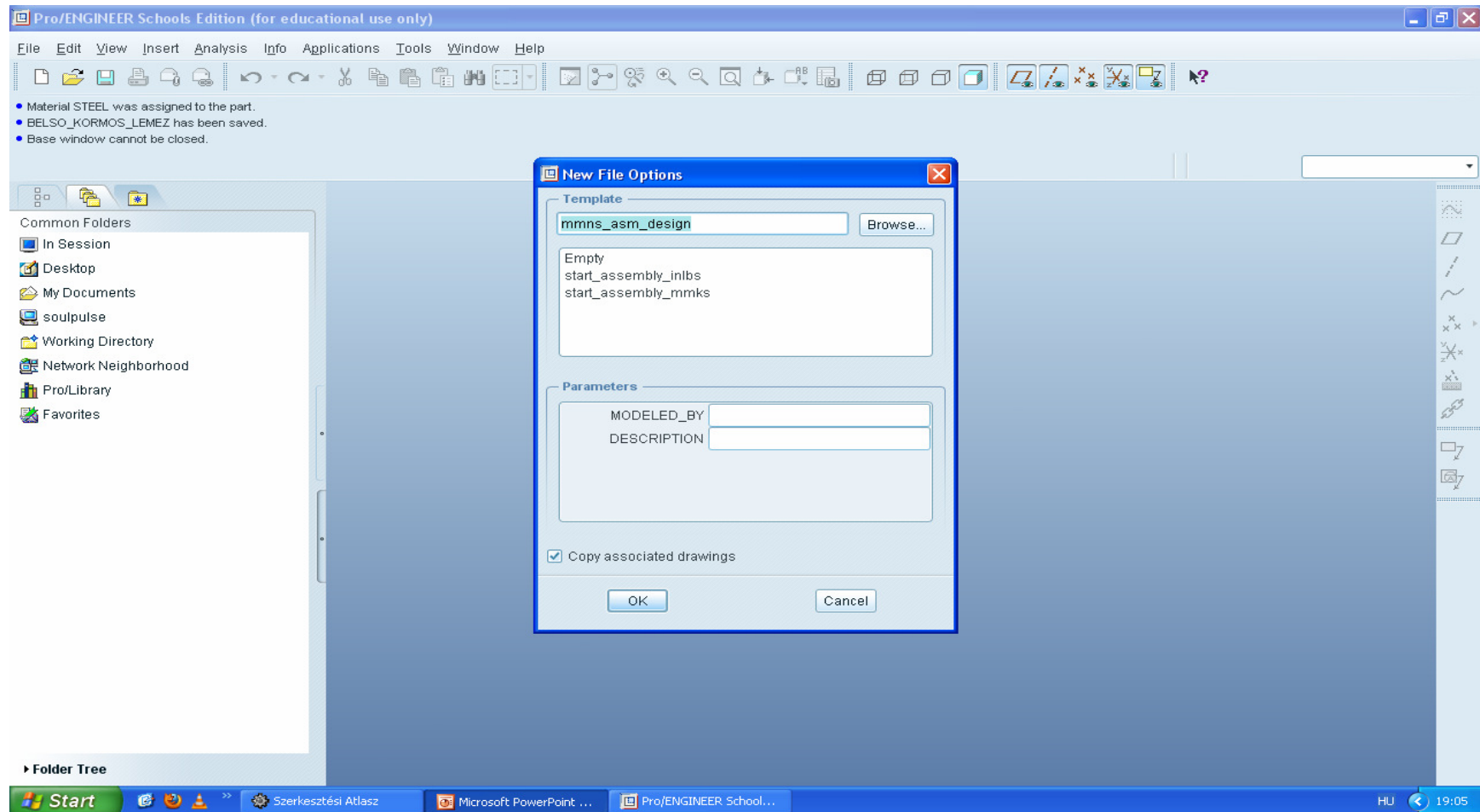
# Másik alkatrészen is !!



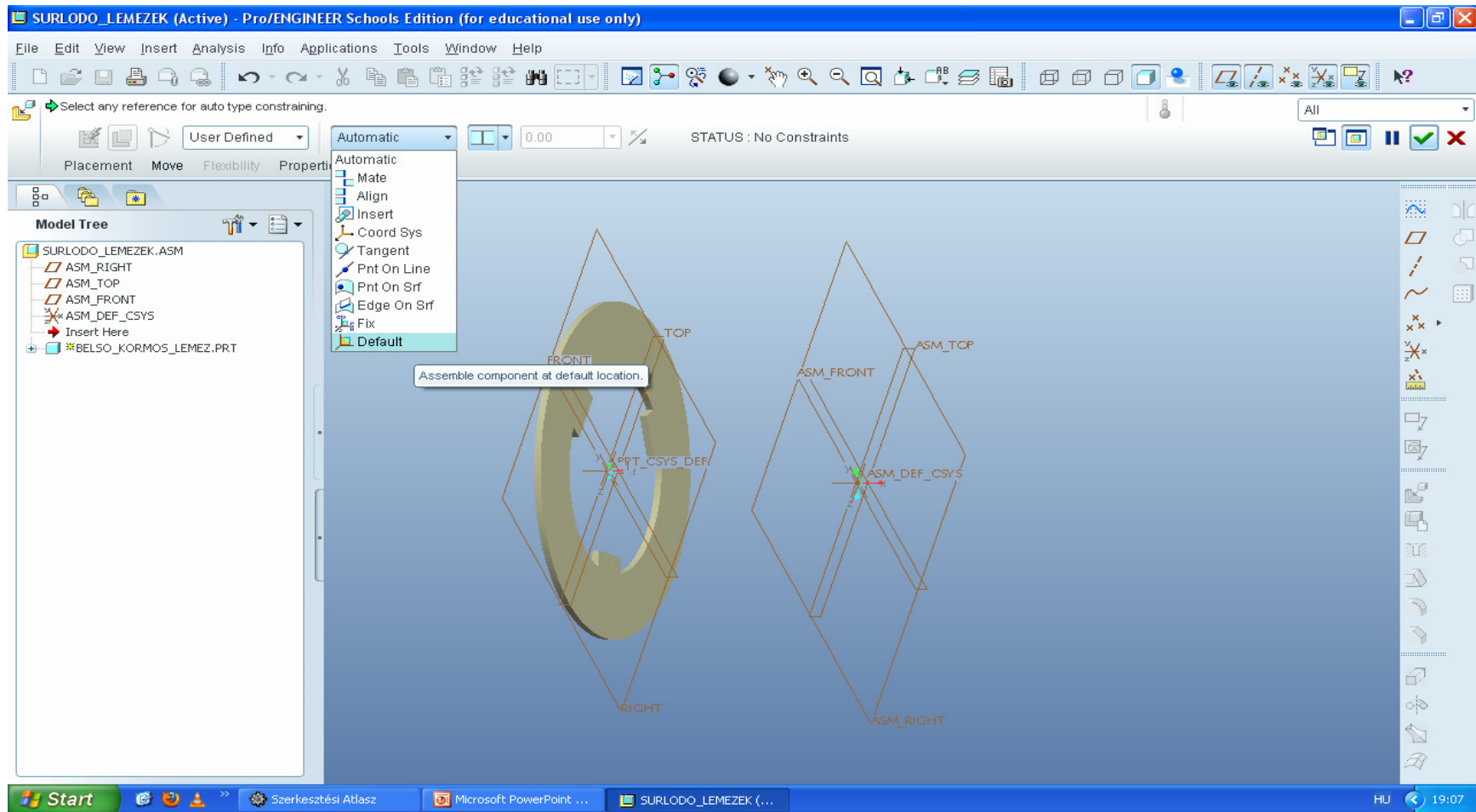
# Összeszerelés, surlodo\_lemezek.asm



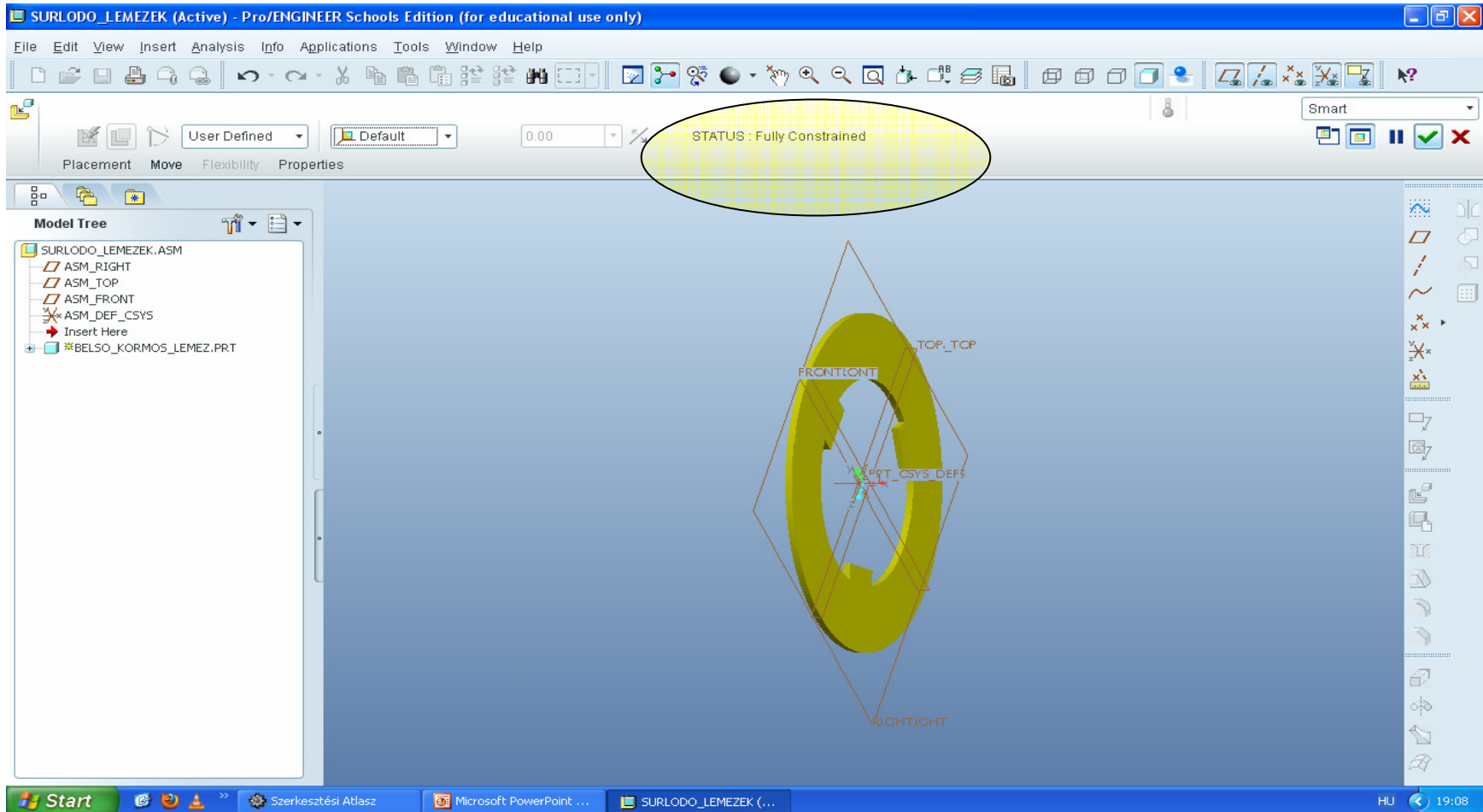
# Mmns\_asm\_design



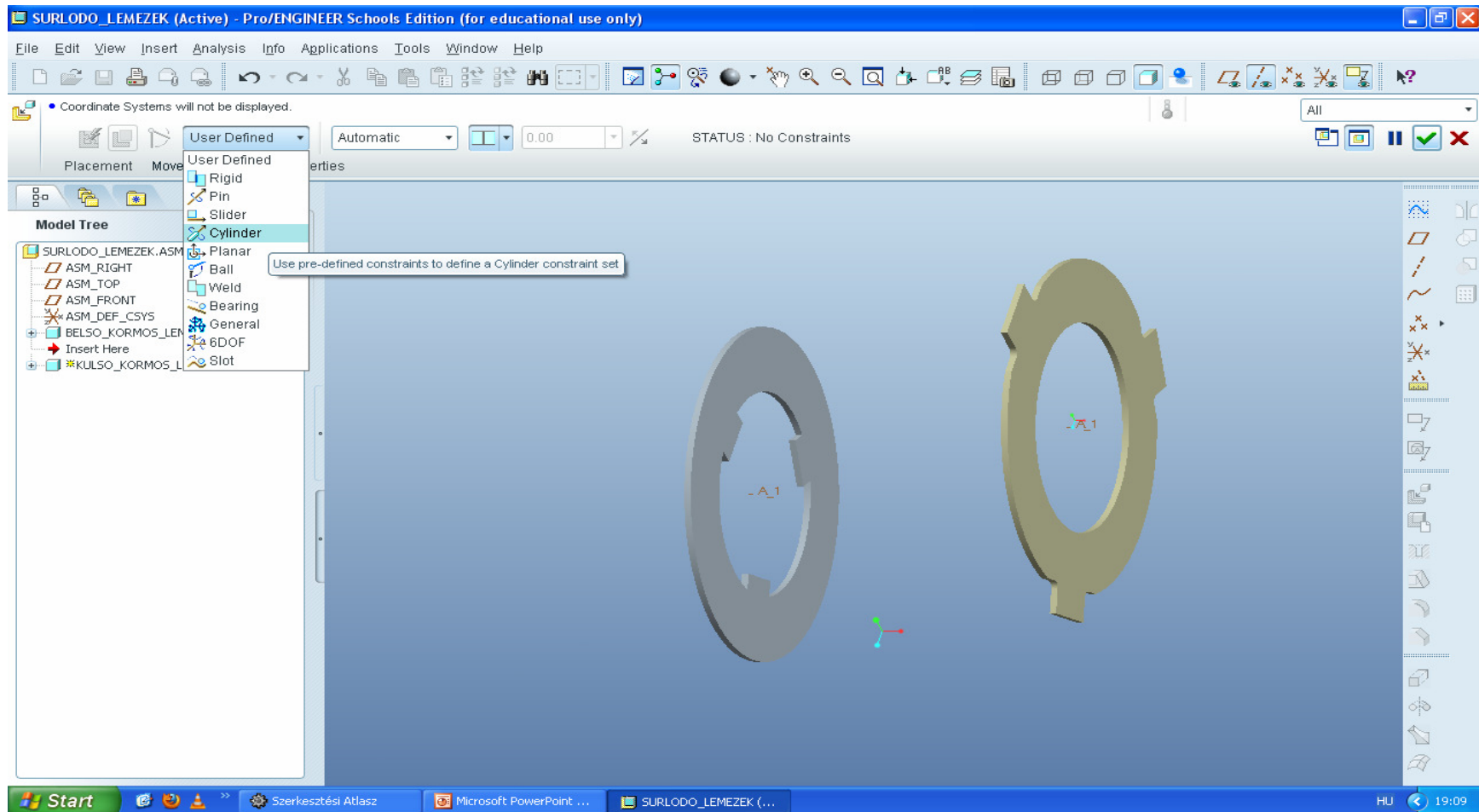
# Belso kormos\_DEFAULT





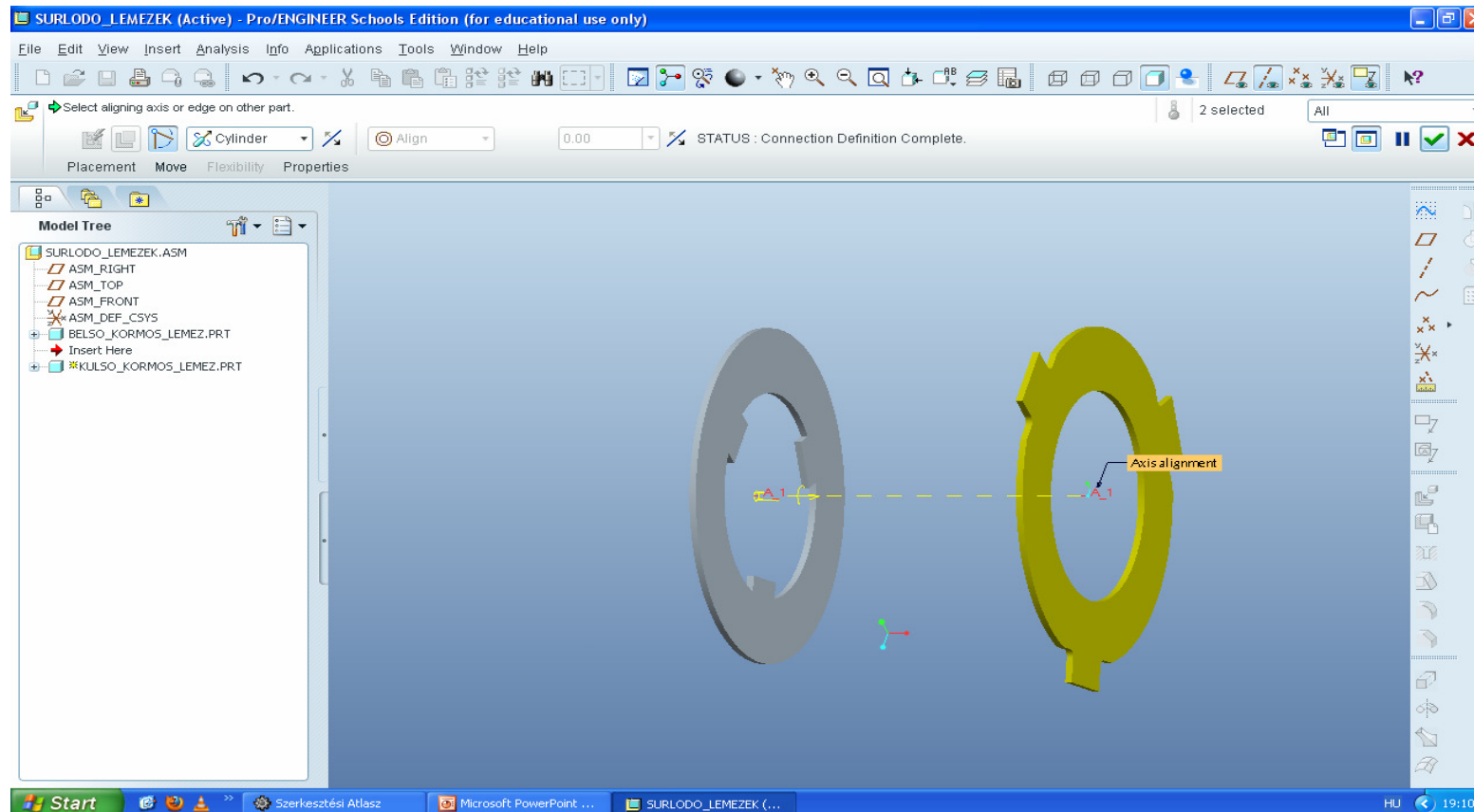


# Kulso kormos → cylinder

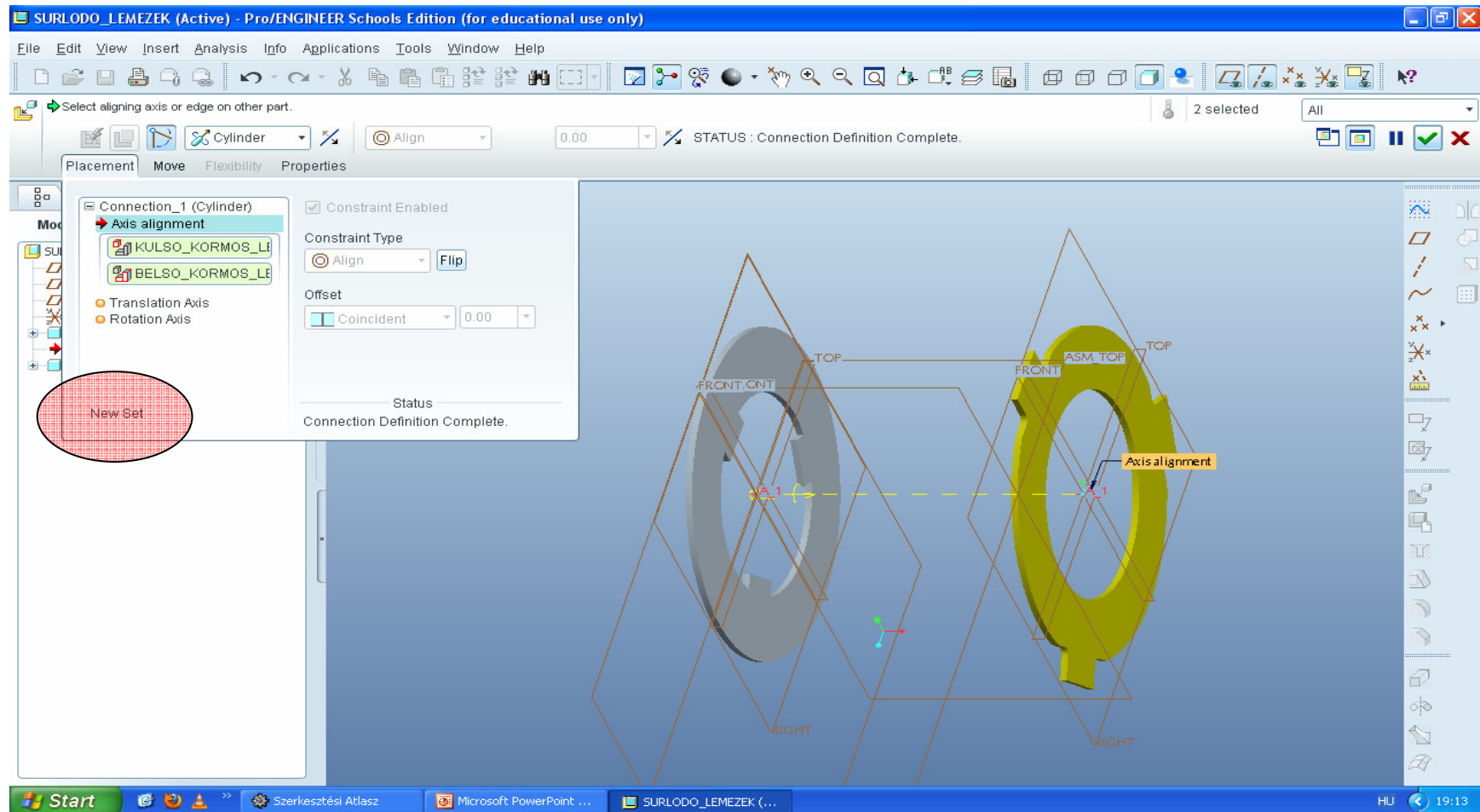


# A\_1 → a\_1

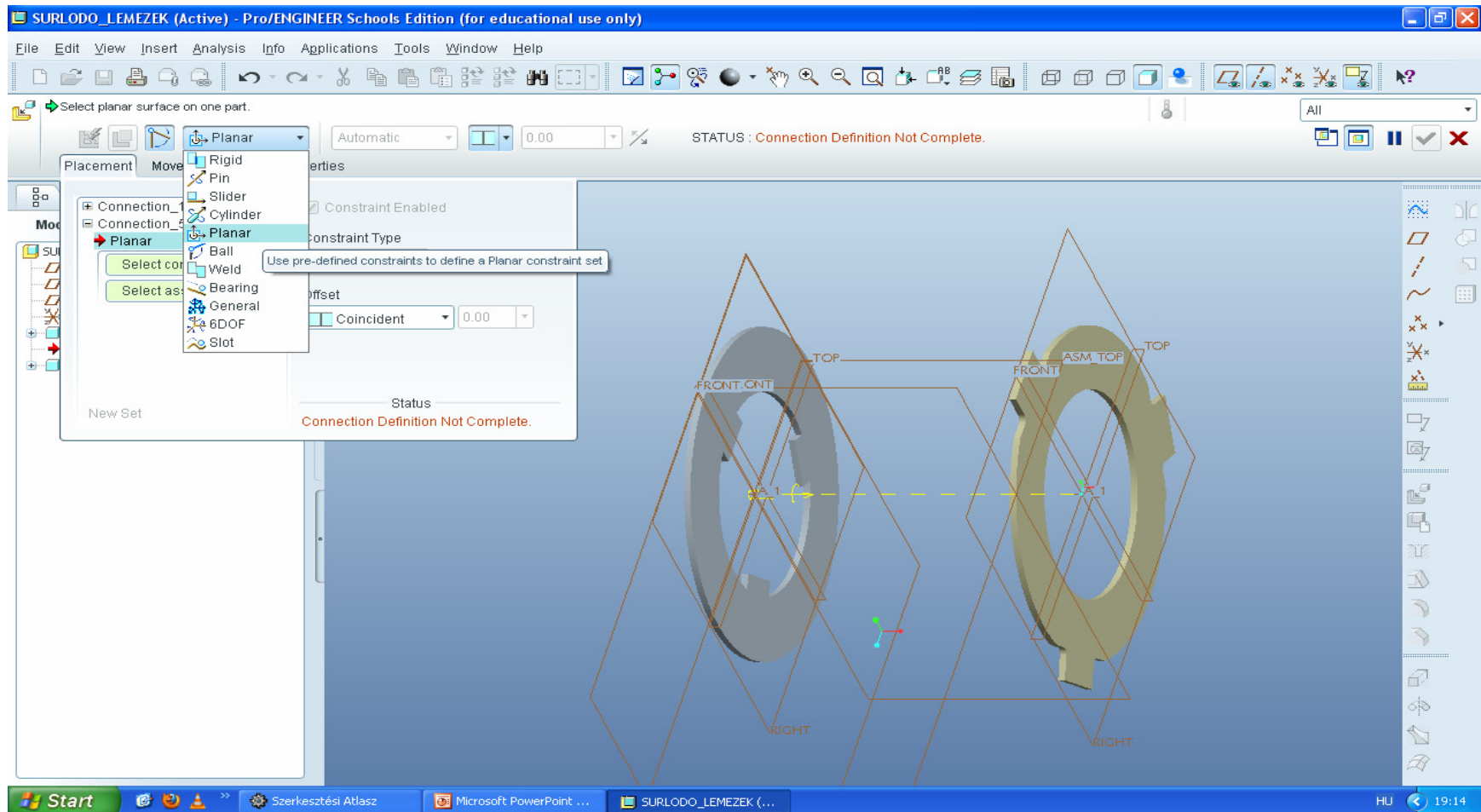
Ctrl+alt+JEgér+egérmozg eltolja,  
Ctrl+alt+KEgér+egérmozg forgatja,  
Ctrl+alt+BEgér+egérmozg mind2



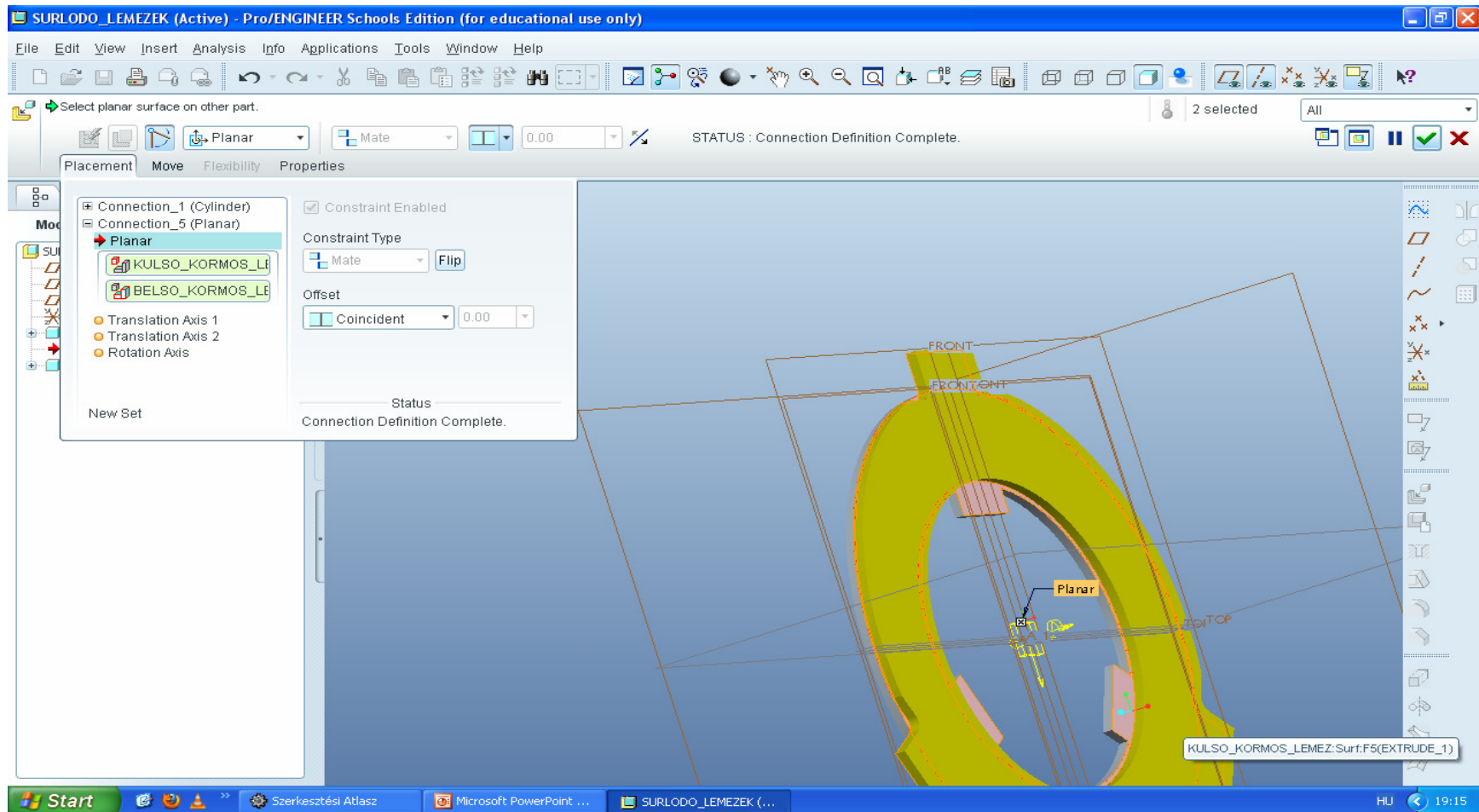
# Placement NEW SET!



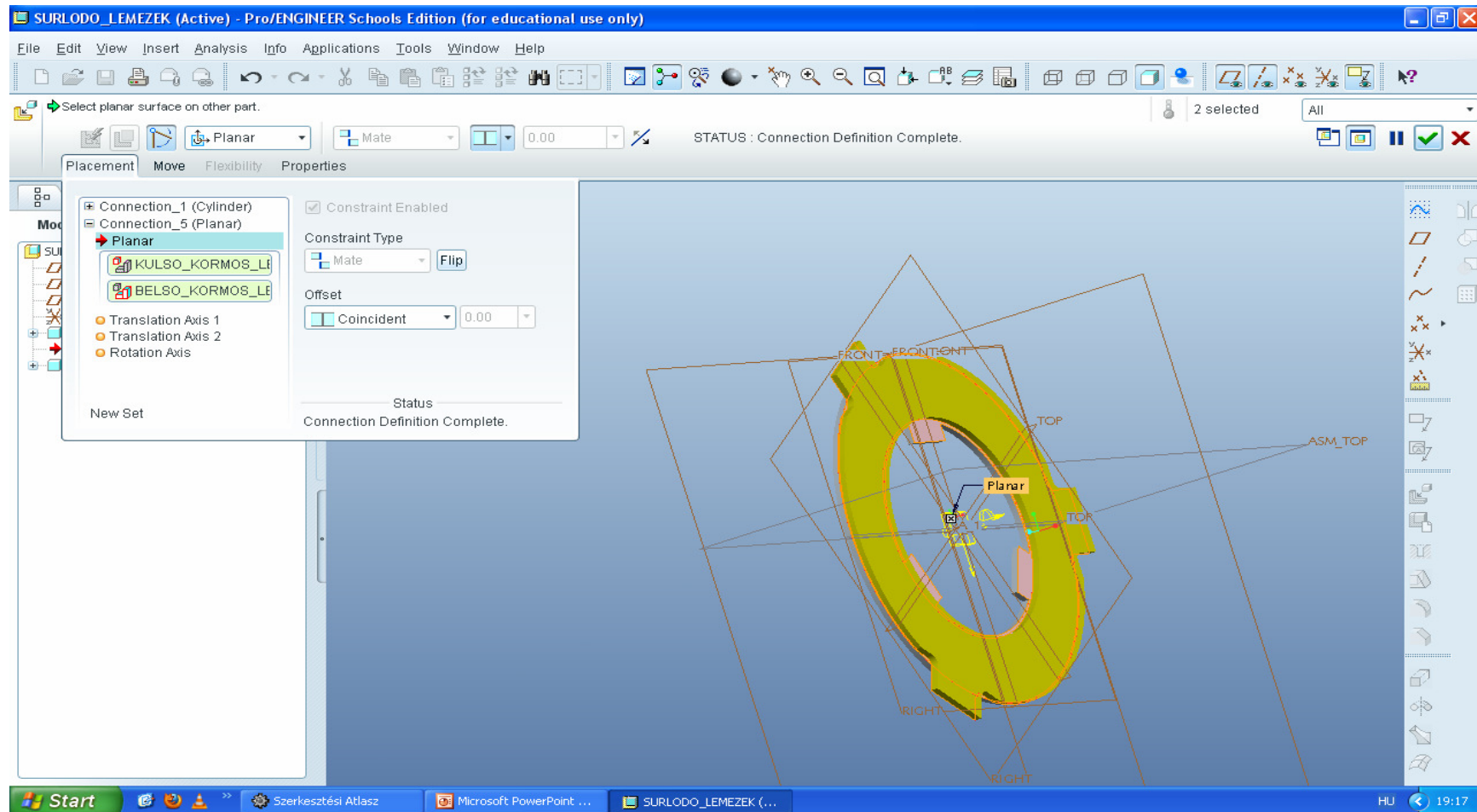
# planar



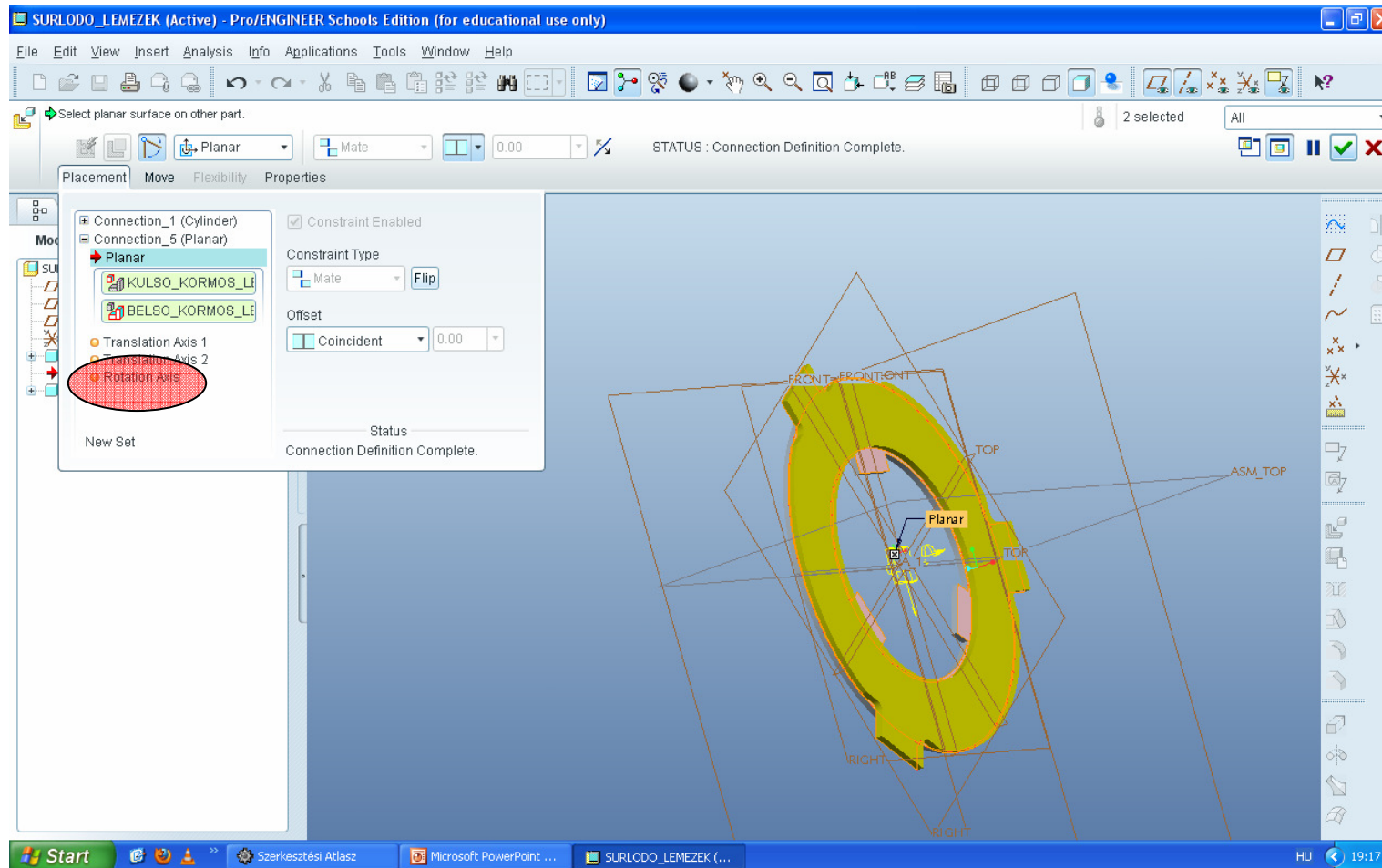
# Érintkező oldalakat jelölje ki



# Ctrl+alt+B Egér+egérmozg csak forgatja

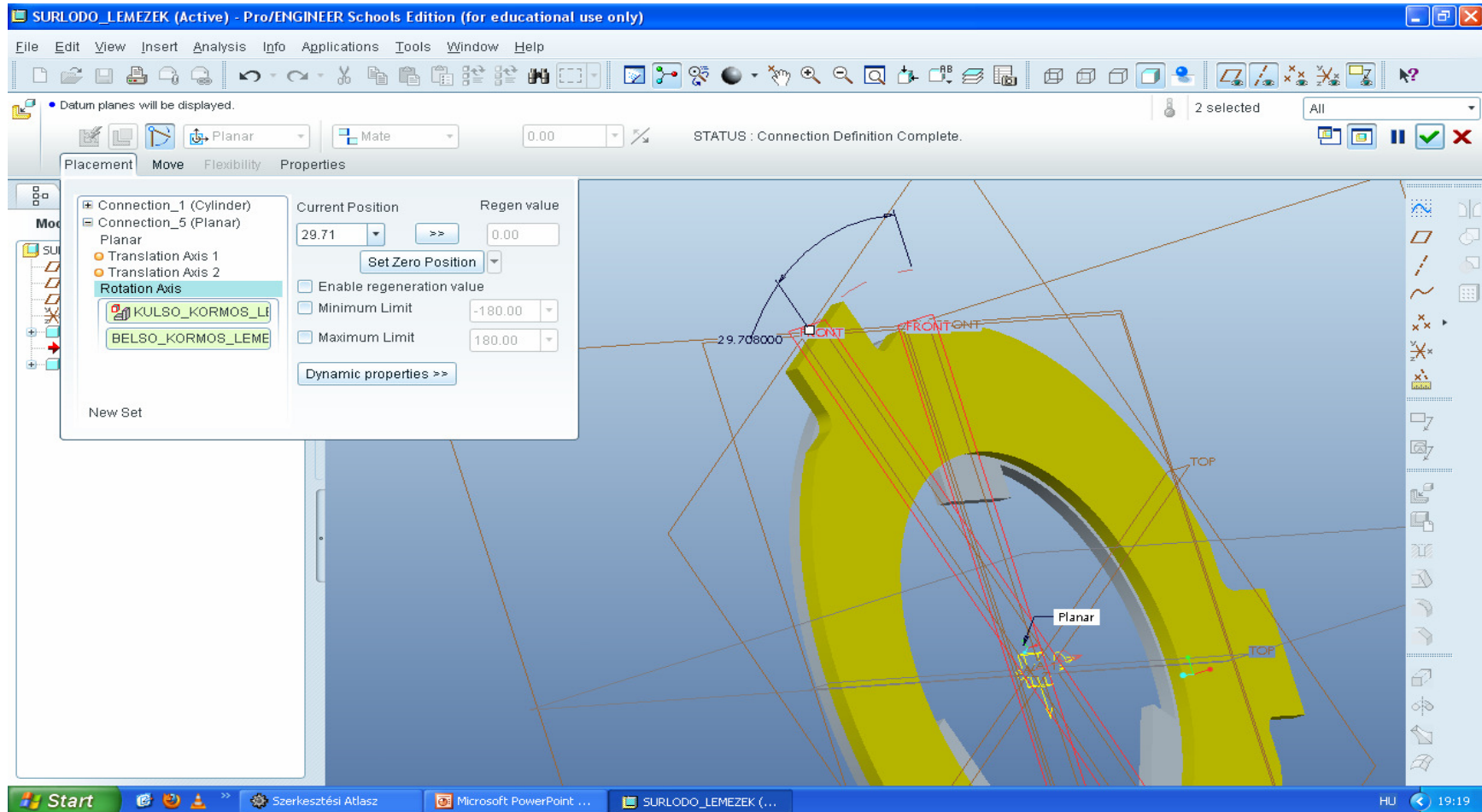


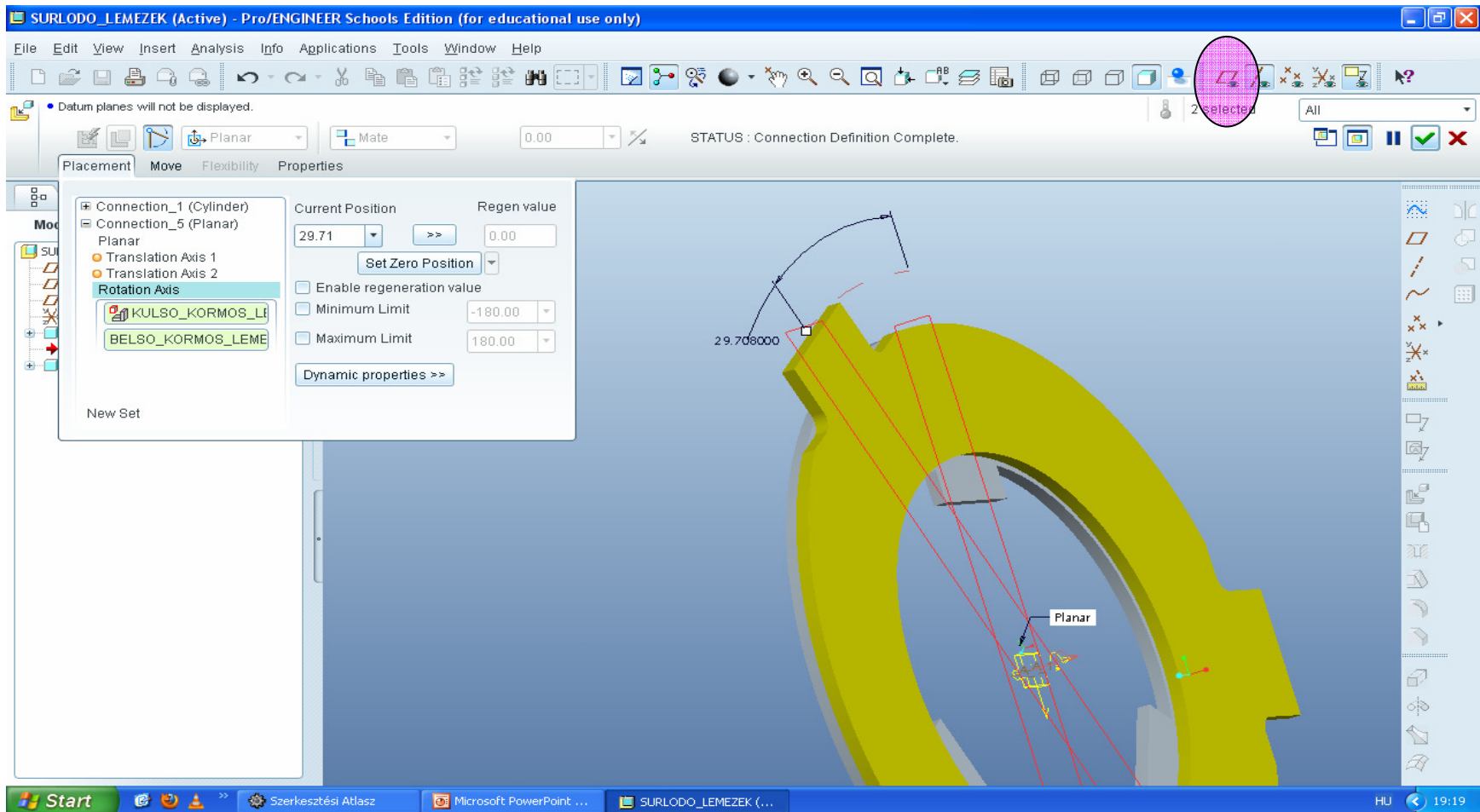
# Rotation axis, katt



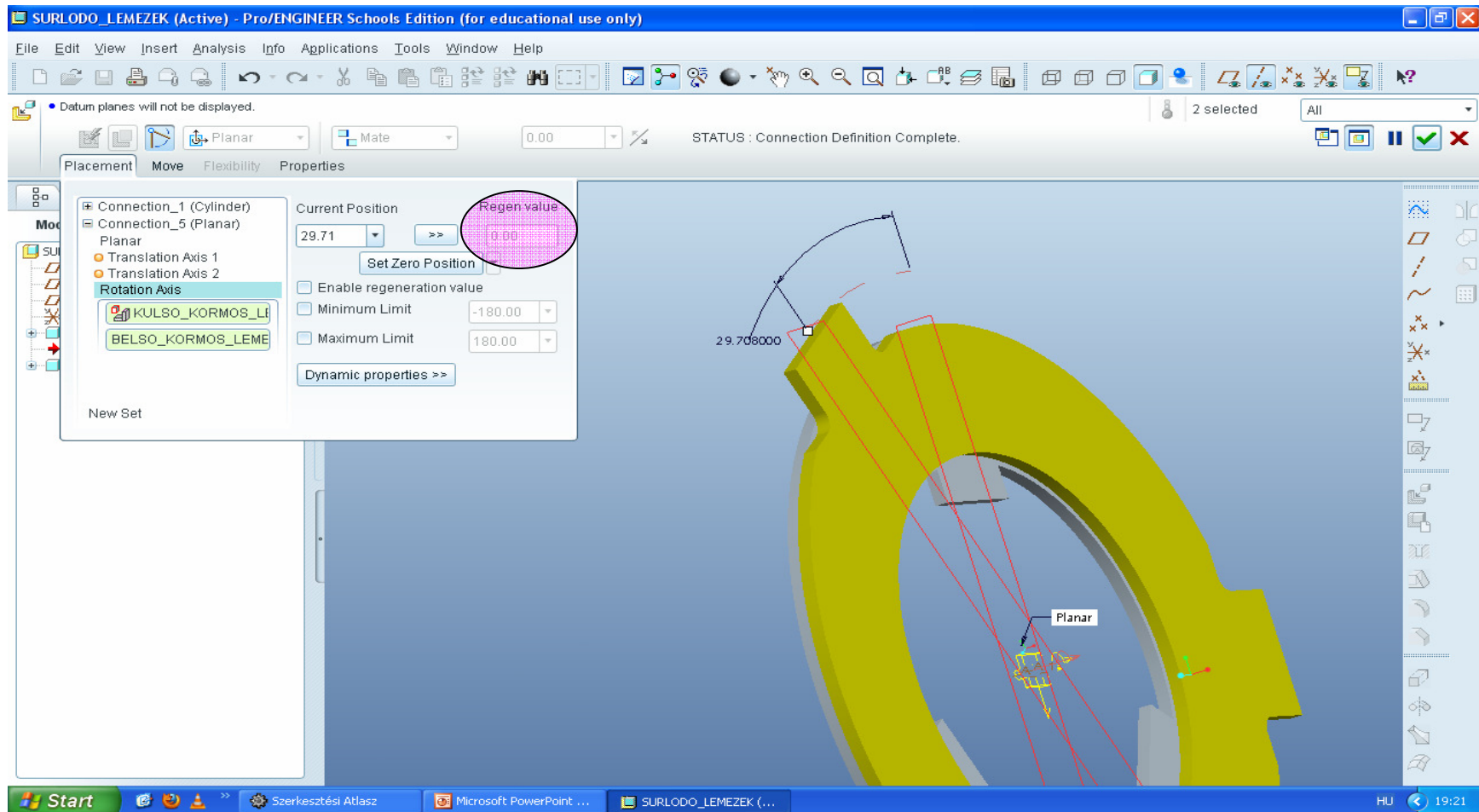


# Front → Front síkok

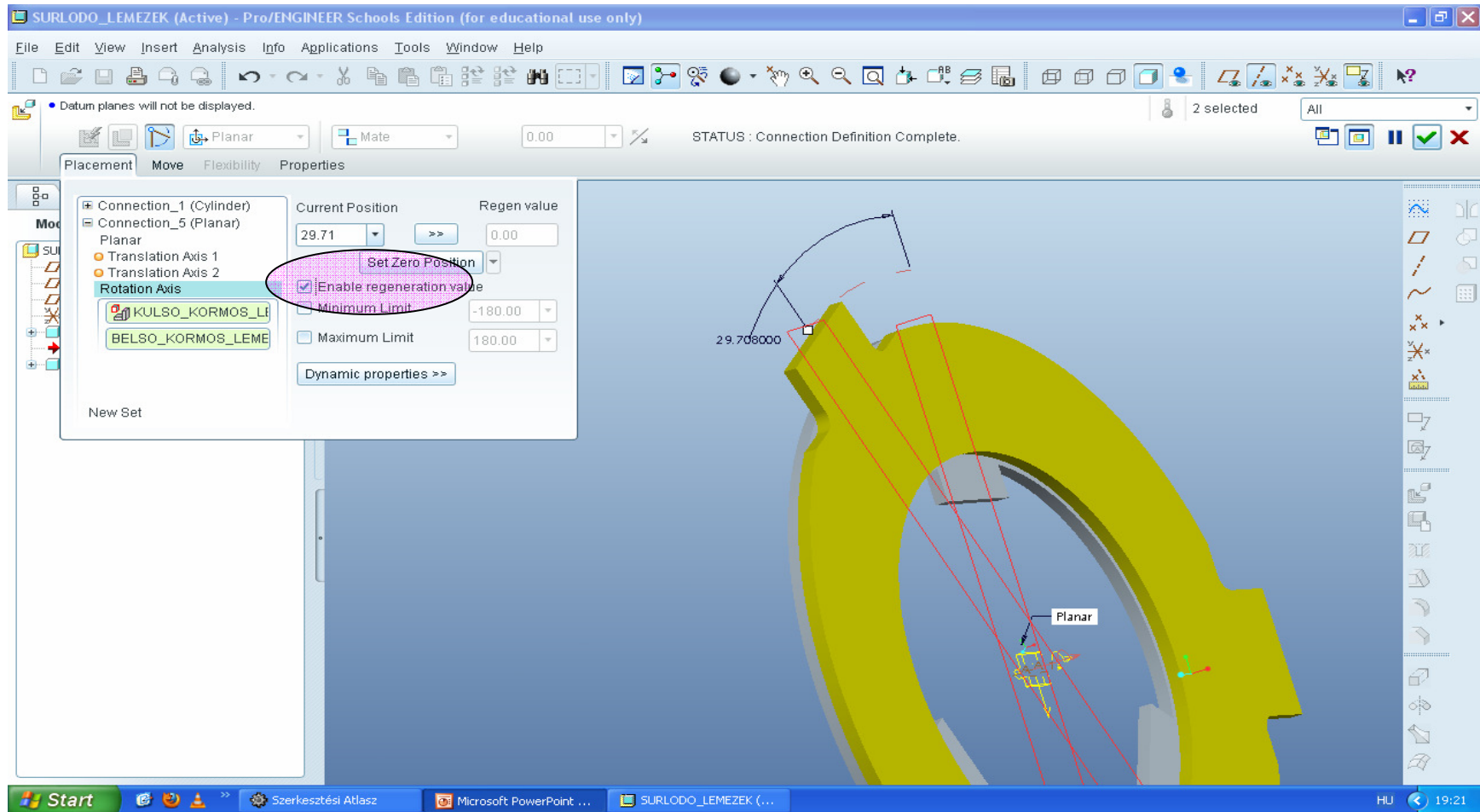




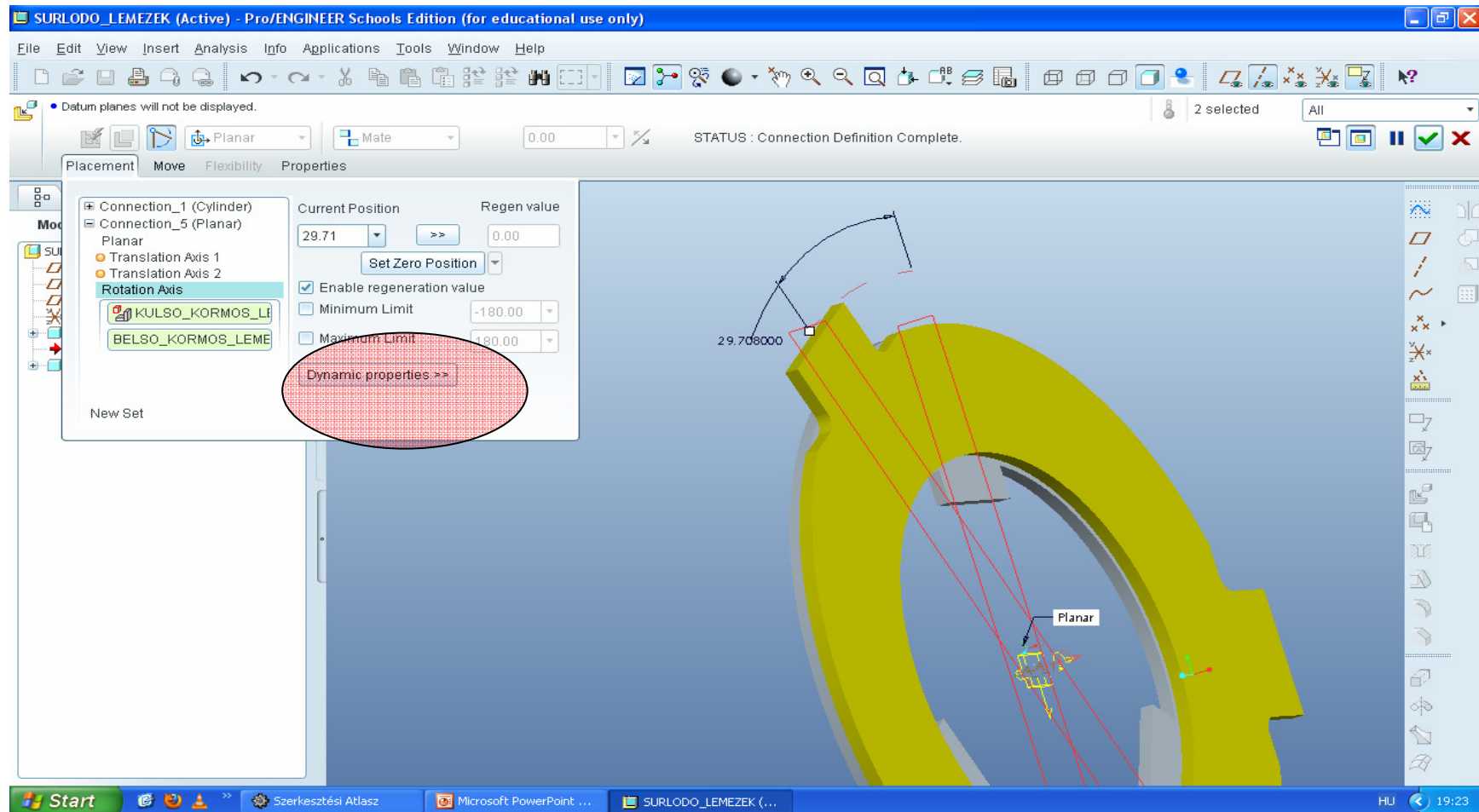
# Újragenerálási érték maradjon 0-án (regen value 0.0)



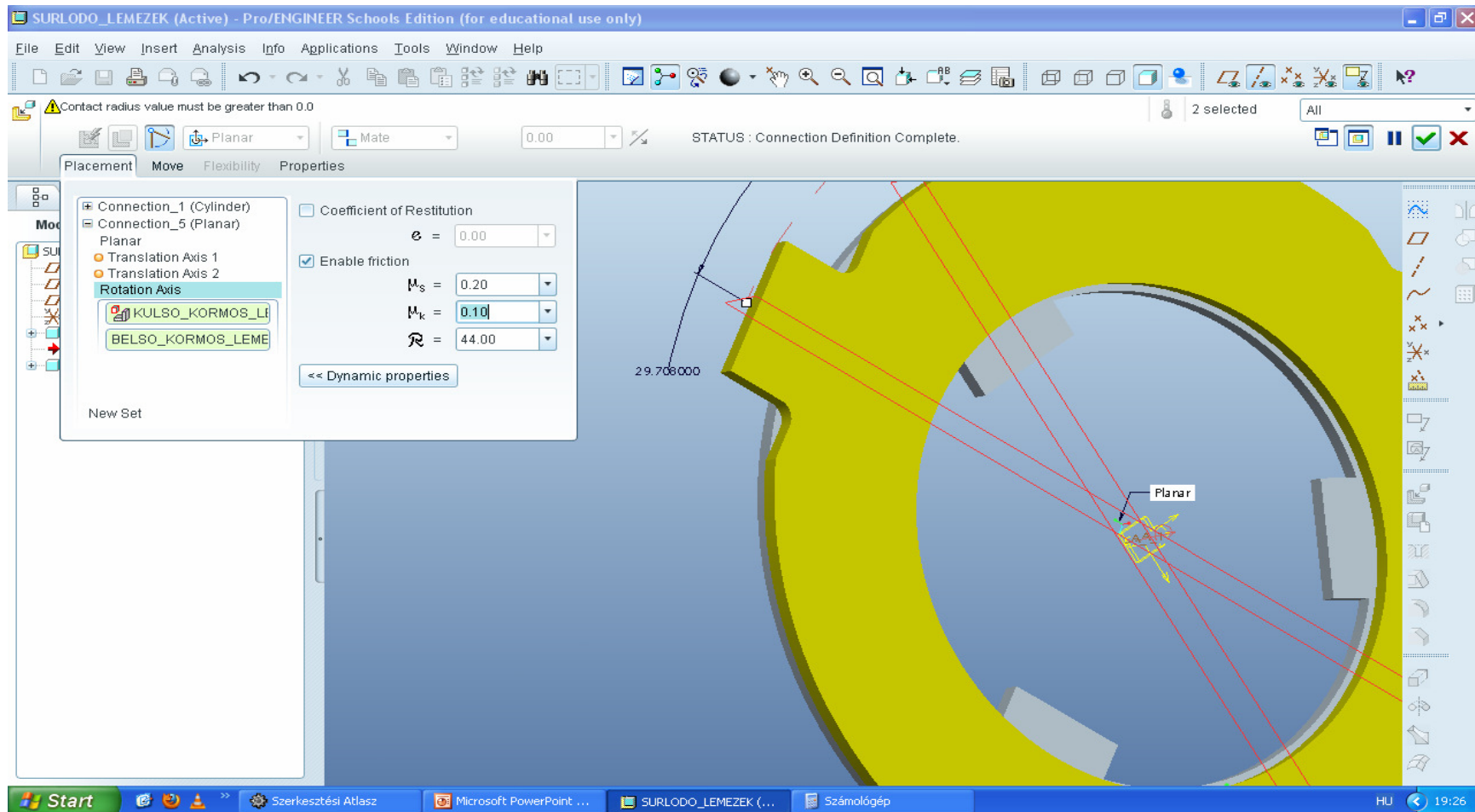
# Pipa! Az újragenerálási érték engedélyezéséhez! Enable regen value



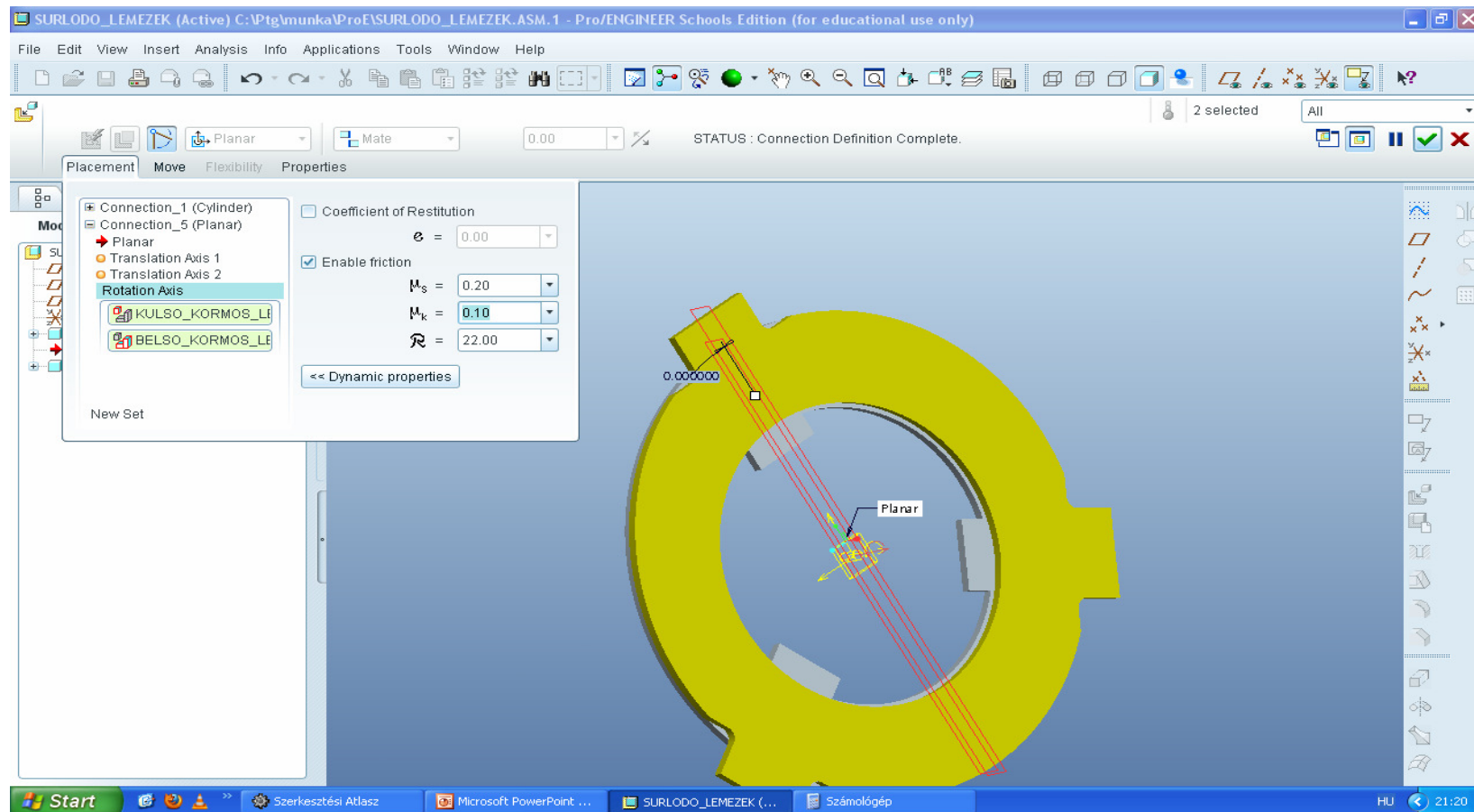
# Dinamikus tulajdonságok dynamic properties



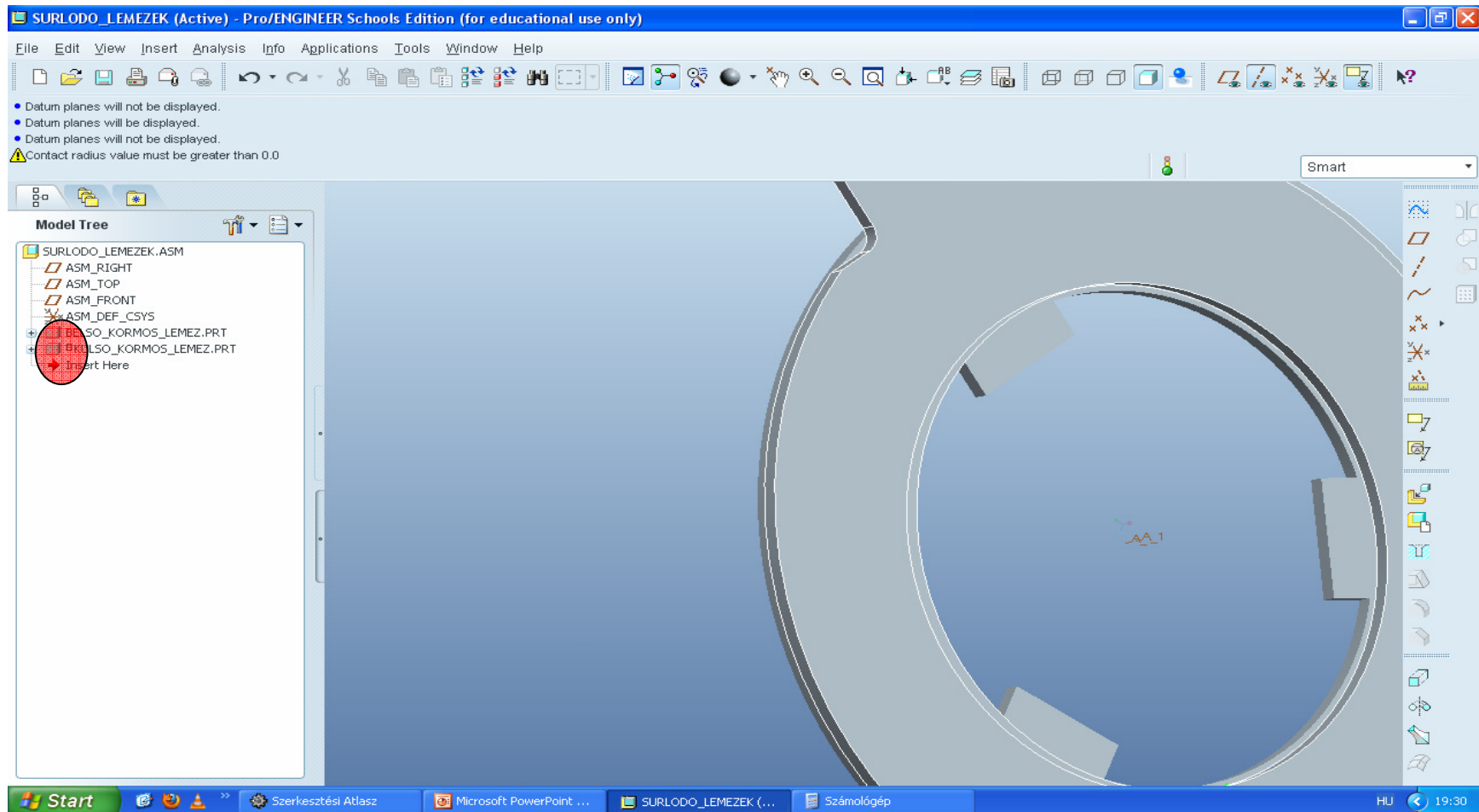
# Pipa! Súrlódás engedélyezése, enable friction,



Tapadási súrl tény  $\mu_s=0.2$ ,  
csúszási súrl tény  $\mu_k=0.1$   
az elvi súrlódó felület közepes  
sugara-  $R \sim (34+54)/4=22$  [mm]

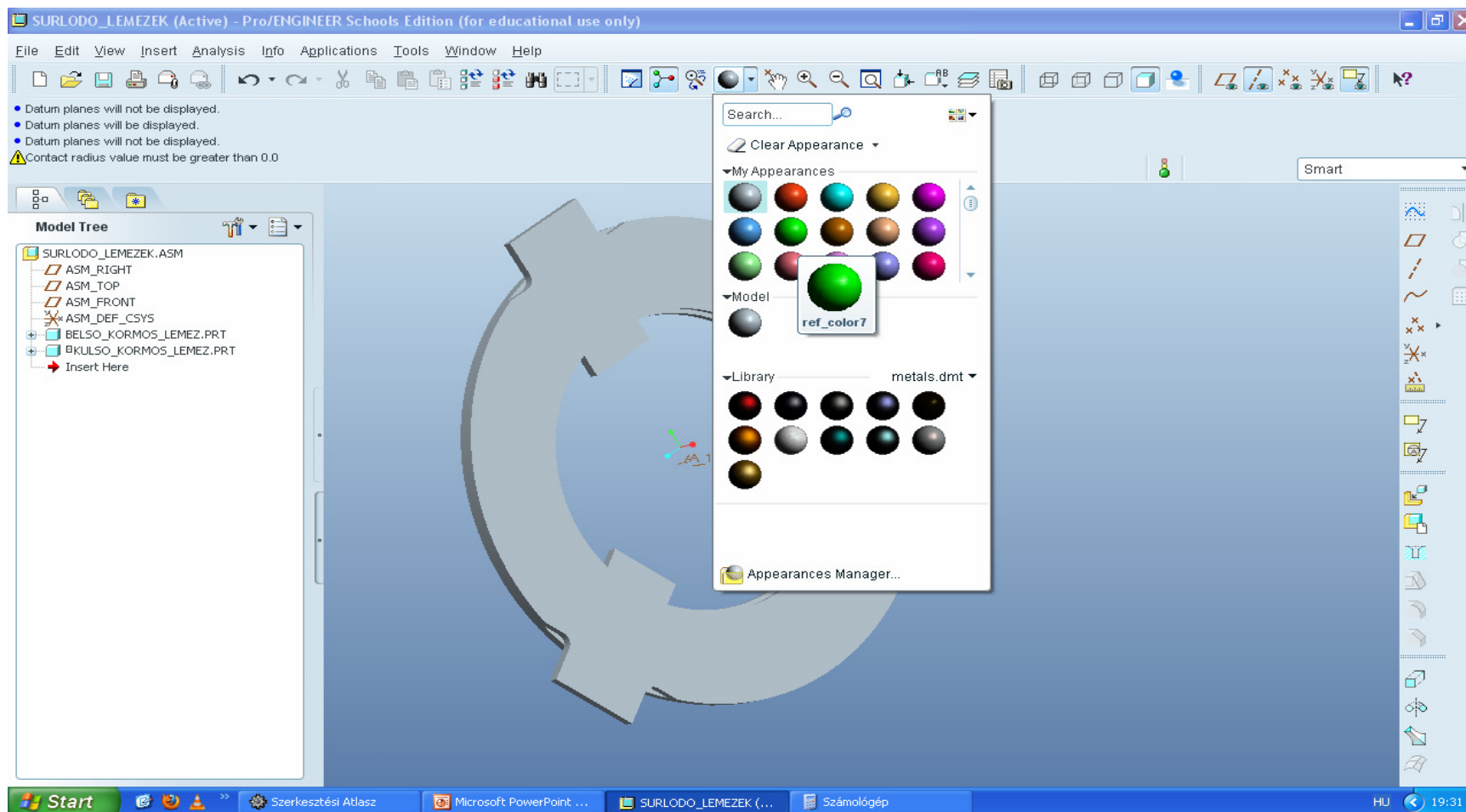


# A mechanizmus kényiszert a modellfa pontosított négyzettel jelzi

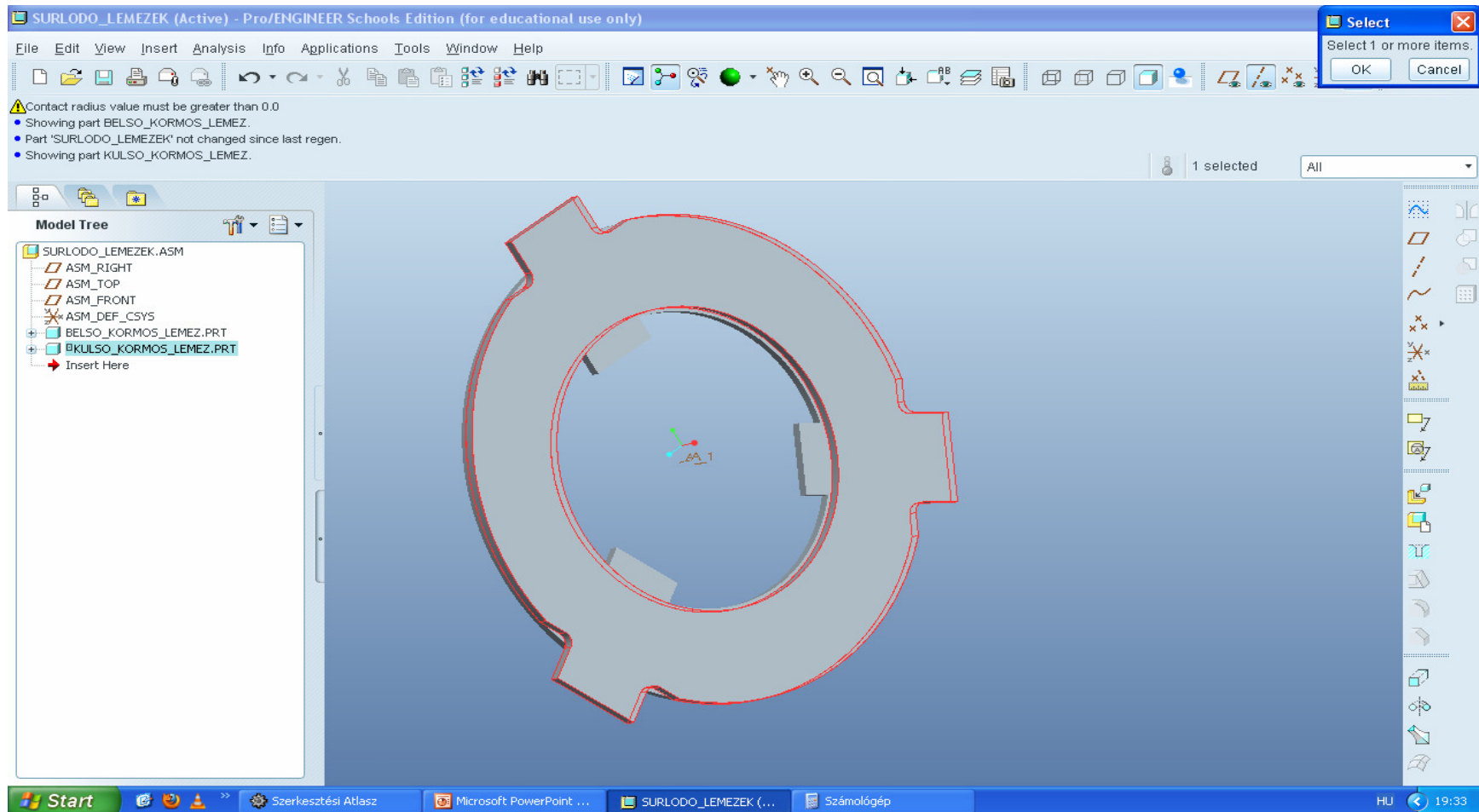




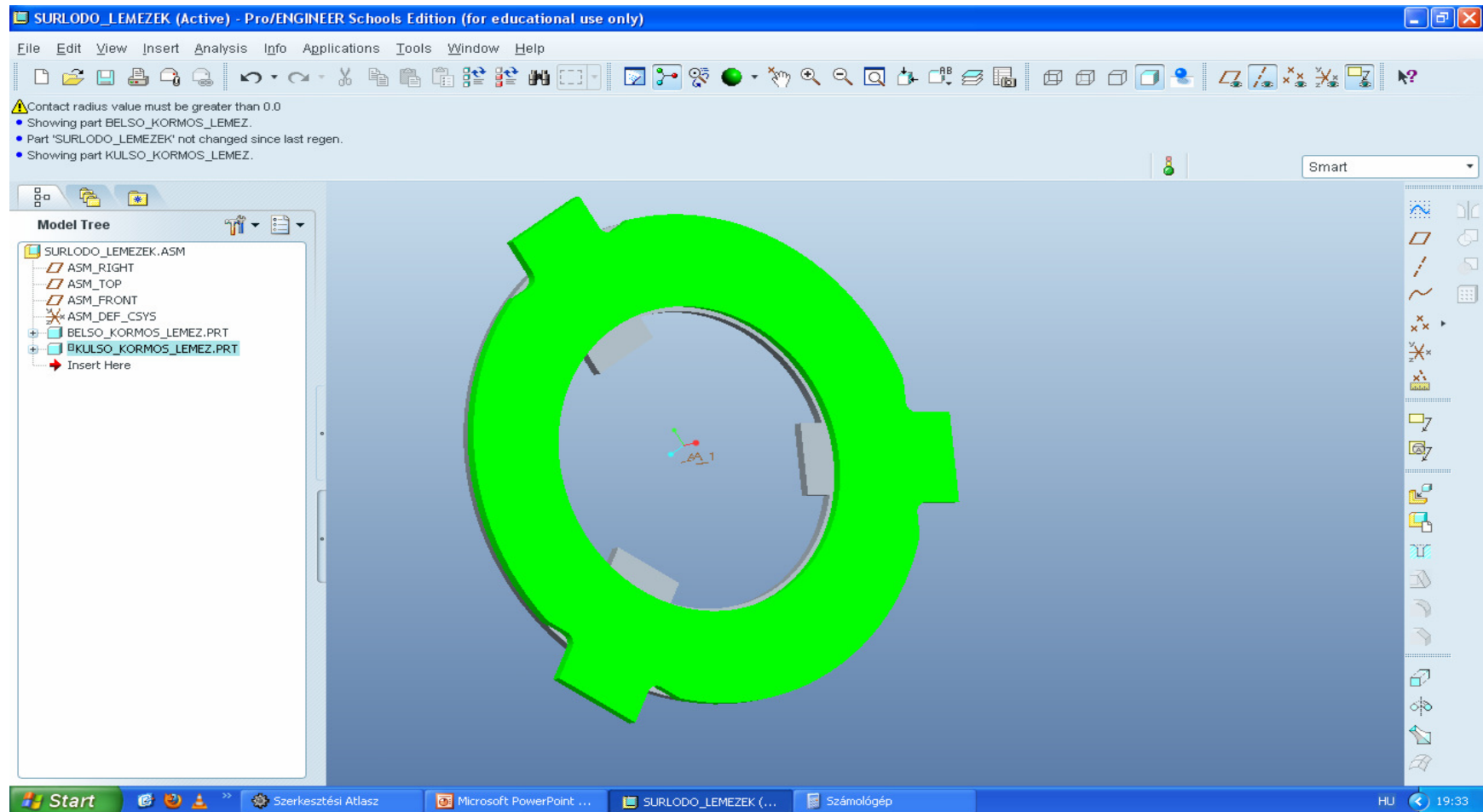
# Színezés: első a szín kiválasztás, a második a modelfában az alkatrészé



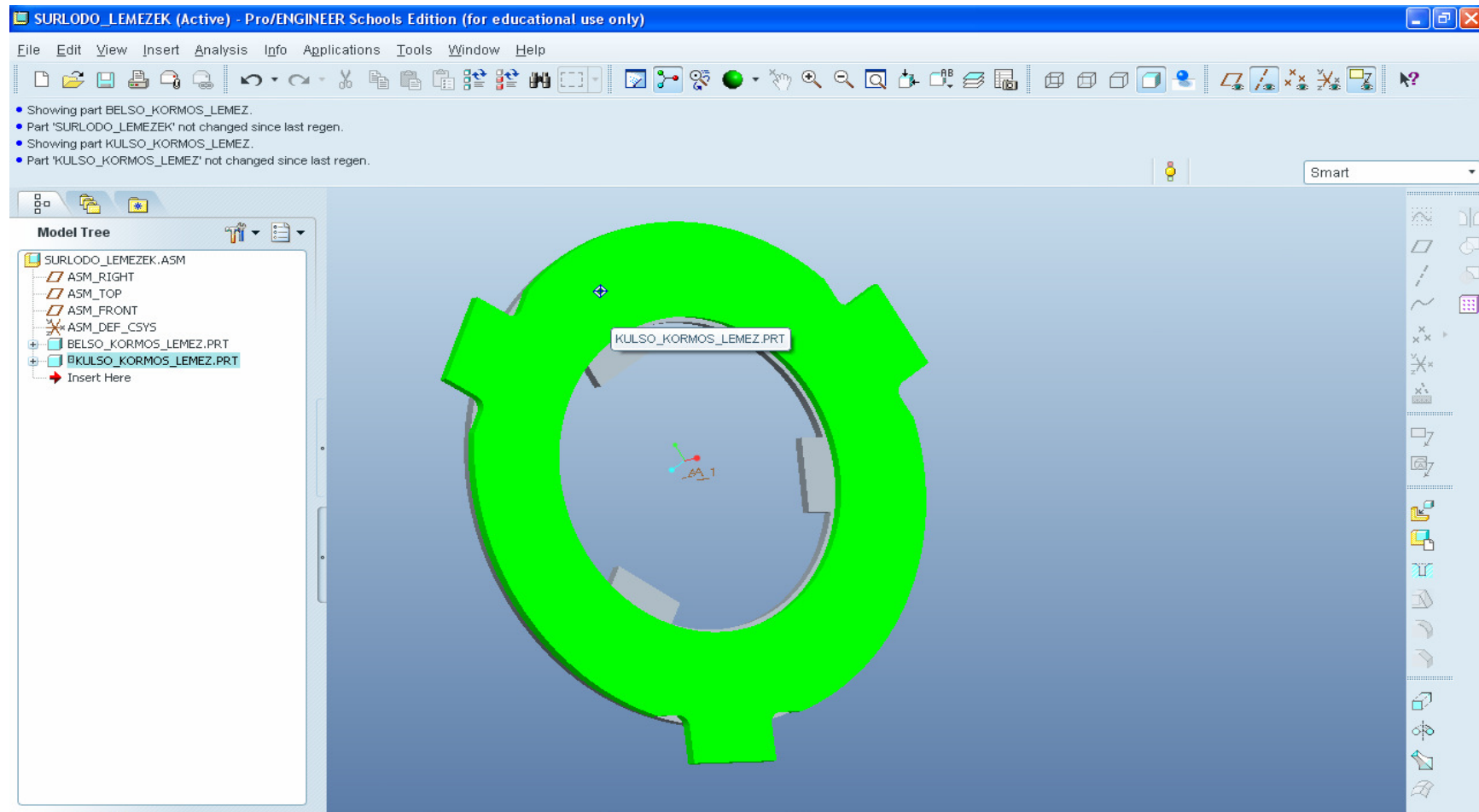
# Azután OK



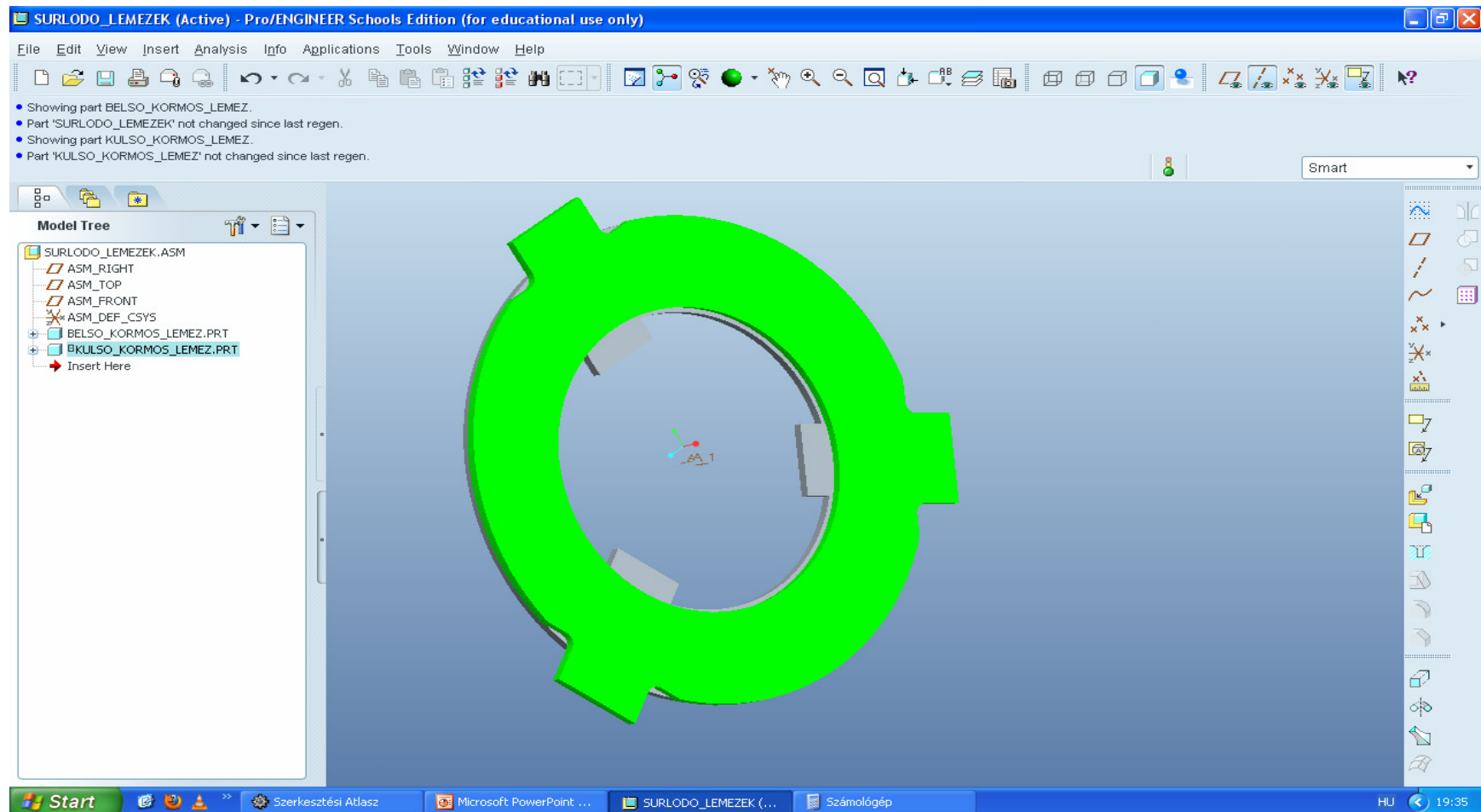
# kész



# Ctrl+alt+BEgér+egérmozg elforgat

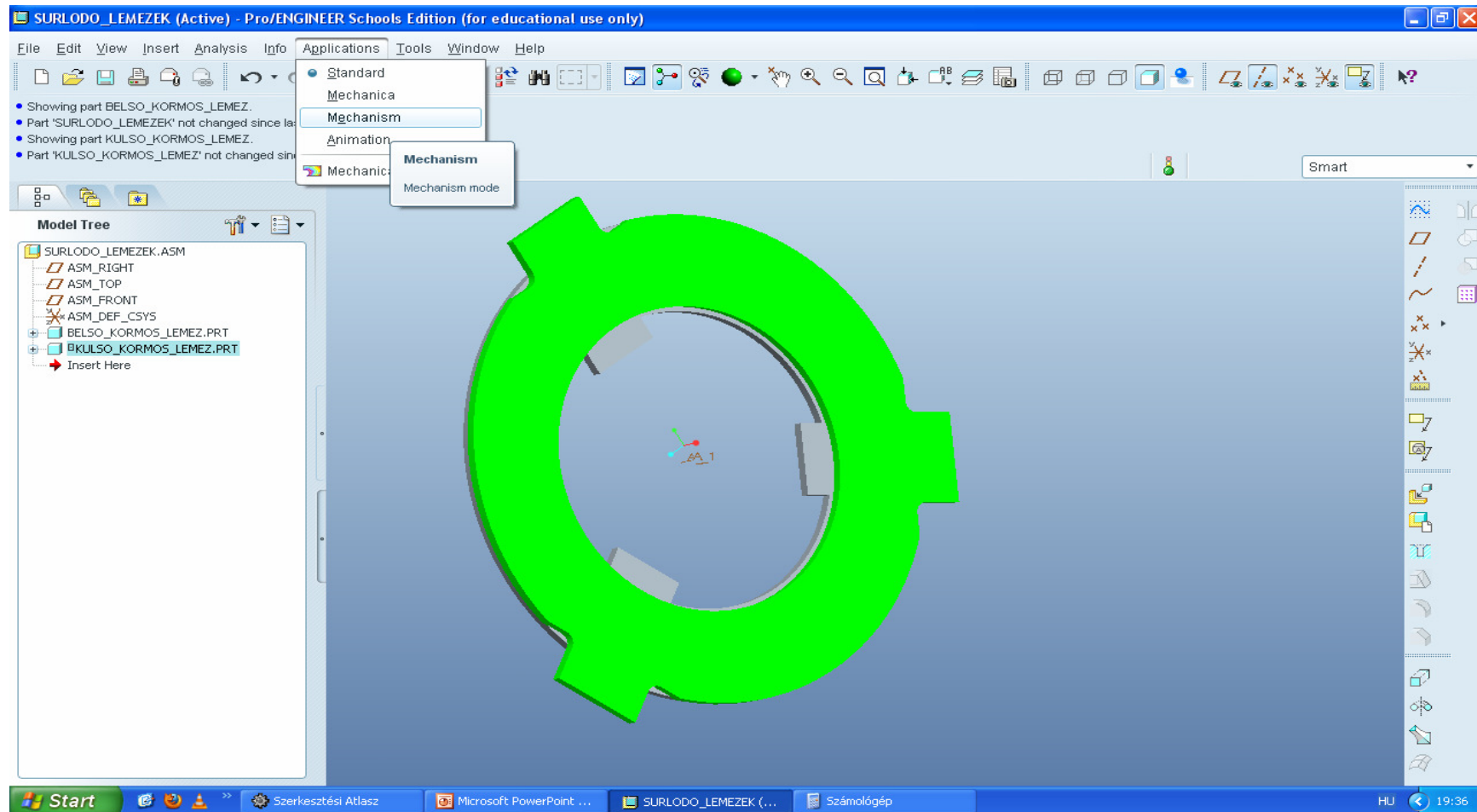


# Regenerate (ctrl+g)-vel visszaáll a 0-ba(→működik az enable regen value)

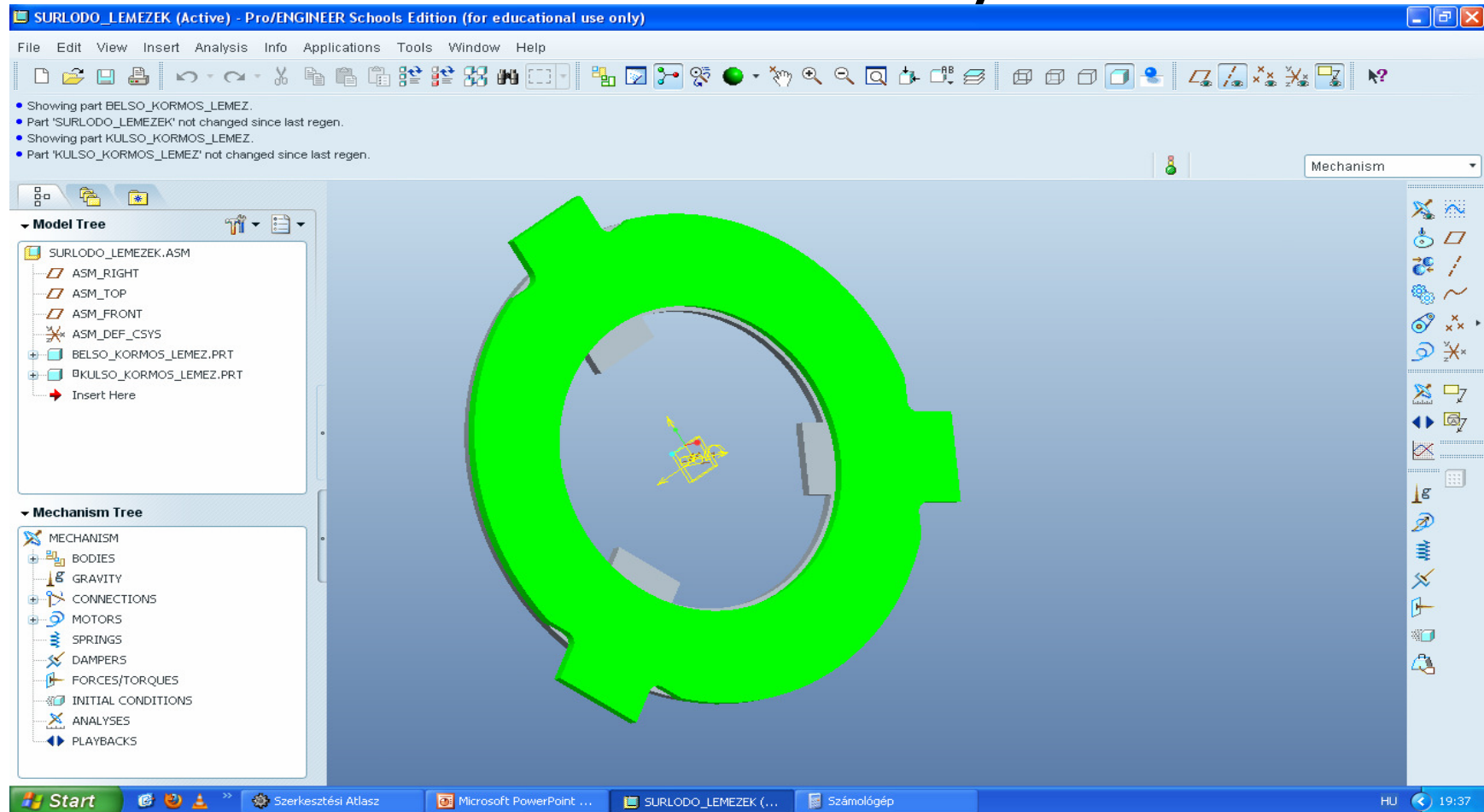


# Mechanizmus alkalmazás indítása

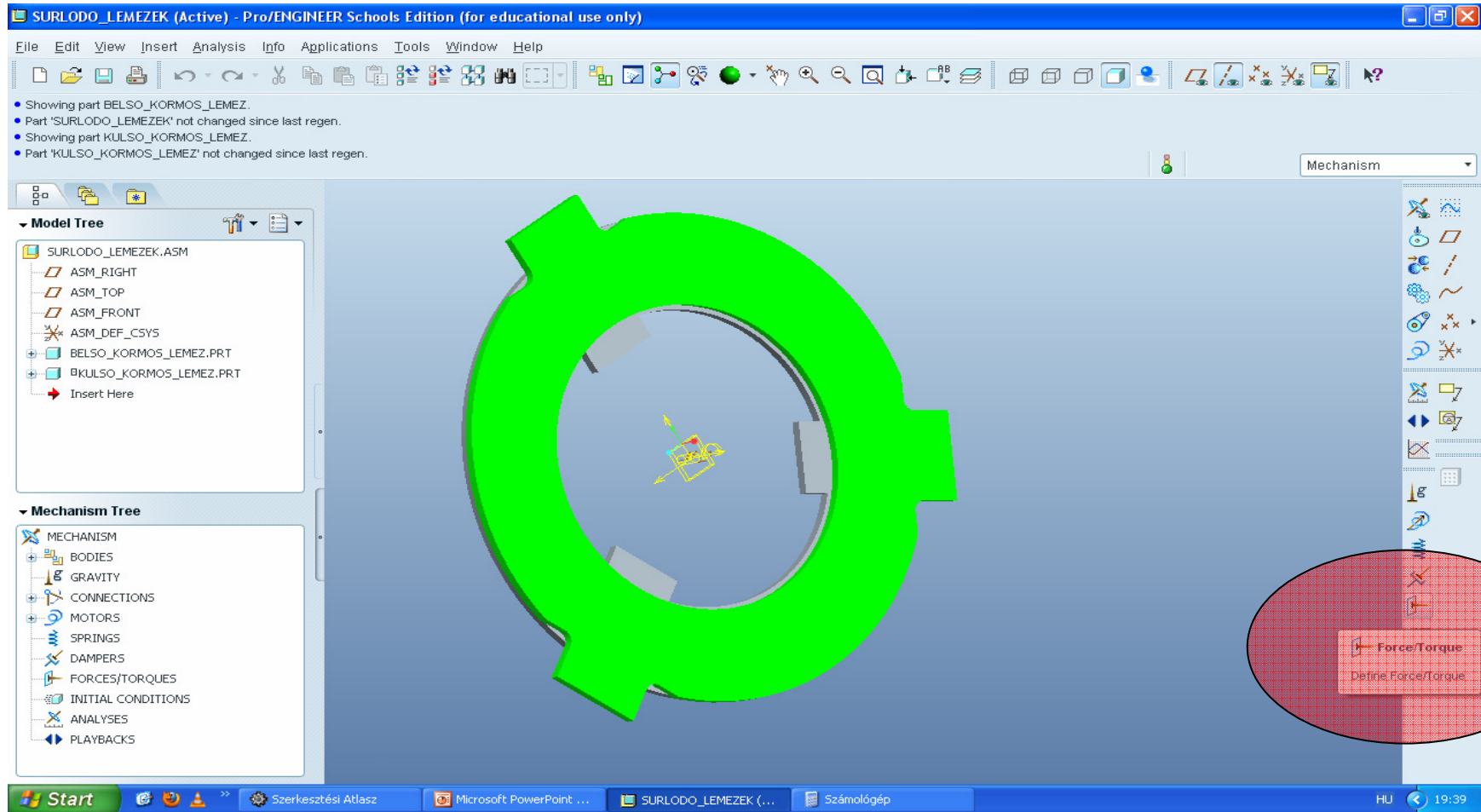
## Applications/Mechanism



# Bal oldalt mechanizmus fa, jobb oldalt mechanizmus eszközök, a modellen látszódnak sárgán a mechanizmus kényszerek

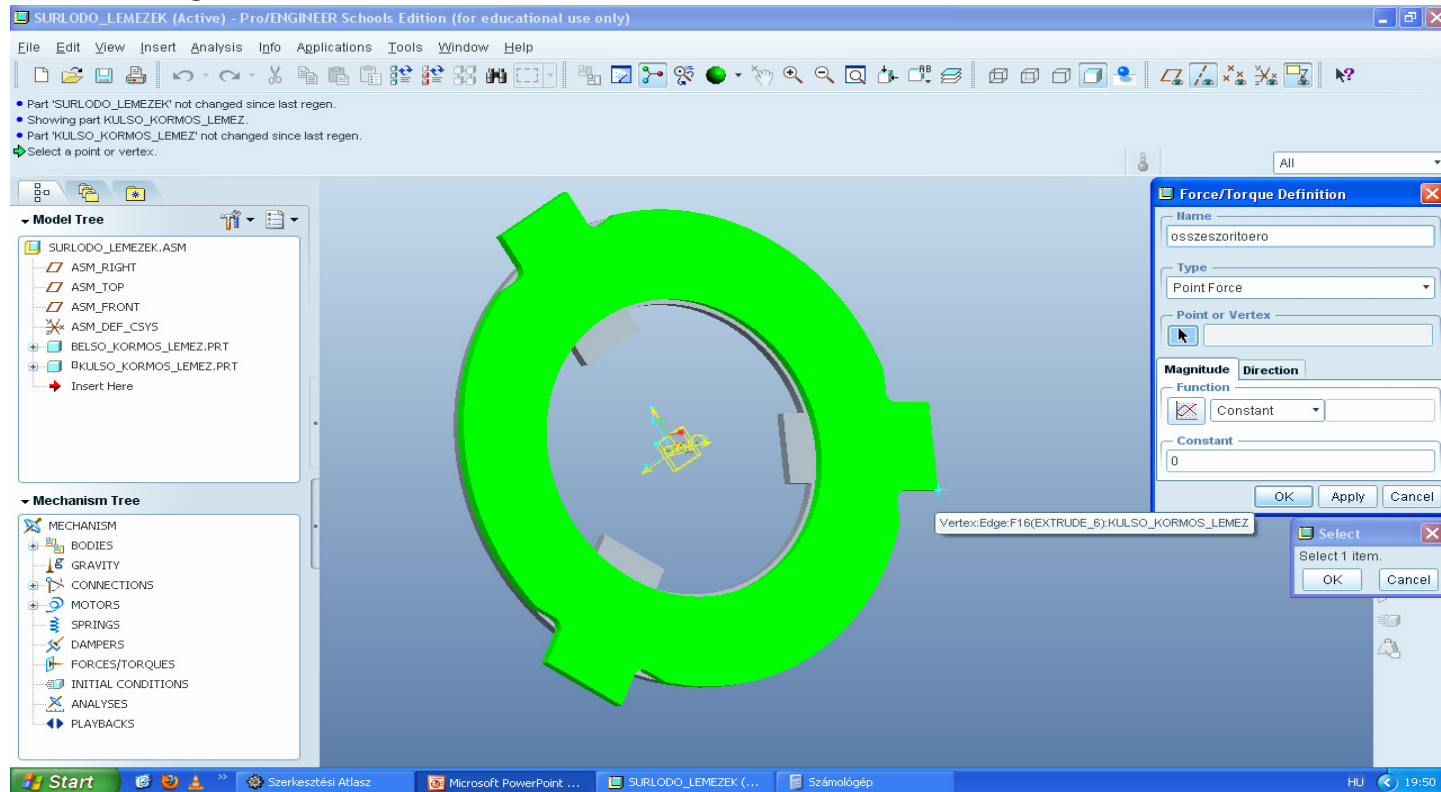


# Összeszorító erő definiálása

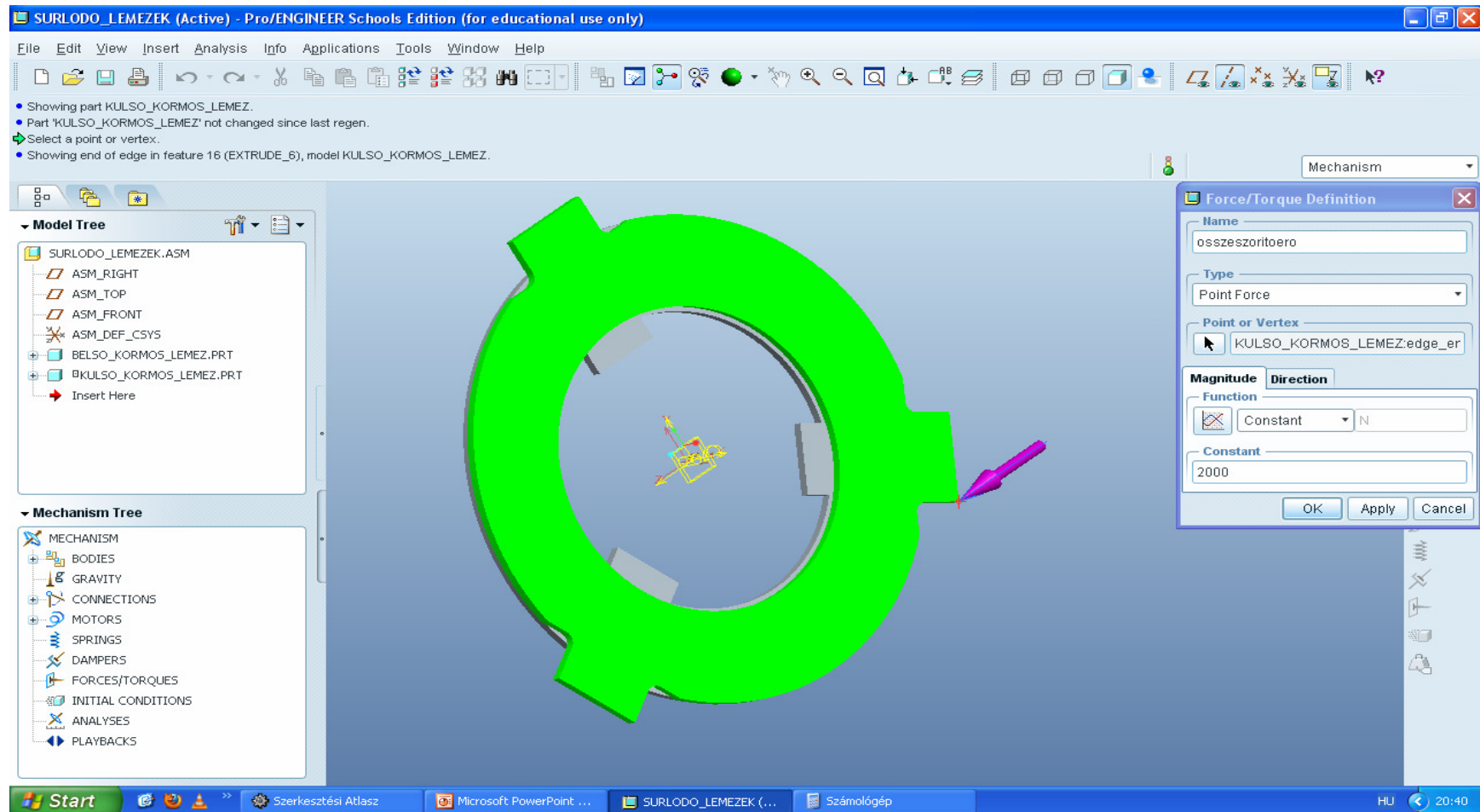




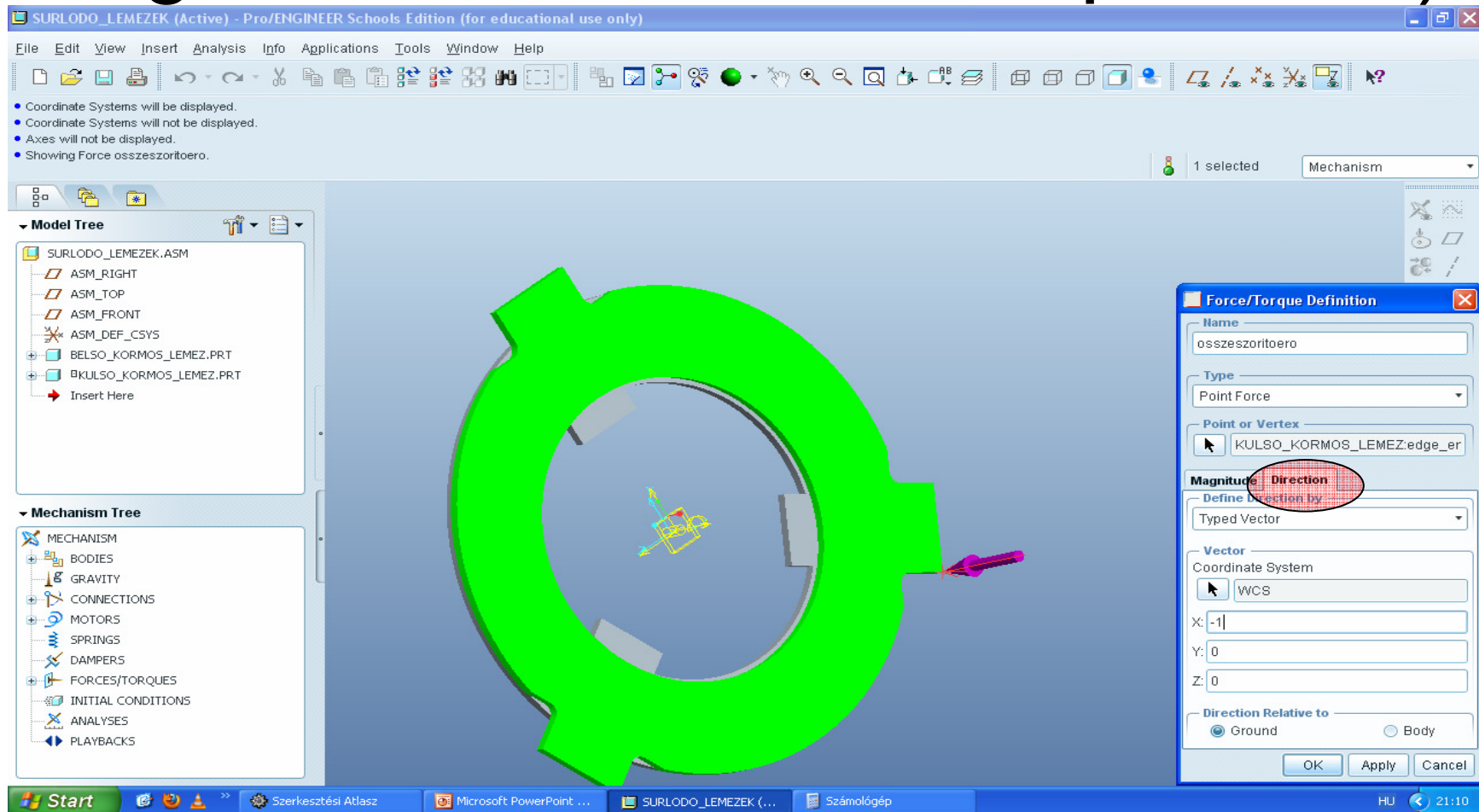
Név+ point force, majd az egyik csúcsát jelölni. Merev testként kezeli az alkatrészeket, ill. a kényszerek miatt nem ad nyomtérket bárhova definiáljuk



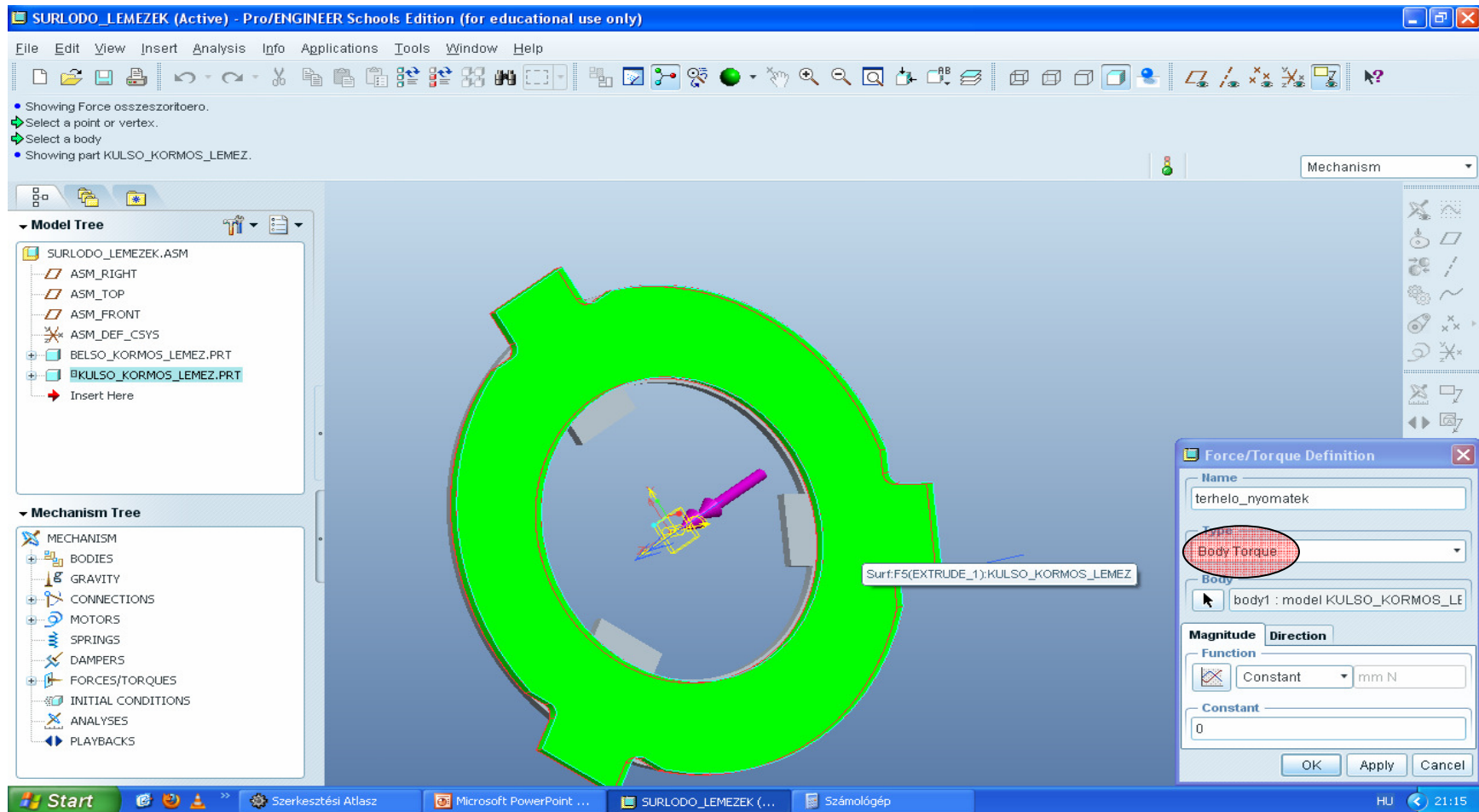
# Erő nagysága 2000N , magnitude fűl constant 2000 (jobbra feljebb N)



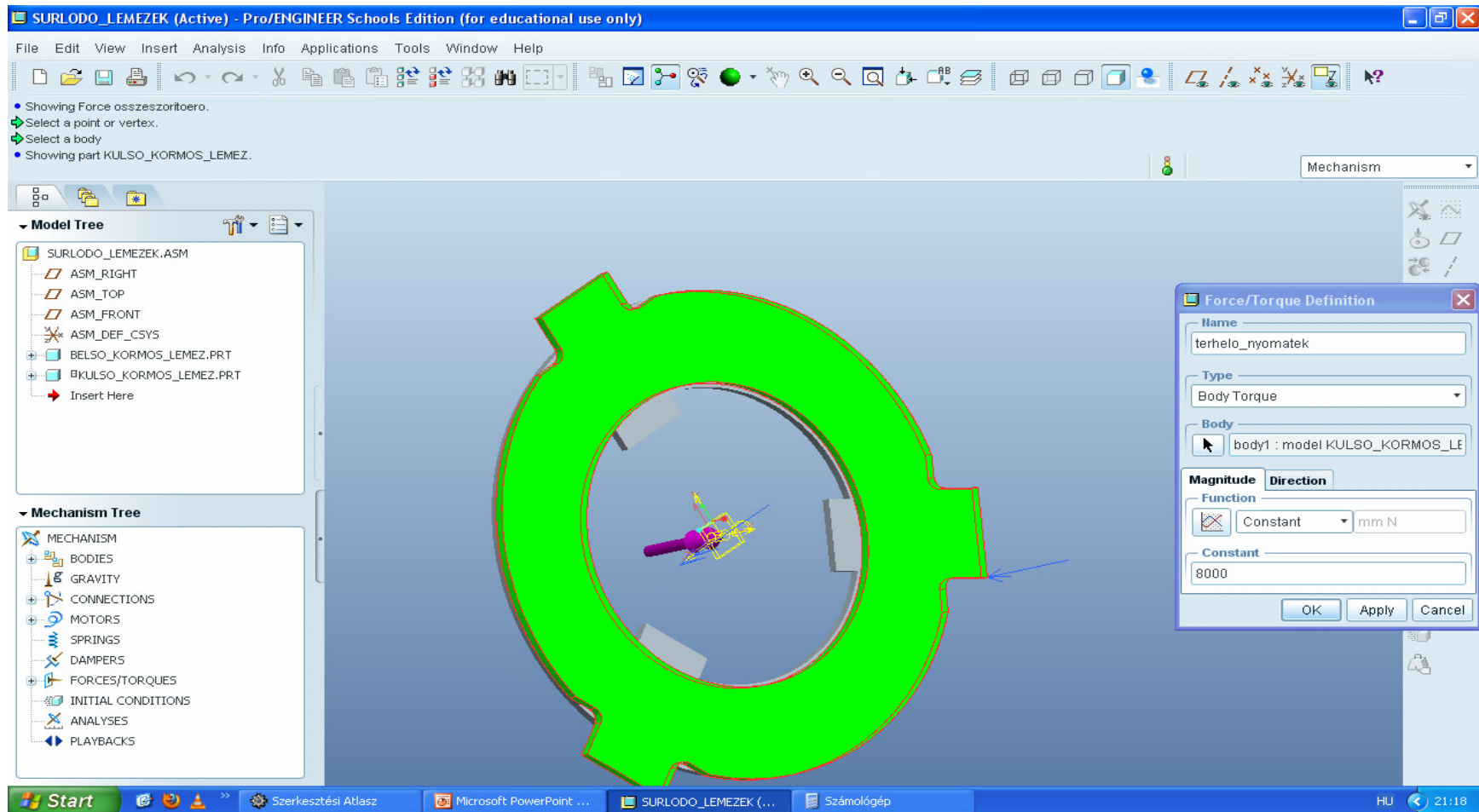
Íránya  $x=-1$ +enter,  $y=z=0$ ,  
viszonyítás az alap koordr.-hez  
(wcs, ami középen látszik, ha a  
segéd koordr. ki is van kapcsolva!)



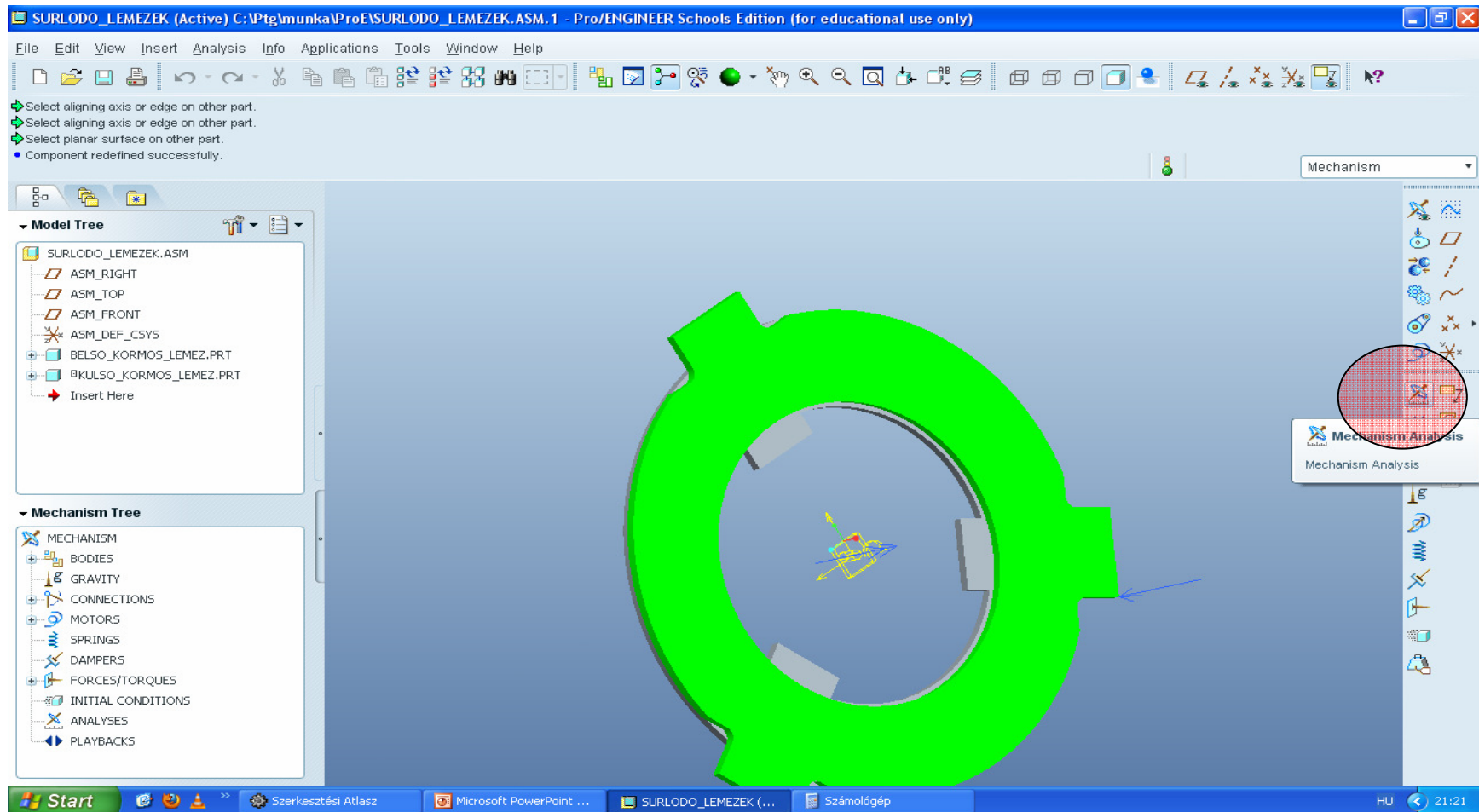
# Terhelő nyomaték, test nyomaték: type: body torque, katt a tárcsára



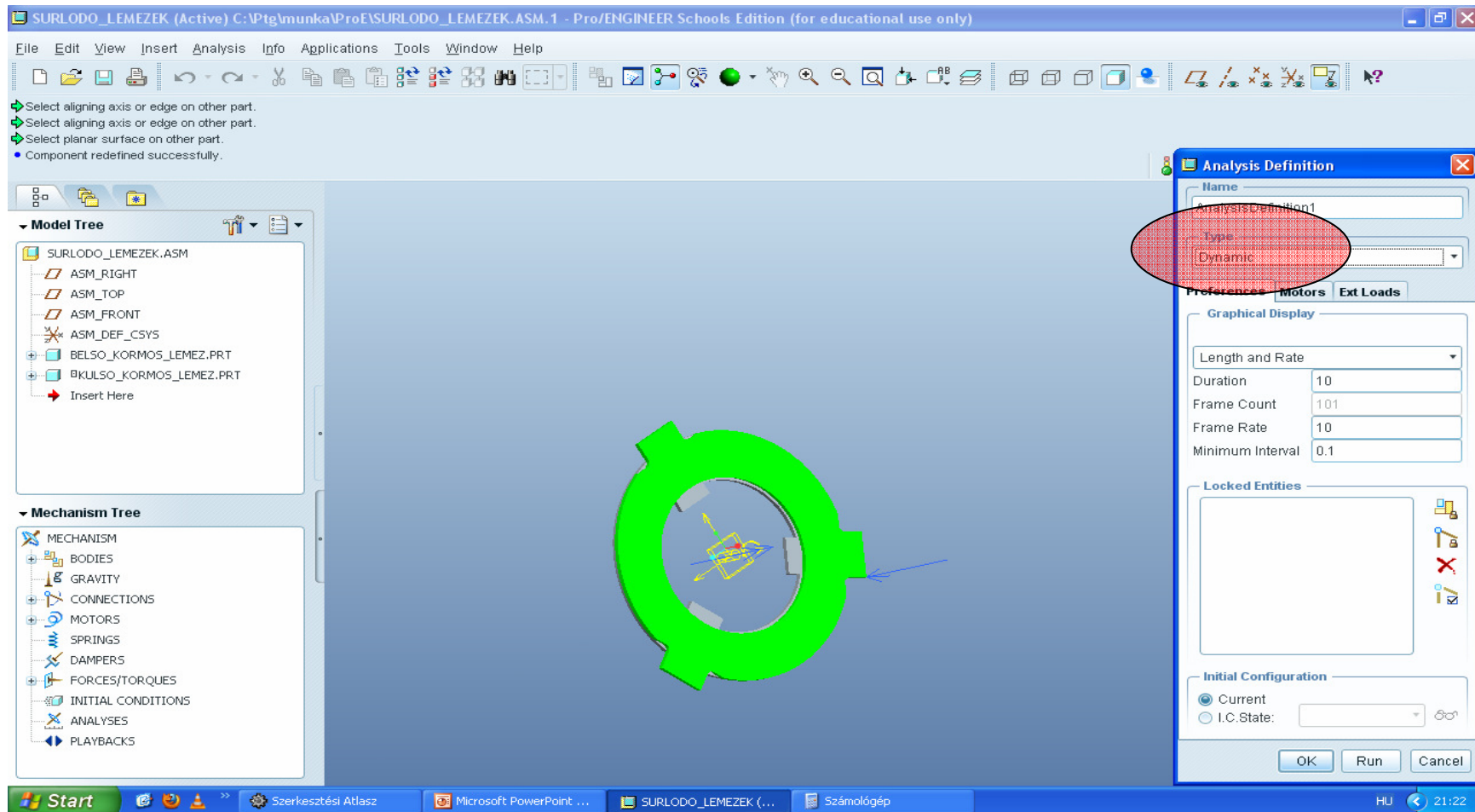
Nagyság 8000 Nmm, irány  $x=1$ ,  
 $y=z=0$



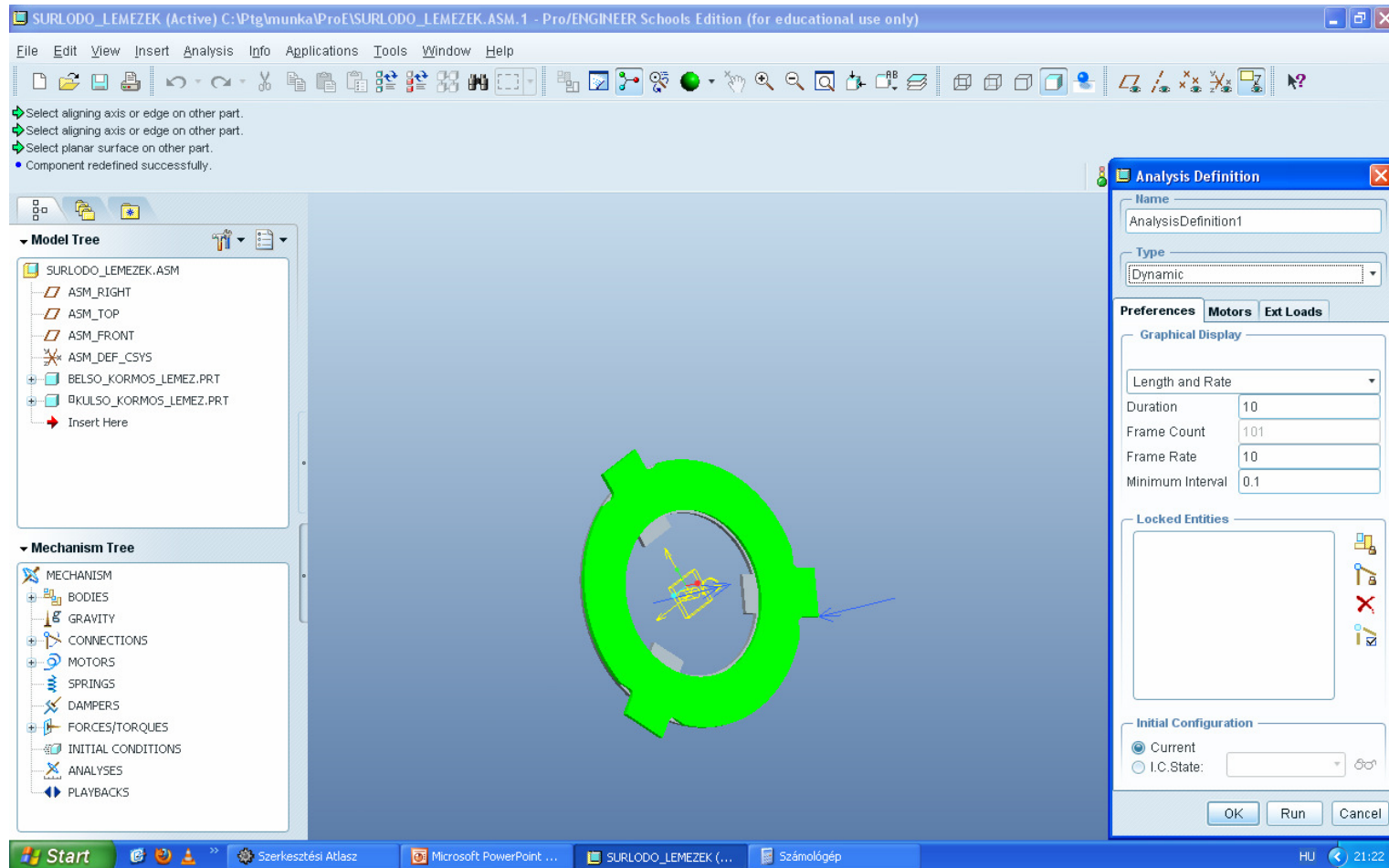
# Vizsgálat, analysis



# Dinamikus, itt lehet erőkkkel, tömegekkel, gyorsulásokat... mérni

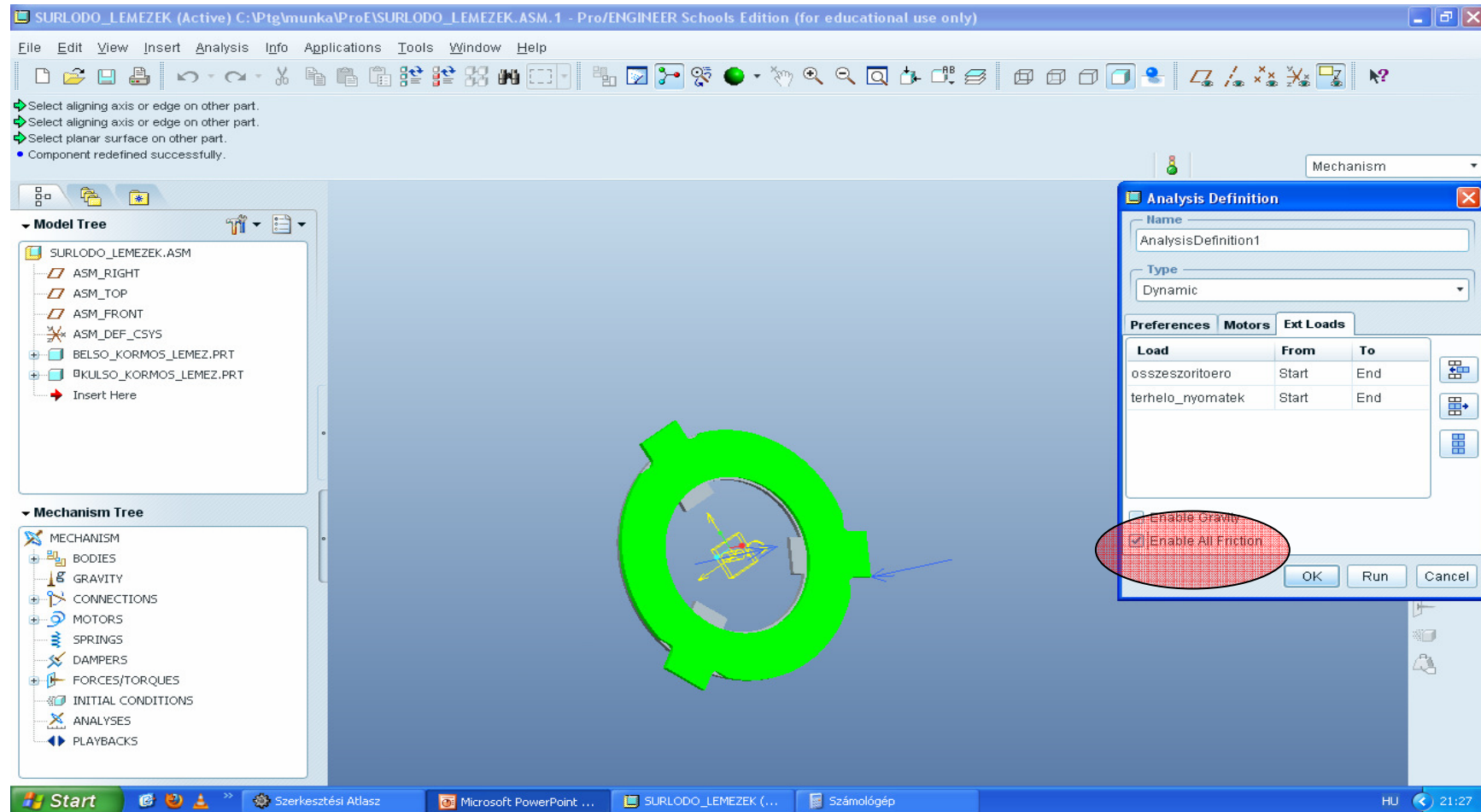


Hossz 10 sec (duration), frame  
count képkocka szám, kép arány 10  
[db/sec], minimum képkockák közti  
idő





Motors fül üres, az külső erők ext loads-ban van az erő ill. nyomaték, és pipa, súrlódás engedélyezése, aztán RUN



# Megszakítás, idő, %

The screenshot shows the SolidWorks software interface during a dynamic analysis simulation. The main window displays a 3D model of a mechanical part, highlighted in green. The status bar at the bottom indicates the simulation is in progress, showing 'Mechanism' and 'Time: 0.7' with a progress bar at 7%.

The 'Analysis Definition' dialog box is open, showing the following settings:

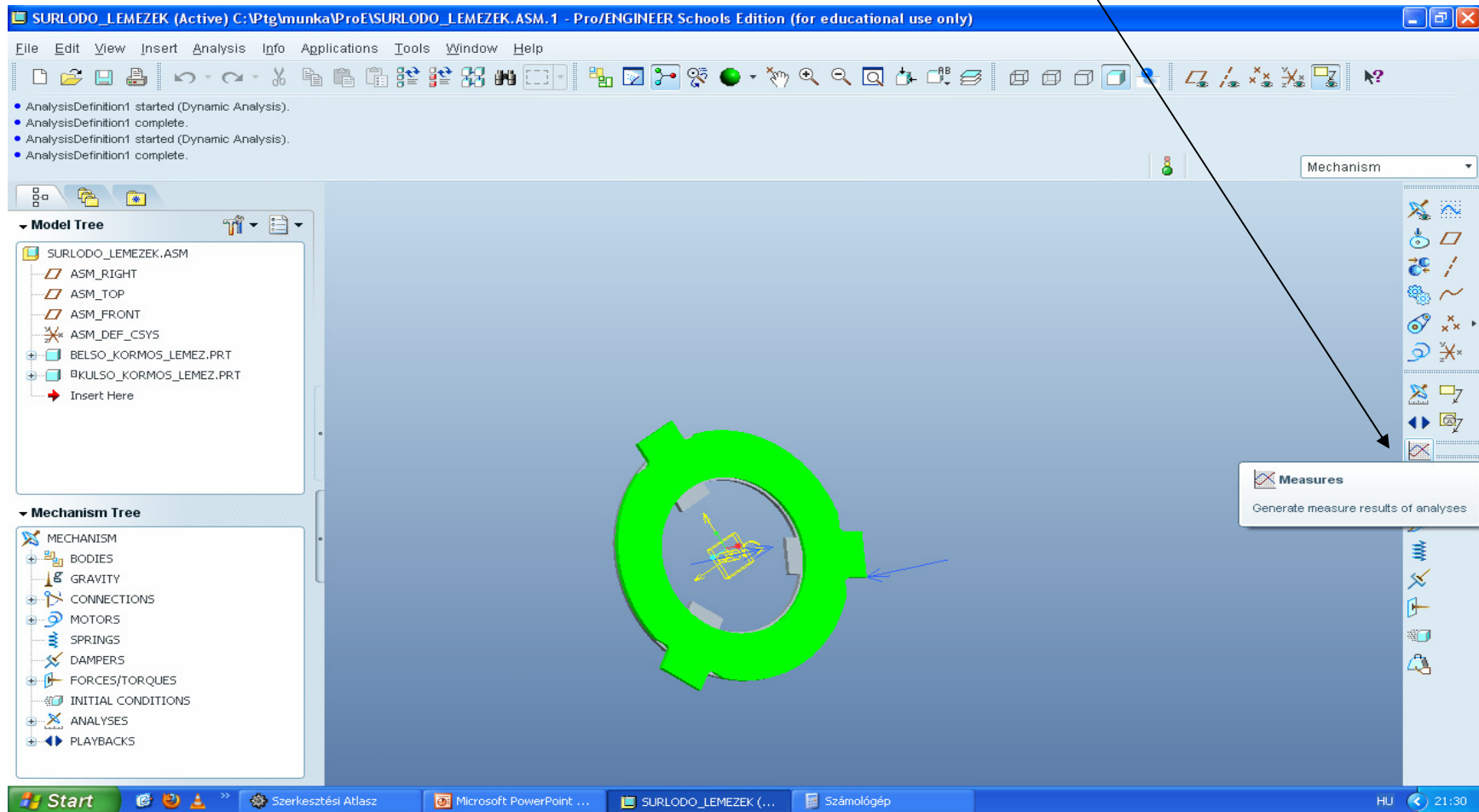
- Name: AnalysisDefinition1
- Type: Dynamic
- Preferences:  Enable Gravity,  Enable All Friction
- Ext Loads: 

Load	From	To
osszeszoritoero	Start	End
terhelo_nyomatek	Start	End

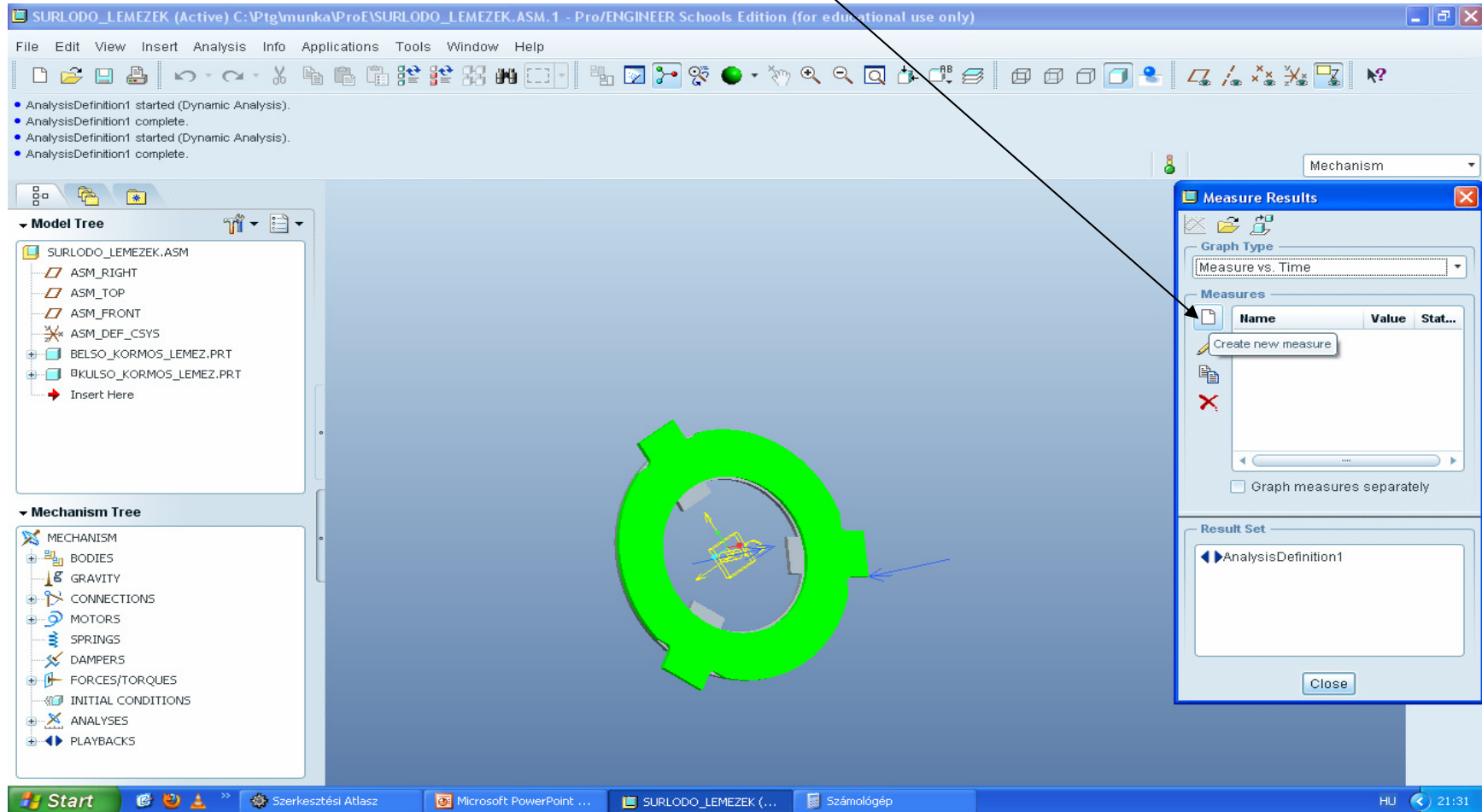
The 'Model Tree' on the left shows the assembly structure, including components like SURLODO\_LEMEZEK.ASM, ASM\_RIGHT, ASM\_TOP, ASM\_FRONT, ASM\_DEF\_CSYS, BELSO\_KORMOS\_LEMEZ.PRT, and BKULSO\_KORMOS\_LEMEZ.PRT. The 'Mechanism Tree' on the left shows the simulation setup, including MECHANISM, BODIES, GRAVITY, CONNECTIONS, MOTORS, SPRINGS, DAMPERS, FORCES/TORQUES, INITIAL CONDITIONS, ANALYSES, and PLAYBACKS.

Utána OK

# Mérések (measures)



# new



# Helyzet mérés position

The screenshot displays the Pro/ENGINEER software interface. The main window shows a 3D model of a gear with a green highlight on its outer ring. A purple grid is overlaid on the gear's inner hole, with a red arrow pointing to a specific point on the grid. A blue arrow points to a feature on the gear's outer ring. The 'Measure Definition' dialog box is open, with 'Name' set to 'helyzet', 'Type' set to 'Position', and 'Evaluation Method' set to 'Each Time Step'. The 'Point or Motion Axis' field is empty. A 'Select' dialog box is also open, prompting the user to 'Select 1 item.' The 'Model Tree' on the left shows the assembly structure, and the 'Mechanism Tree' on the right shows the simulation setup. The Windows taskbar at the bottom shows the Start button and several open applications, including 'Szerkesztési Atlasz', 'Microsoft PowerPoint', 'SURLODO\_LEMEZEK (...)', and 'Számológép'. The system tray shows 'HU' and '21:33'.

Utána rá nagyítás!!

Measure Definition

Name: helyzet

Type: Position units

Point or Motion Axis:

Evaluation Method: Each Time Step

Select

Select 1 item.

# Pont vagy mozgás tengelye, Point or motion axis

The screenshot displays the Pro/ENGINEER software interface. The main window shows a 3D model of a mechanism with a yellow arrow indicating a rotation axis. The Model Tree on the left lists components: SURLODO\_LEMEZEK.ASM, ASM\_RIGHT, ASM\_TOP, ASM\_FRONT, ASM\_DEF\_CSYS, BELSO\_KORMOS\_LEMEZ.PRT, and BKULSO\_KORMOS\_LEMEZ.PRT. The Mechanism Tree on the left lists: MECHANISM, BODIES, GRAVITY, CONNECTIONS, MOTORS, SPRINGS, DAMPERS, FORCES/TORQUES, INITIAL CONDITIONS, ANALYSES, and PLAYBACKS. The Measure Definition dialog box is open, showing the Name field set to 'helyzet', Type set to 'Position', and Evaluation Method set to 'Each Time Step'. A Select dialog box is also open, prompting the user to 'Select 1 item.' An arrow points to the rotation axis in the 3D model, labeled 'Connection\_5.first\_rot\_axis'.

Showing Connection Axis Connection\_5.first\_rot\_axis.  
Select a point or motion axis  
Select a point or motion axis  
Select a point or motion axis

Model Tree

- SURLODO\_LEMEZEK.ASM
  - ASM\_RIGHT
  - ASM\_TOP
  - ASM\_FRONT
  - ASM\_DEF\_CSYS
  - BELSO\_KORMOS\_LEMEZ.PRT
  - BKULSO\_KORMOS\_LEMEZ.PRT
  - Insert Here

Mechanism Tree

- MECHANISM
  - BODIES
  - GRAVITY
  - CONNECTIONS
  - MOTORS
  - SPRINGS
  - DAMPERS
  - FORCES/TORQUES
  - INITIAL CONDITIONS
  - ANALYSES
  - PLAYBACKS

Measure Definition

Name: helyzet

Type: Position units

Point or Motion Axis: [Selected]

Evaluation Method: Each Time Step

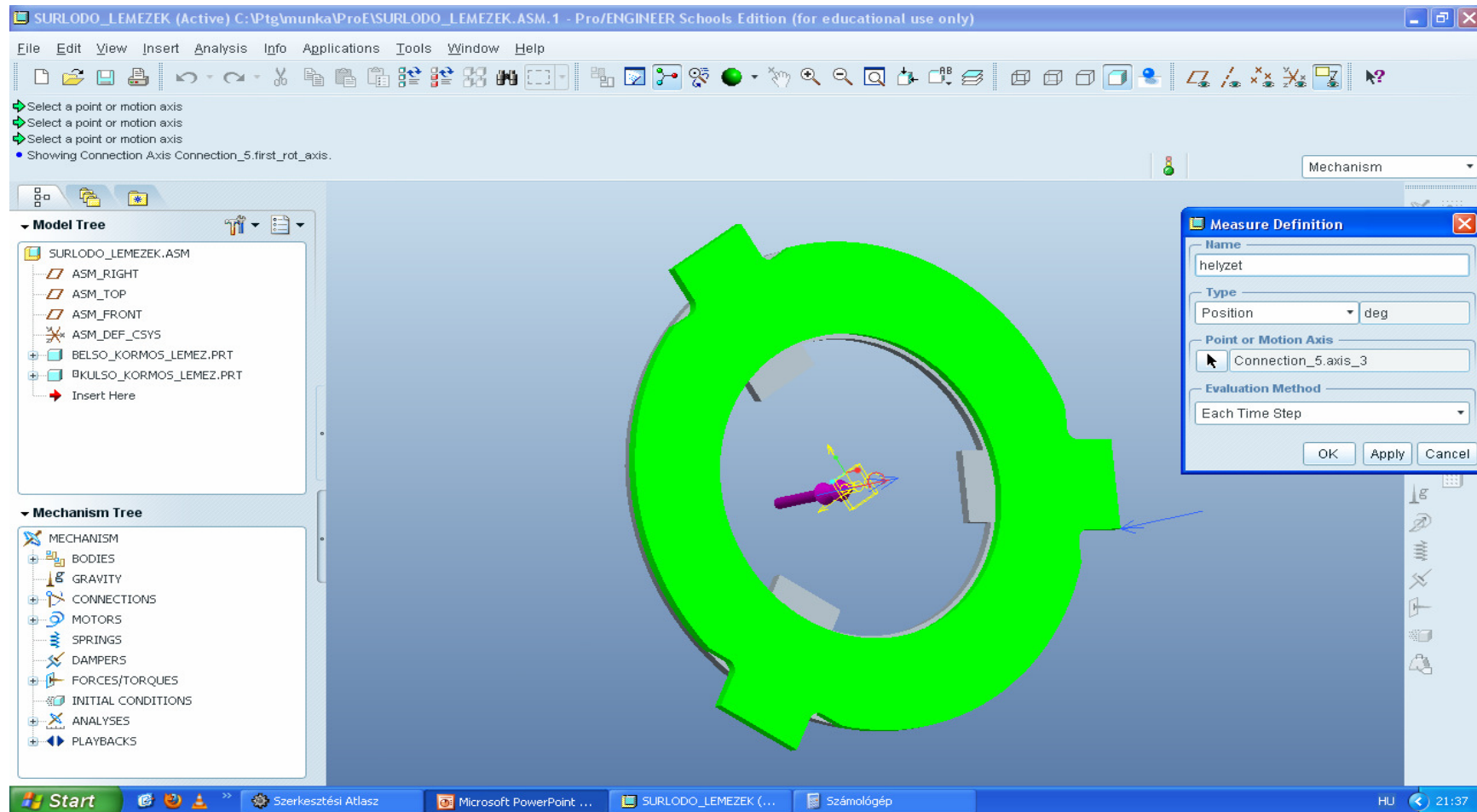
Select

Select 1 item.

Connection\_5.first\_rot\_axis

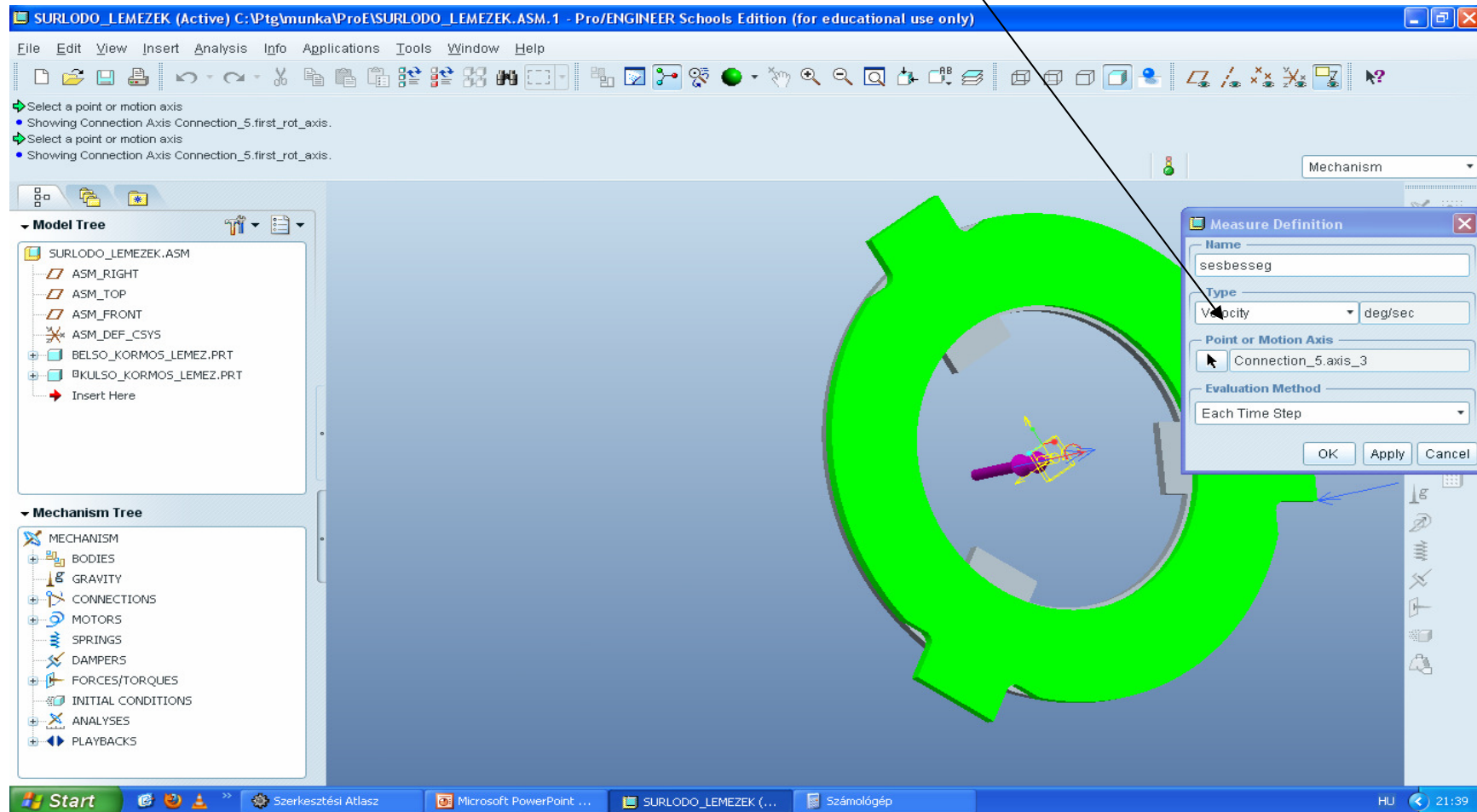
A planar kényszer forgási tengelye kell!  
Itt Connection 5 (nem a cylinderé!)

# (mértékegység fok, azaz 'deg')+OK

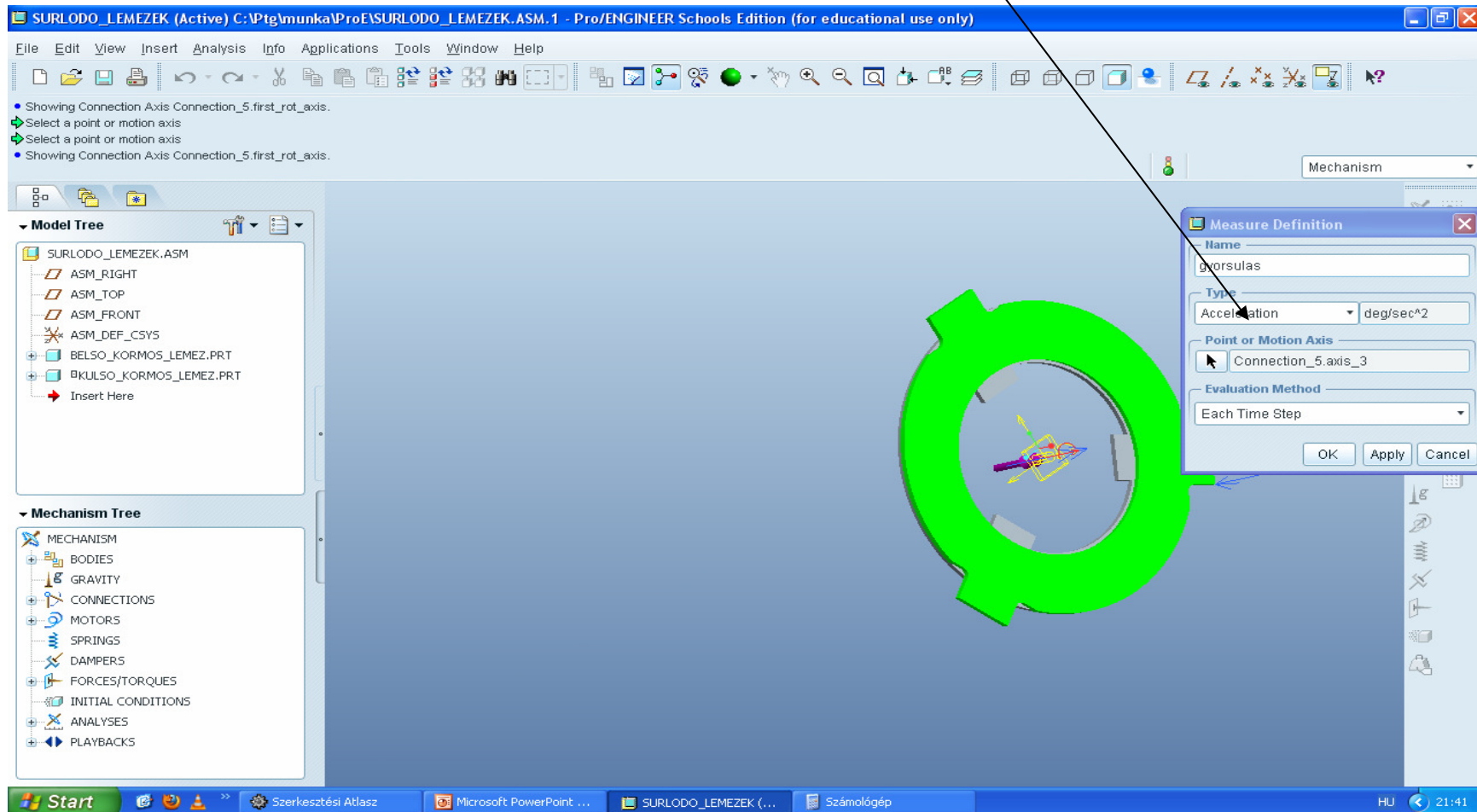




# Új mérés, sebesség (deg/sec), a motion axis ugyan az



# Új mérés, gyorsulás (deg/sec<sup>2</sup>), a motion axis ugyan az



# Új mérés, reakcióerő

The screenshot displays the Pro/ENGINEER software interface. The main window shows a 3D model of a mechanism with a green ring. A 'Measure Definition' dialog box is open, showing the following configuration:

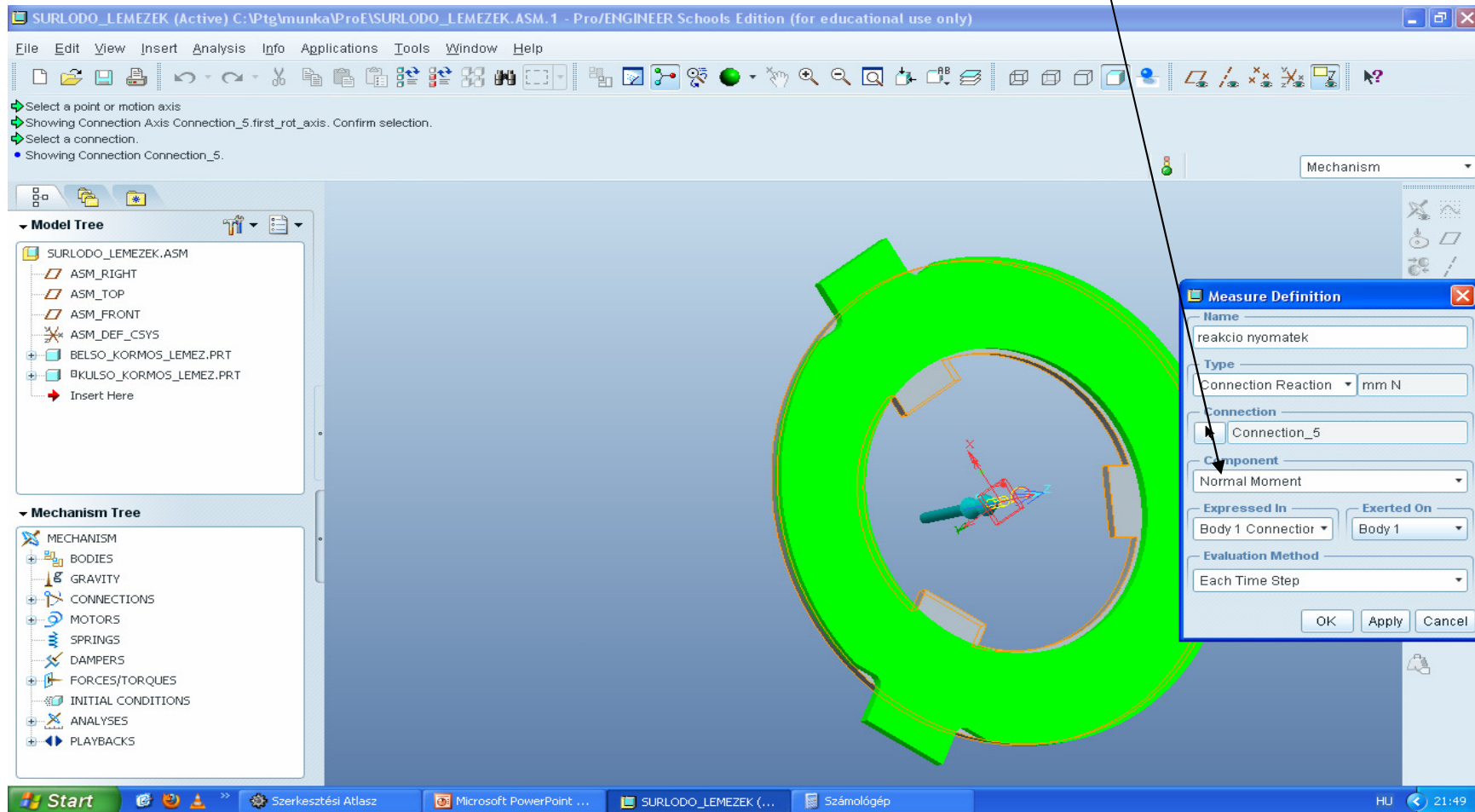
- Name: reakcioero
- Type: Connection Reaction
- Connection: Connection\_5
- Component: Normal Force
- Expressed In: Body 1 Connector
- Exerted On: Body 1
- Evaluation Method: Each Time Step

Annotations in Hungarian point to specific parts of the model and dialog:

- Planar connection (Planar connection)
- Normál erő (Normal force)
- Egyes test koord.-ében (In the coordinate system of the body)
- Egyes testre ható (Acting on the body)

The Model Tree on the left shows the assembly structure, and the Mechanism Tree shows the simulation setup. The Windows taskbar at the bottom indicates the system is running on Windows with the Start button visible.

# Új mérés, reakciónyomaték



# Eredmények megjelenítése

The screenshot displays the Pro/ENGINEER interface with a mechanism model of a ring with four protrusions. The model is highlighted in green. On the left, the Model Tree and Mechanism Tree are visible. The Mechanism Tree includes MECHANISM, BODIES, GRAVITY, CONNECTIONS, MOTORS, SPRINGS, DAMPERS, FORCES/TORQUES, INITIAL CONDITIONS, ANALYSES, and PLAYBACKS. The Measure Results dialog box is open on the right, showing a table of measures and a result set.

1) Kattintás alul a megfelelő analízisre

2) Kijelölés a megfelelő mérésre

3) Katt a grafikon ikonra

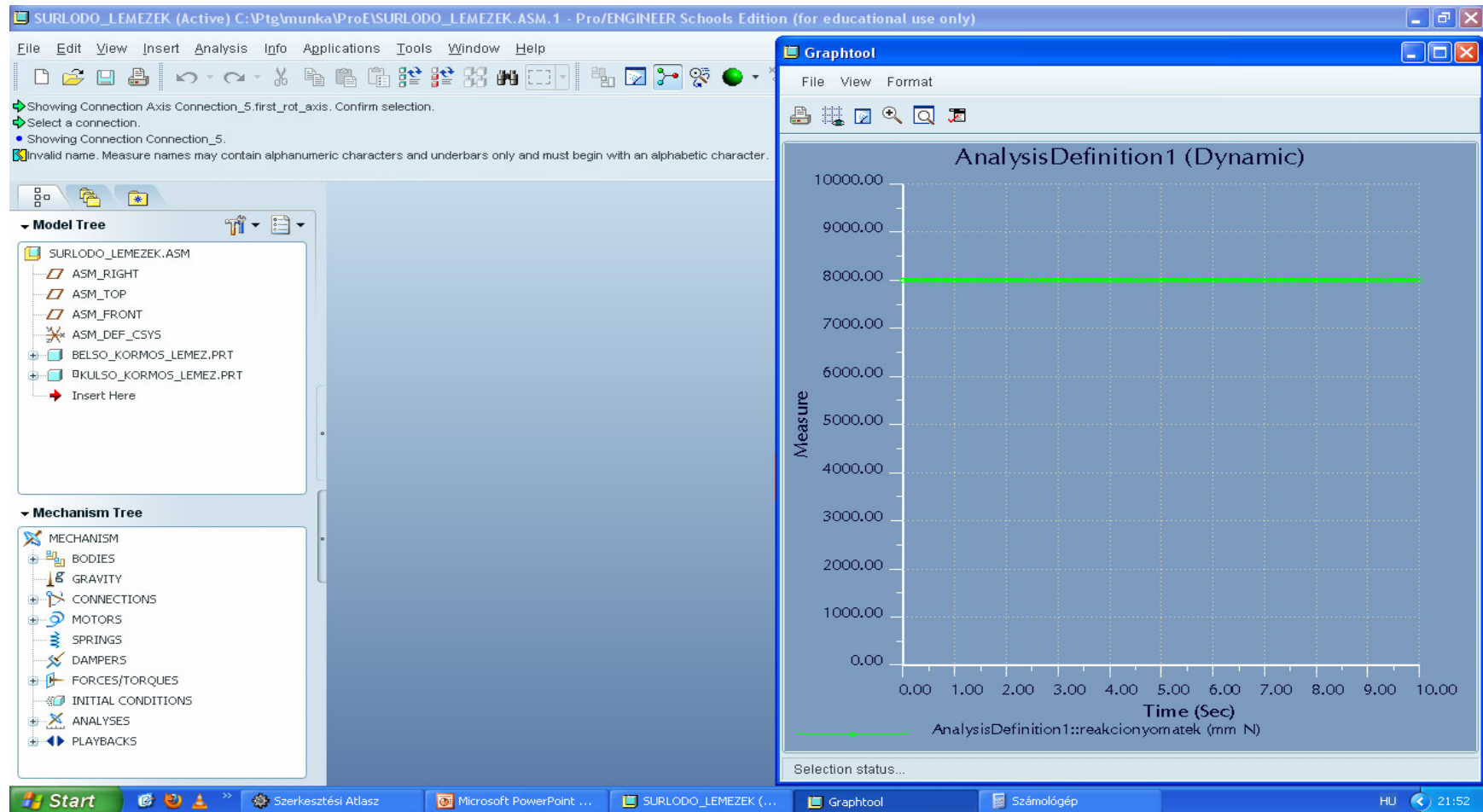
Name	Value	Stat...
gyorsulas	0	
helyzet	0	
reakcioero	-2000	
reakcionymatek	8000	
sesbesség	0	

Result Set

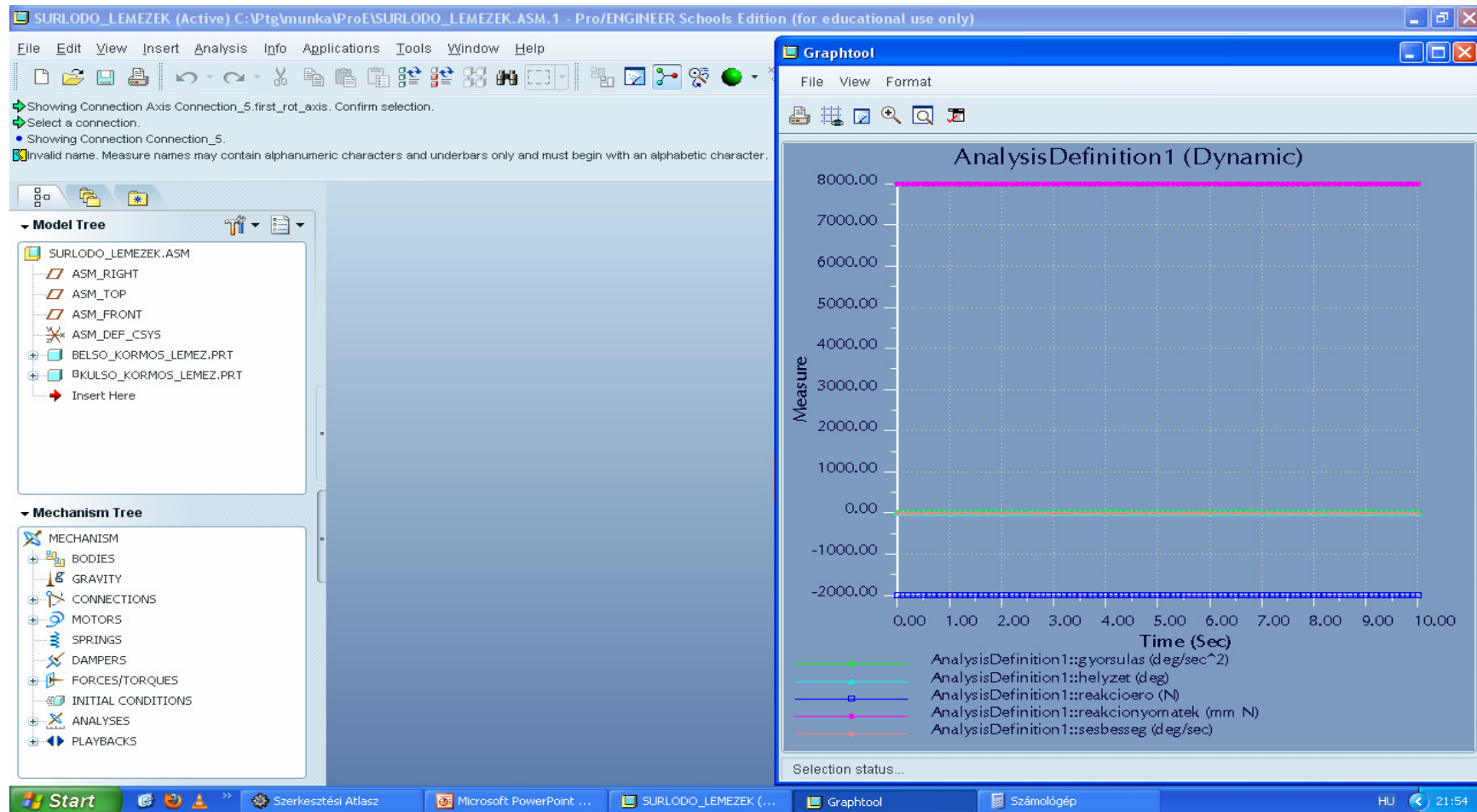
- AnalysisDefinition1

# Eredmények értékelése

## 8000Nmm-nél még nem csúszik meg (csak 8800-nál)



# Több görbe egyszerre: CTRL-lal több mérés kijelölése



# Több grafikon külön tengelyekkel

The screenshot displays the Pro/ENGINEER software interface. The main window shows a 3D model of a ring mechanism with a central coordinate system. The Model Tree on the left lists the assembly components, and the Mechanism Tree on the bottom left shows the simulation setup. A Measure Results dialog box is open on the right, showing a table of measures and their values.

File Edit View Insert Analysis Info Applications Tools Window Help

Showing Connection Axis Connection\_5\_first\_rot\_axis. Confirm selection.  
Select a connection.  
Showing Connection Connection\_5.  
Invalid name. Measure names may contain alphanumeric characters and underbars only and must begin with an alphabetic character.

Model Tree

- SURLODO\_LEMEZEK.ASM
  - ASM\_RIGHT
  - ASM\_TOP
  - ASM\_FRONT
  - ASM\_DEF\_CSYS
  - BELSO\_KORMOS\_LEMEZ.PRT
  - BKULSO\_KORMOS\_LEMEZ.PRT
  - Insert Here

Mechanism Tree

- MECHANISM
  - BODIES
  - GRAVITY
  - CONNECTIONS
  - MOTORS
  - SPRINGS
  - DAMPERS
  - FORCES/TORQUES
  - INITIAL CONDITIONS
  - ANALYSES
  - PLAYBACKS

Measure Results

Graph Type: Measure vs. Time

Measures

Name	Value	Stat...
gyorsulas	0	
helyzet	0	
reakcioero	-2000	
reakcionyomatek	8000	
sesbesseg	0	

Graph measures separately

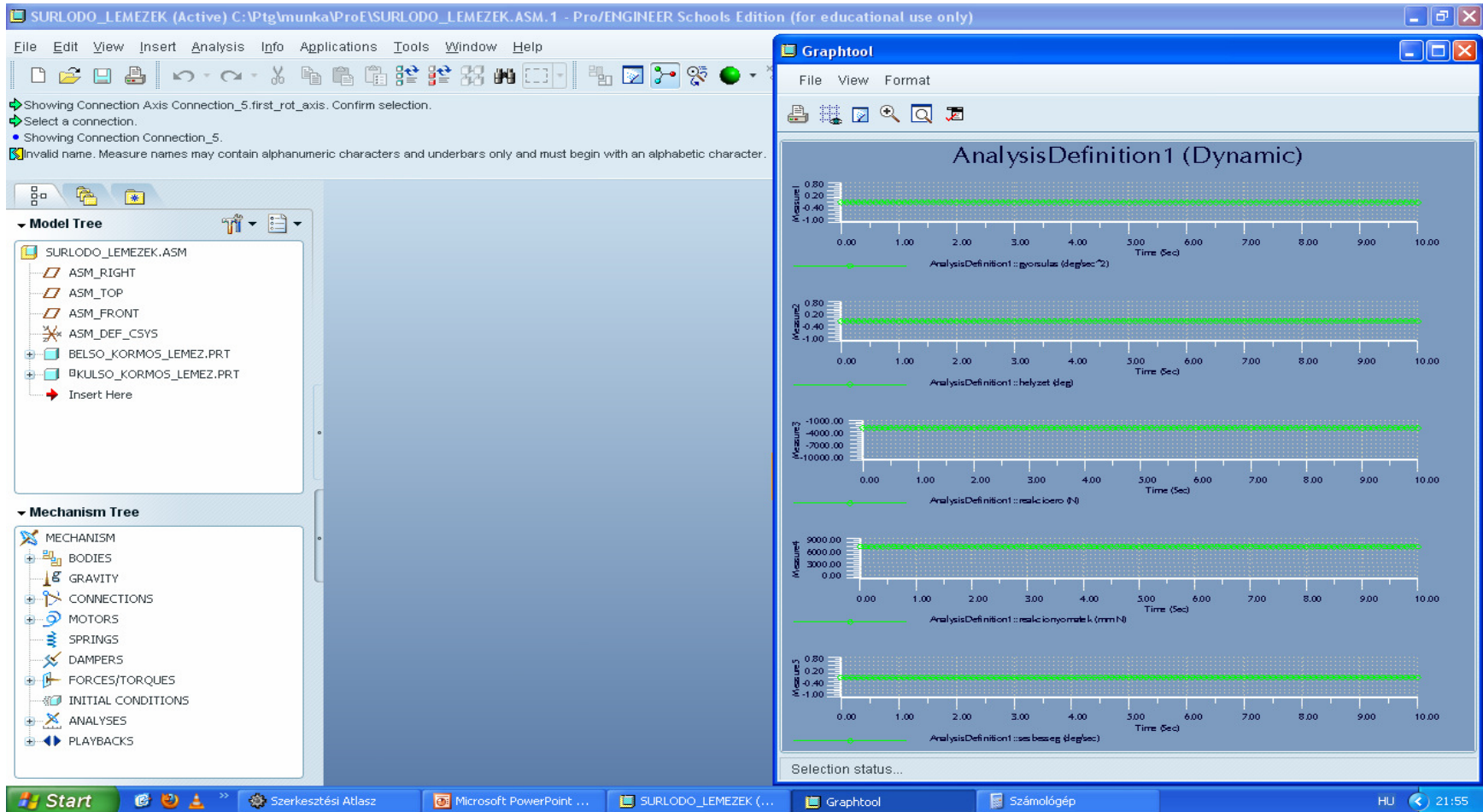
Result Set

- AnalysisDefinition1

Close

Start Szerkesztési Atlasz Microsoft PowerPoint ... SURLODO\_LEMEZEK (...) Számológép HU 21:55





# A megcsúszási határ vizsgálata, változó nyomaték

Mechanizmus fa,  
forces/torques-on  
belül terhelő  
nyomaték JE edit  
definition

SURLODO\_I\_LEMEZEK (Active) C:\P\Tg\munka\ProE\SURLODO\_I\_LEMEZEK.ASM.1 - Pro/ENGINEER Schools Edition (for educational use only)

File Edit View Insert Analysis Info Applications Tools Window Help

Select a connection.  
• Showing Connection Connection\_5.  
• Invalid name. Measure names may contain alphanumeric characters and underbars only and must begin with an alphabetic character.  
• Showing Connection Axis Connection\_1.first\_rot\_axis.

1 selected Mechanism

Model Tree

- SURLODO\_LEMEZEK.ASM
  - ASM\_RIGHT
  - ASM\_TOP
  - ASM\_FRONT
  - ASM\_DEF\_CSYS
  - BELSO\_KORMOS\_LEMEZ.PRT
  - BKULSO\_KORMOS\_LEMEZ.PRT
  - Insert Here

Mechanism Tree

- MECHANISM
  - BODIES
  - GRAVITY
  - CONNECTIONS
  - MOTORS
  - SPRINGS
  - DAMPERS
  - FORCES/TORQUES
    - összeszorítóero (SURLODO...
    - terhelo\_nyomaték (SURLODO\_LEF...
  - INITIAL CONDITIONS

Start Szerkesztési Atlasz Microsoft PowerPoint ... SURLODO\_LEMEZEK (...) Számológép HU 21:56

# Táblázatos megadás, 0 sec 0 Nmm, 5 sec 9000 Nmm

The screenshot shows the Pro/ENGINEER interface with a Force/Torque Definition dialog box open. The dialog box is titled "Force/Torque Definition" and has the following settings:

- Name: terhelo\_nyomatek
- Type: Body Torque
- Body: body1 : model KULSO\_KORMOS\_LE
- Magnitude: Function
- Direction: mm N
- Function: Table
- Table: Use External File
- Table Data:

Variable	Magnitude
0	0
5	9000
- Interpolation: Linear
- Variable: t, sec

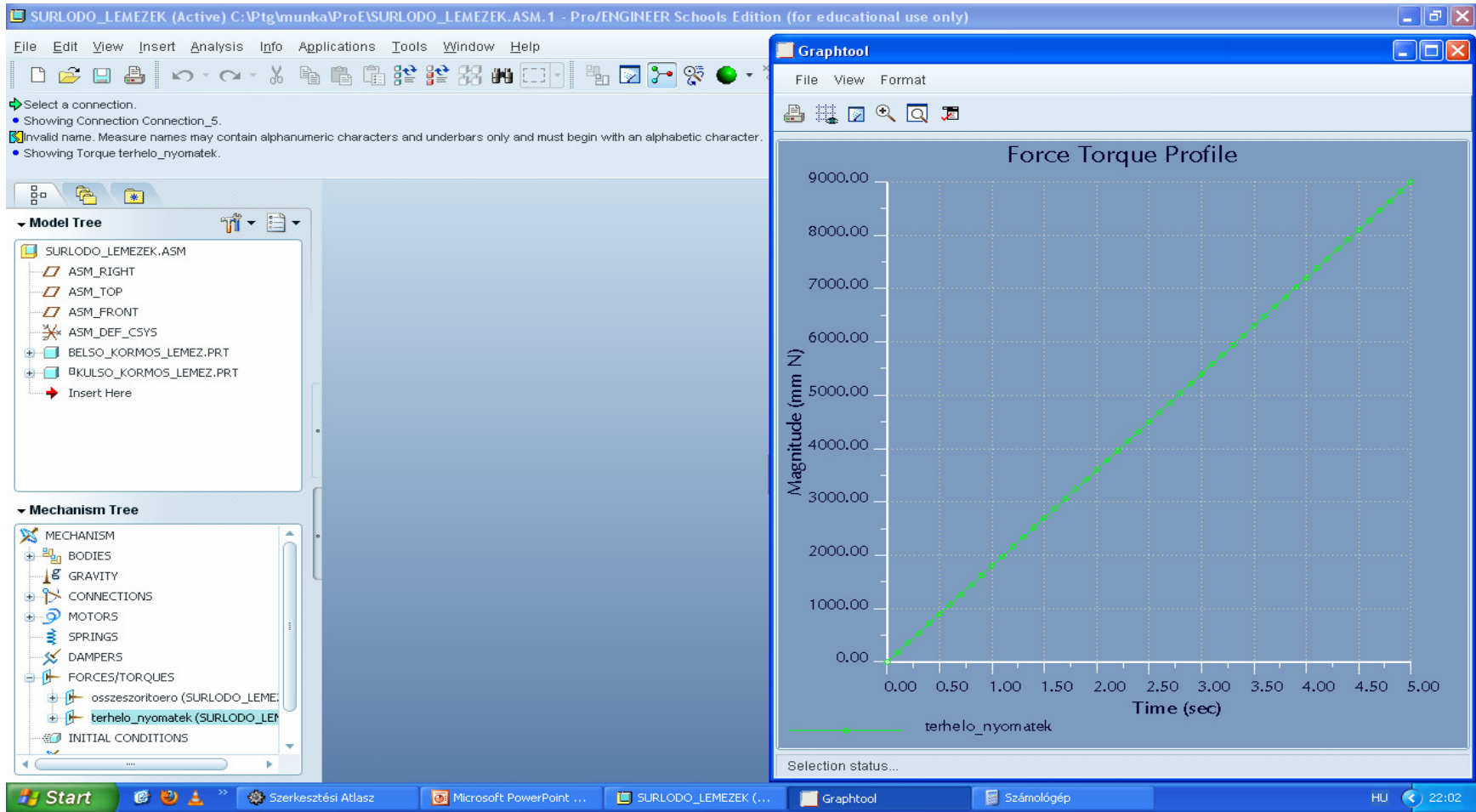
The dialog box also has buttons for "OK", "Apply", and "Cancel".

Annotations in the image point to specific parts of the dialog box and the model tree:

- "táblázatos" points to the "Table" function selection.
- "Sor beszúrás" points to the "Add" button (plus icon) in the table.
- "Változó az idő" points to the "Variable" column header in the table.
- "A megadott pontok között lineárisan közelít" points to the "Linear" interpolation option.
- "A grafikon ikonnal kidobja a lefutást" points to the "Graph" icon (line graph) in the bottom right of the dialog box.

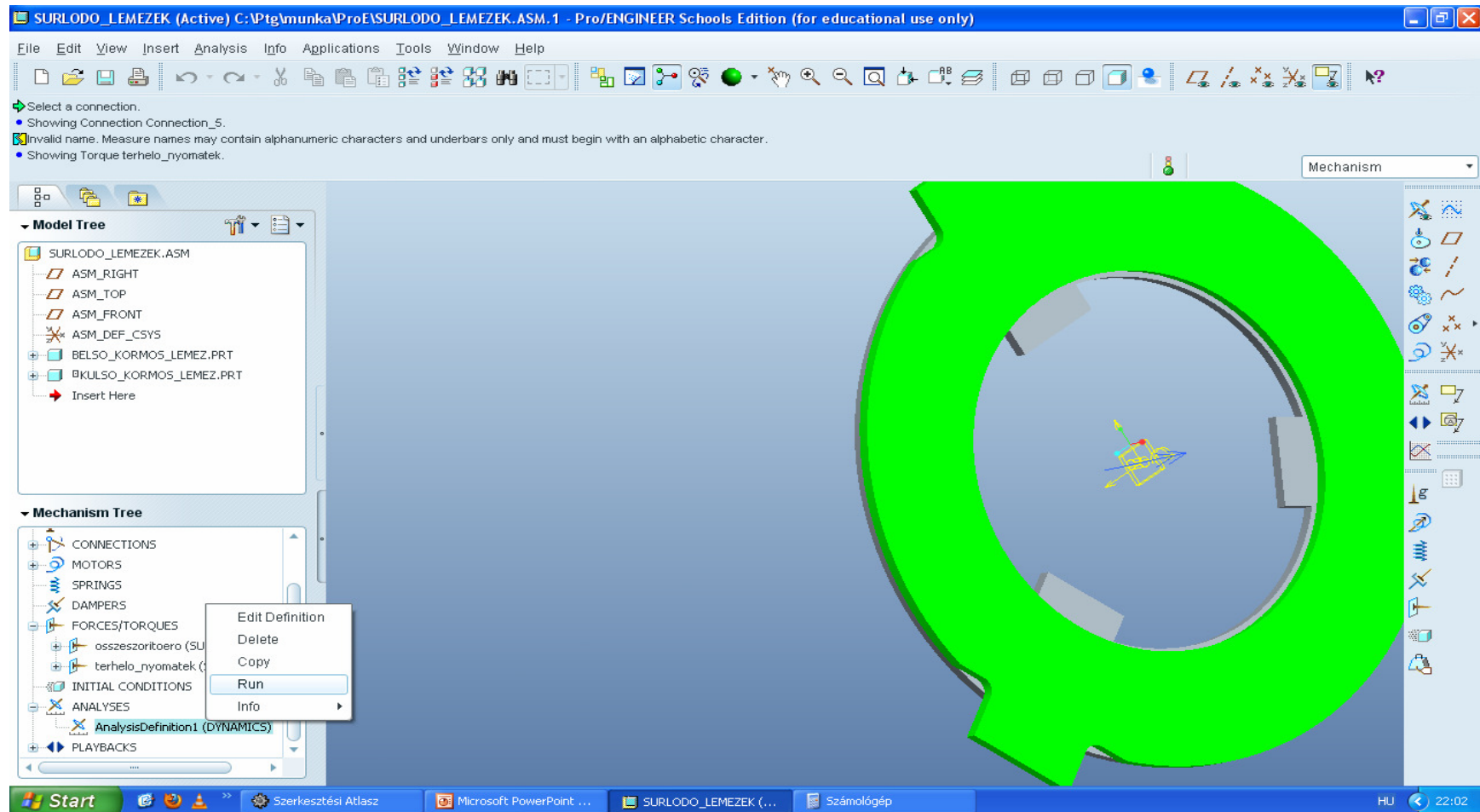
The Model Tree on the left shows the following structure:

- SURLODO\_LEMEZEK.ASM
  - ASM\_RIGHT
  - ASM\_TOP
  - ASM\_FRONT
  - ASM\_DEF\_CSYS
  - BELSO\_KORMOS\_LEMEZ.PRT
  - BKULSO\_KORMOS\_LEMEZ.PRT
  - Insert Here
- Mechanism Tree
  - MECHANISM
    - BODIES
    - GRAVITY
    - CONNECTIONS
    - MOTORS
    - SPRINGS
    - DAMPERS
    - FORCES/TORQUES
      - osszeszoritoero (SURLODO\_LEMEZ)
      - terhelo\_nyomatek (SURLODO\_LEMEZ)
    - INITIAL CONDITIONS

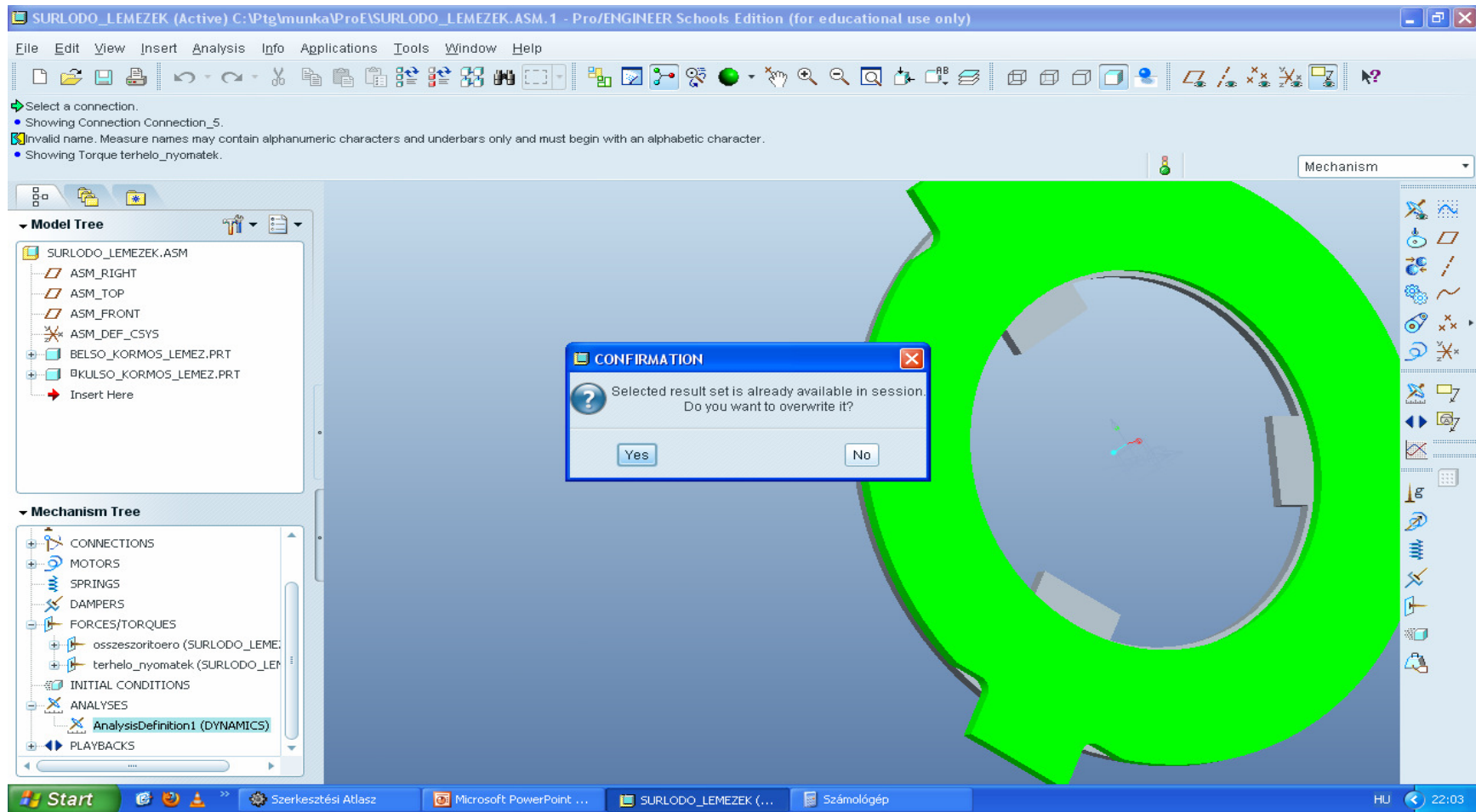


# Analízis újra futtatása!

## Mechanizmus fa JE run

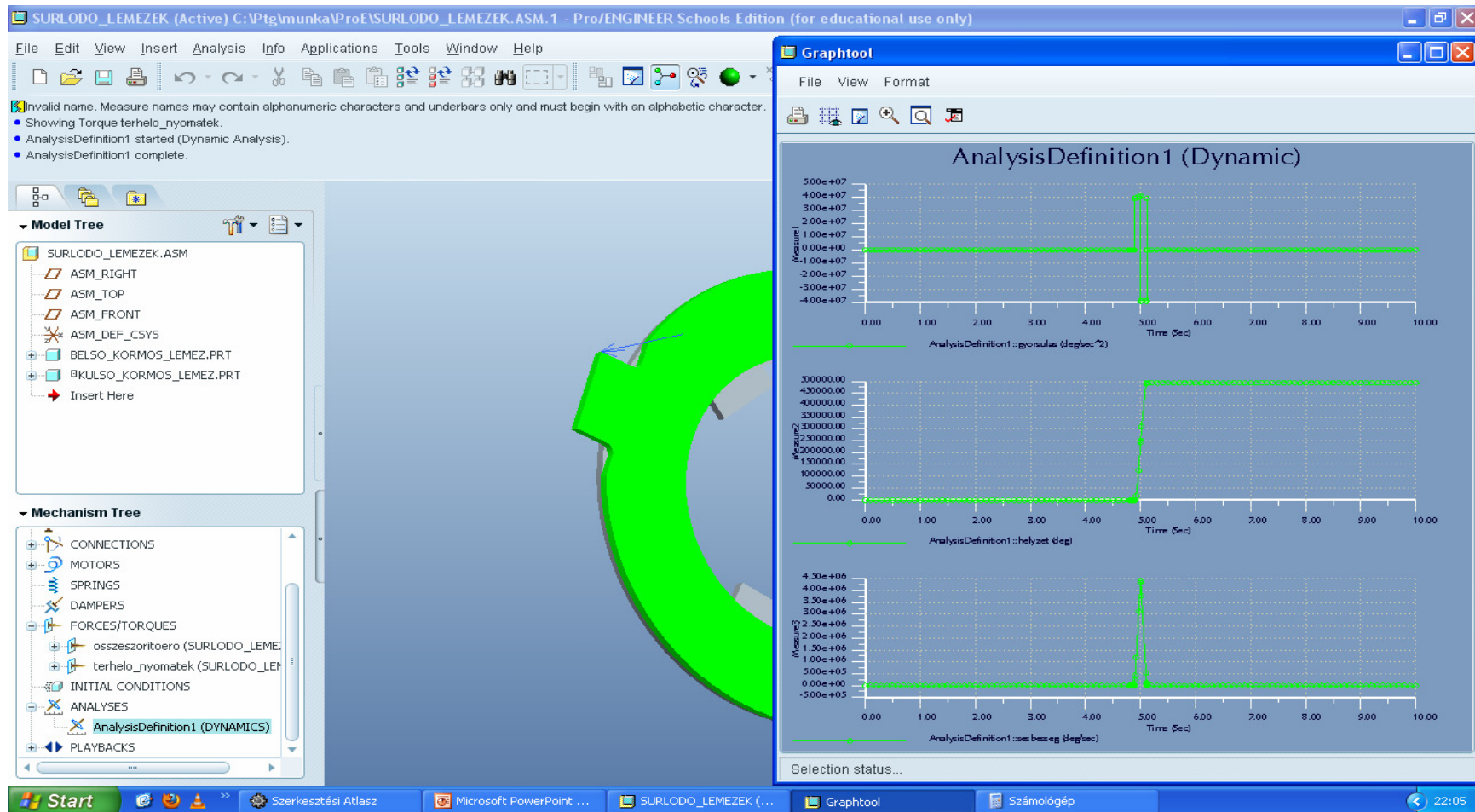


# yes



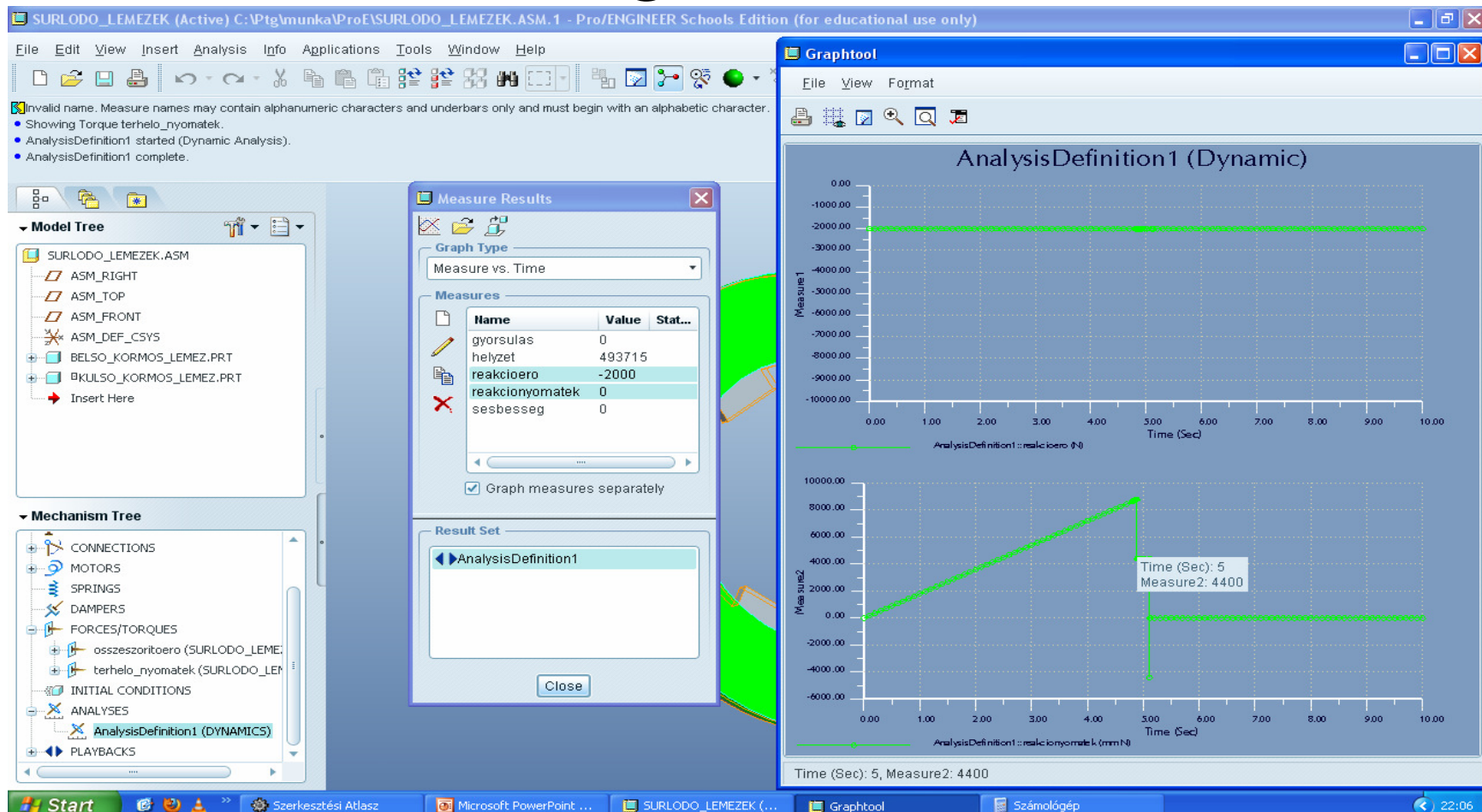
elpördült

# Mérési eredmények megtekintése gyorsulás, helyzet, sebesség

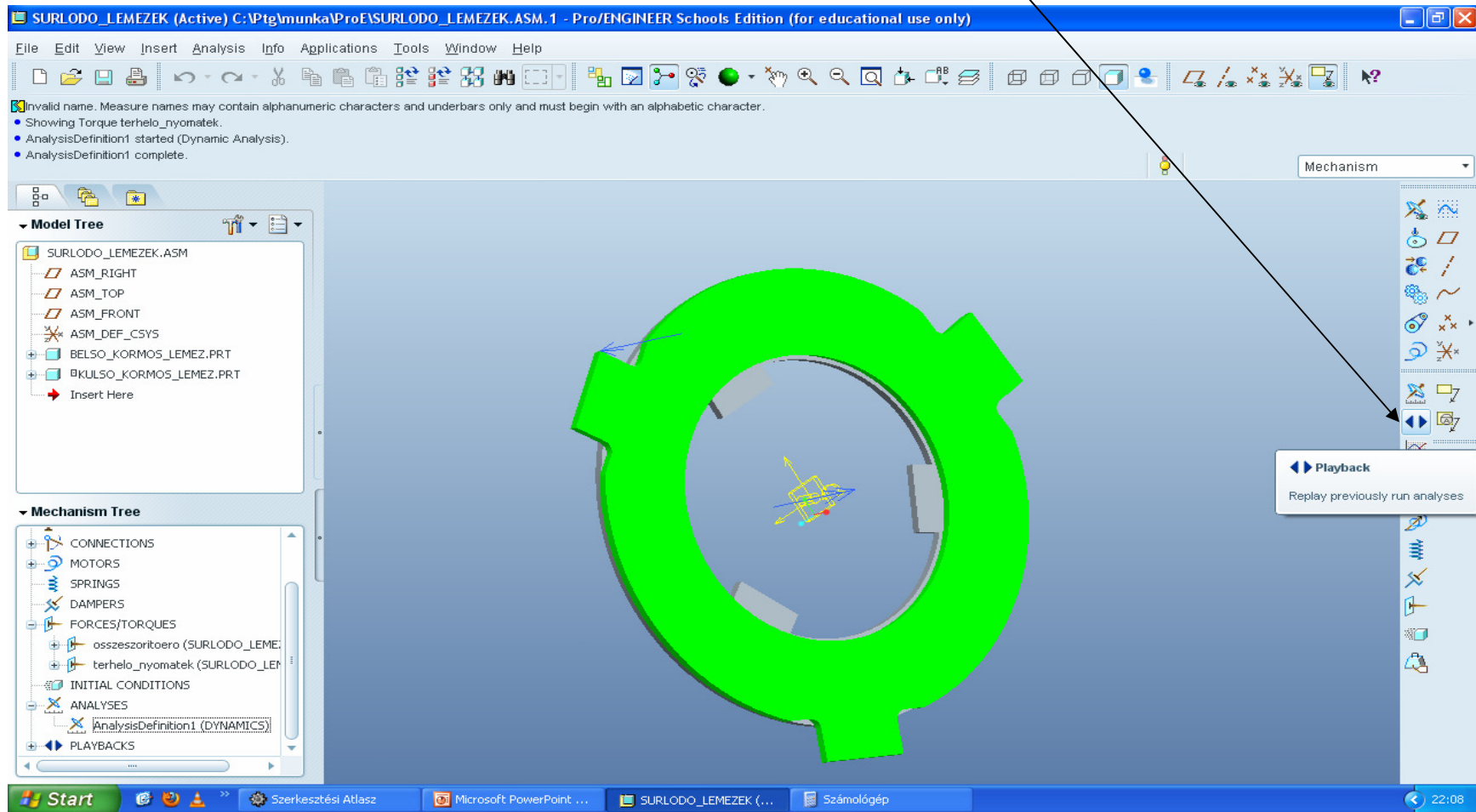




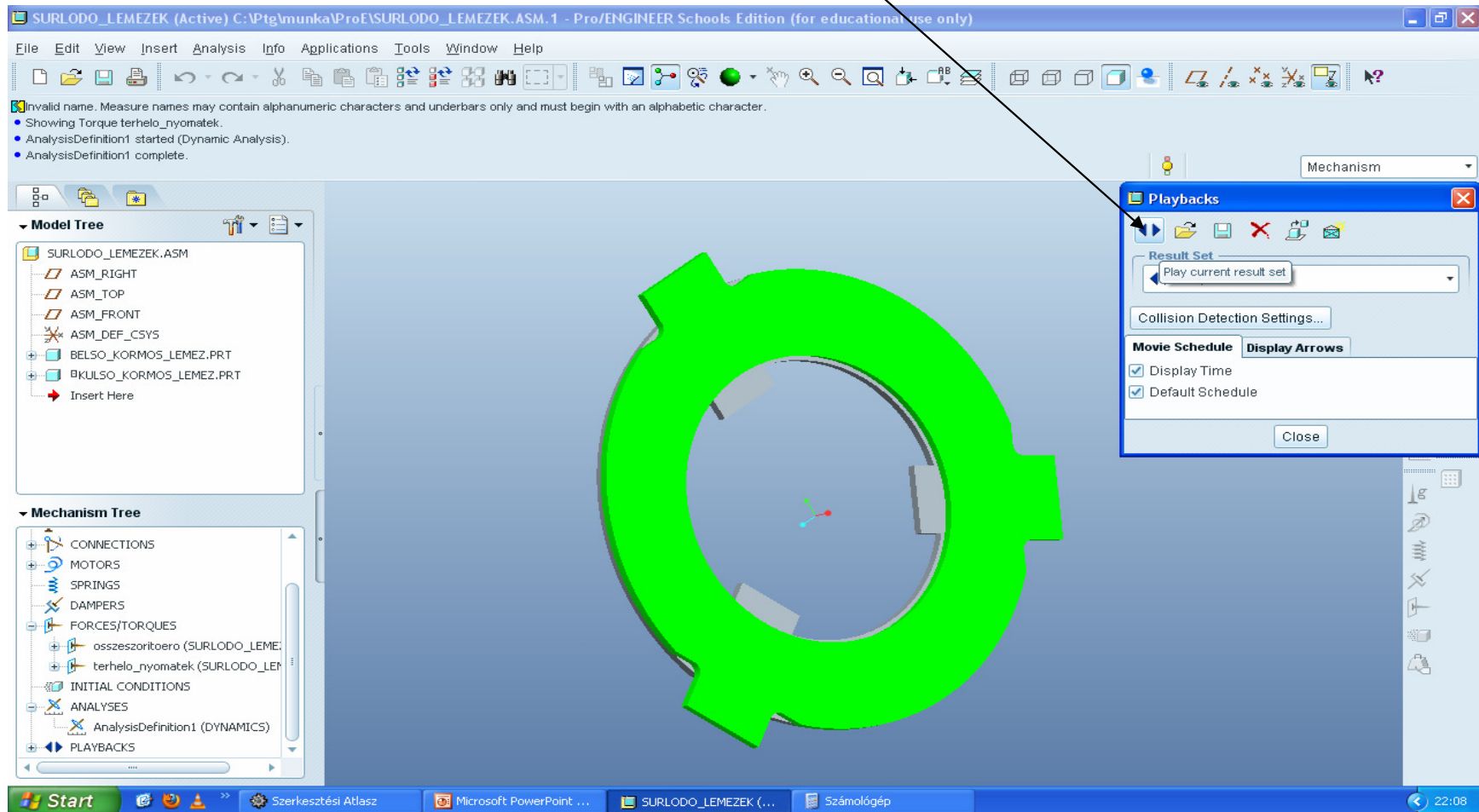
# Reakcióerő, reakciónyomaték. Ha rákattintunk a grafikonra, kiírja az értéket, a másodikon látszik a megcsúszás



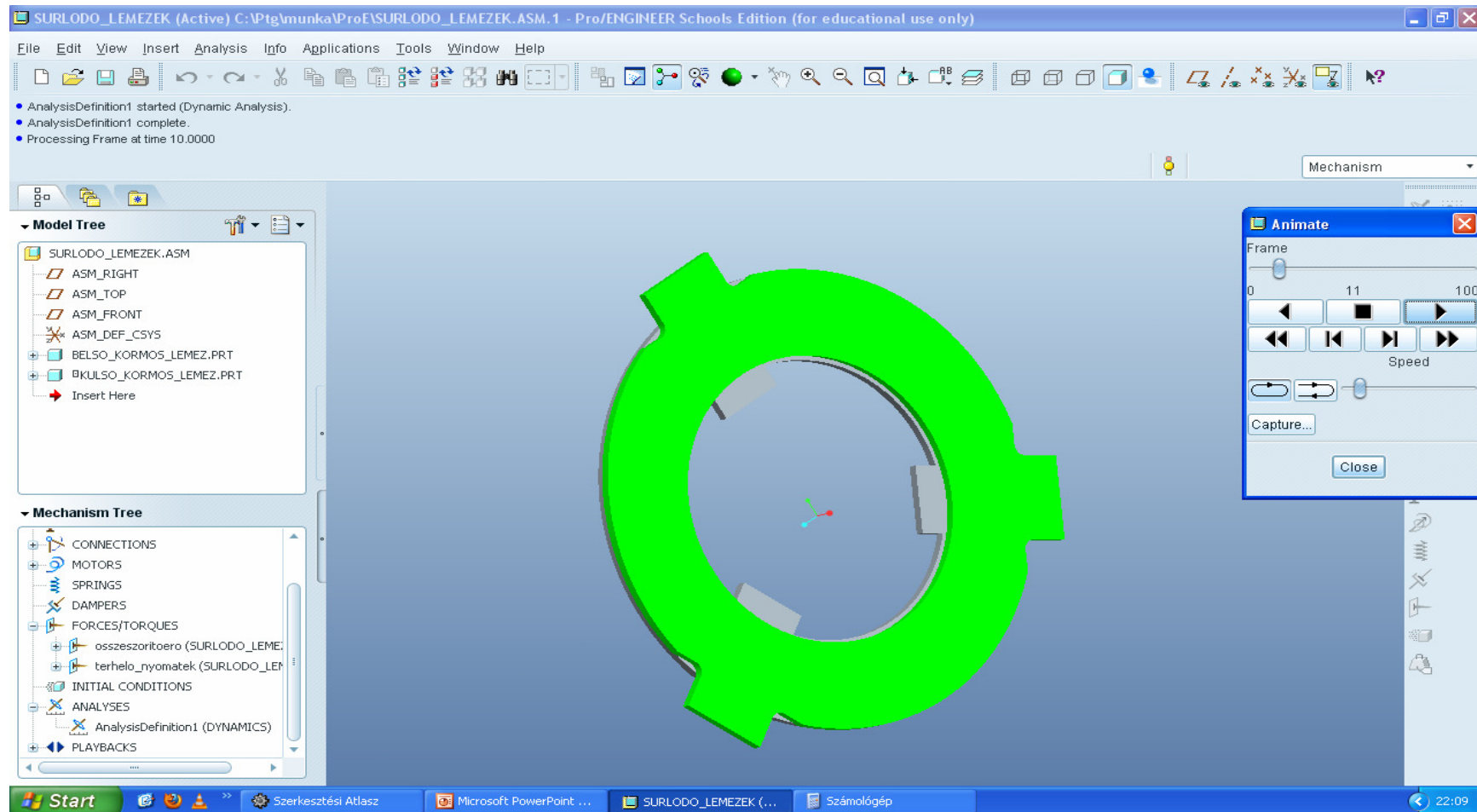
# visszajátszás



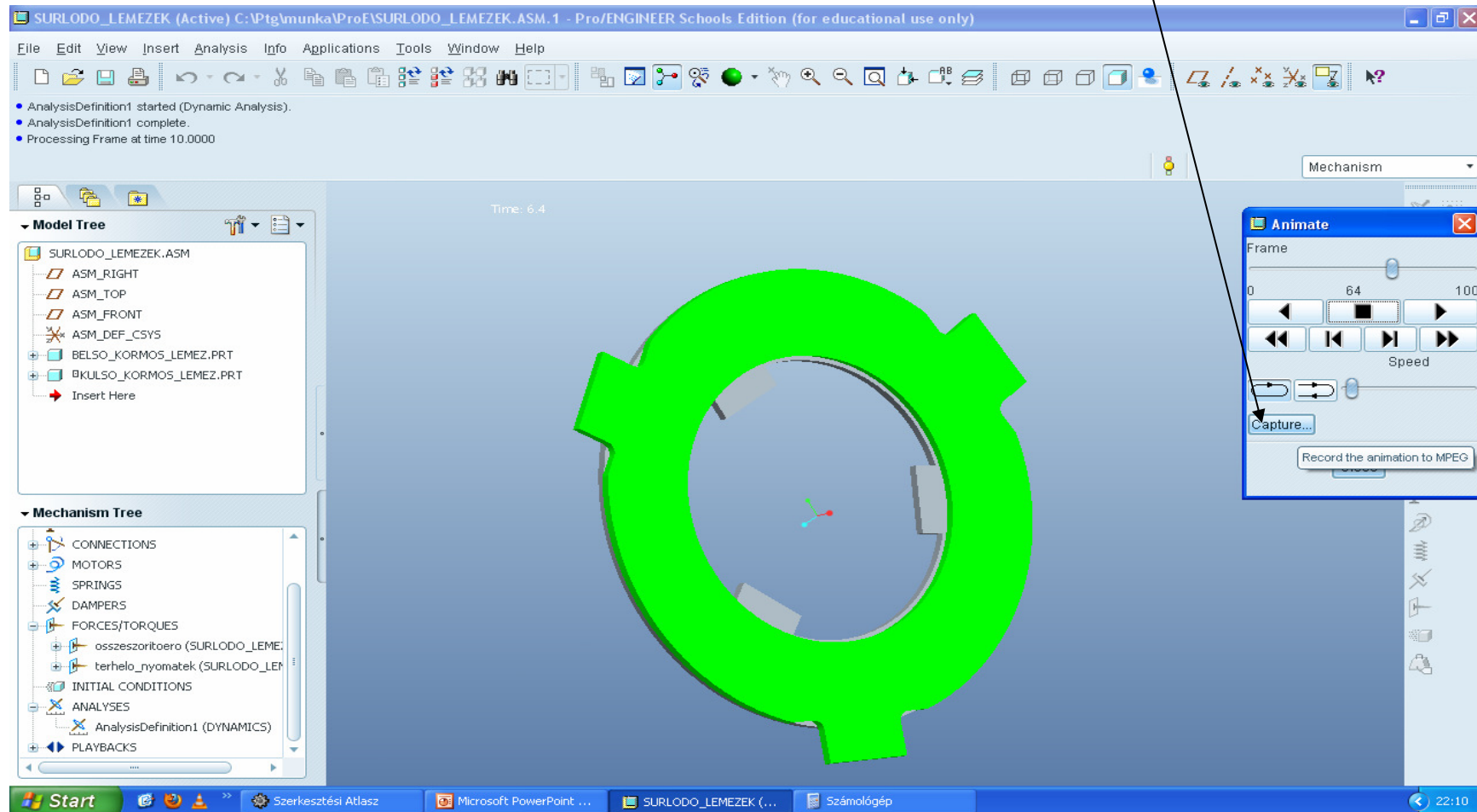
# Katt ide



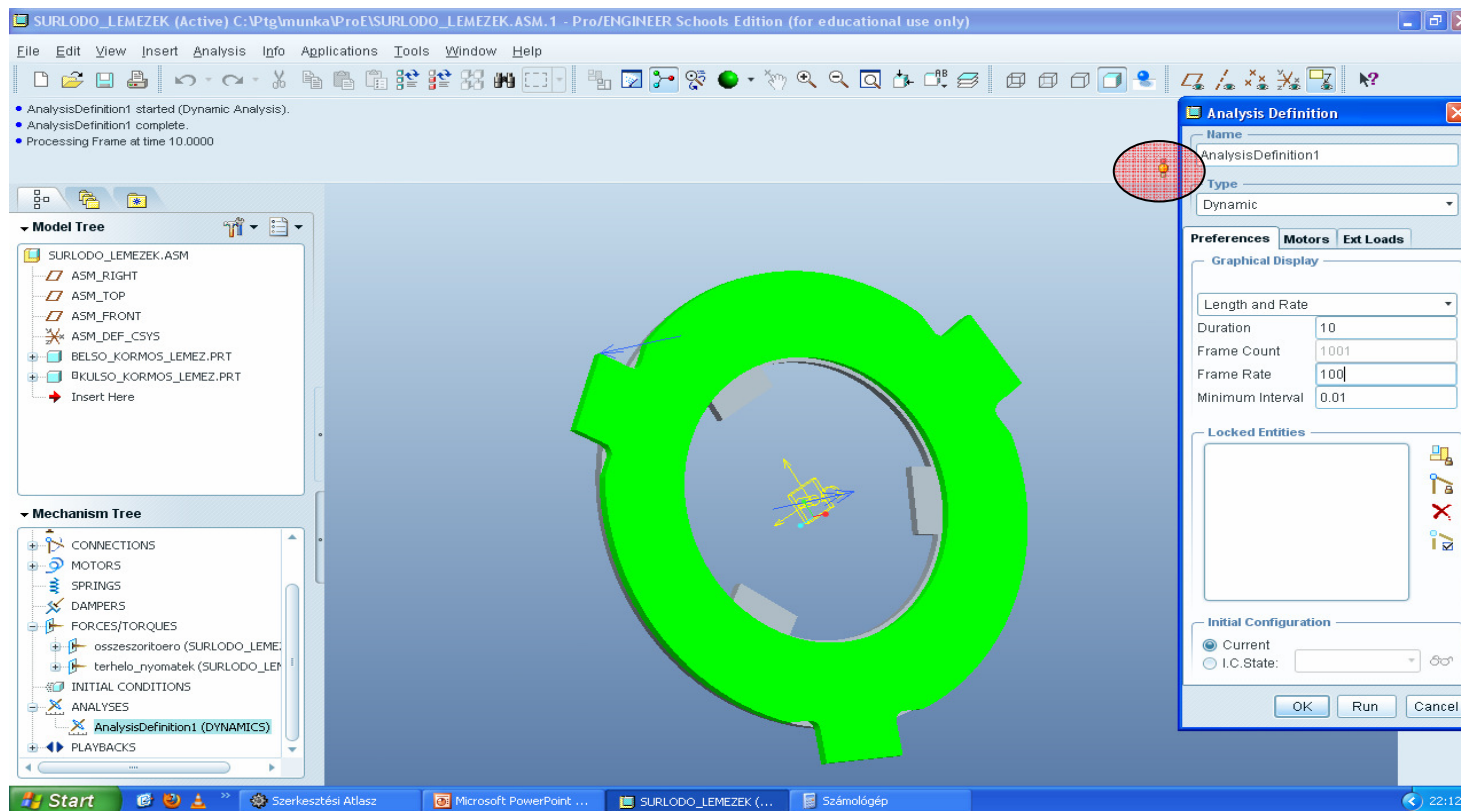
# Lejátszó felület



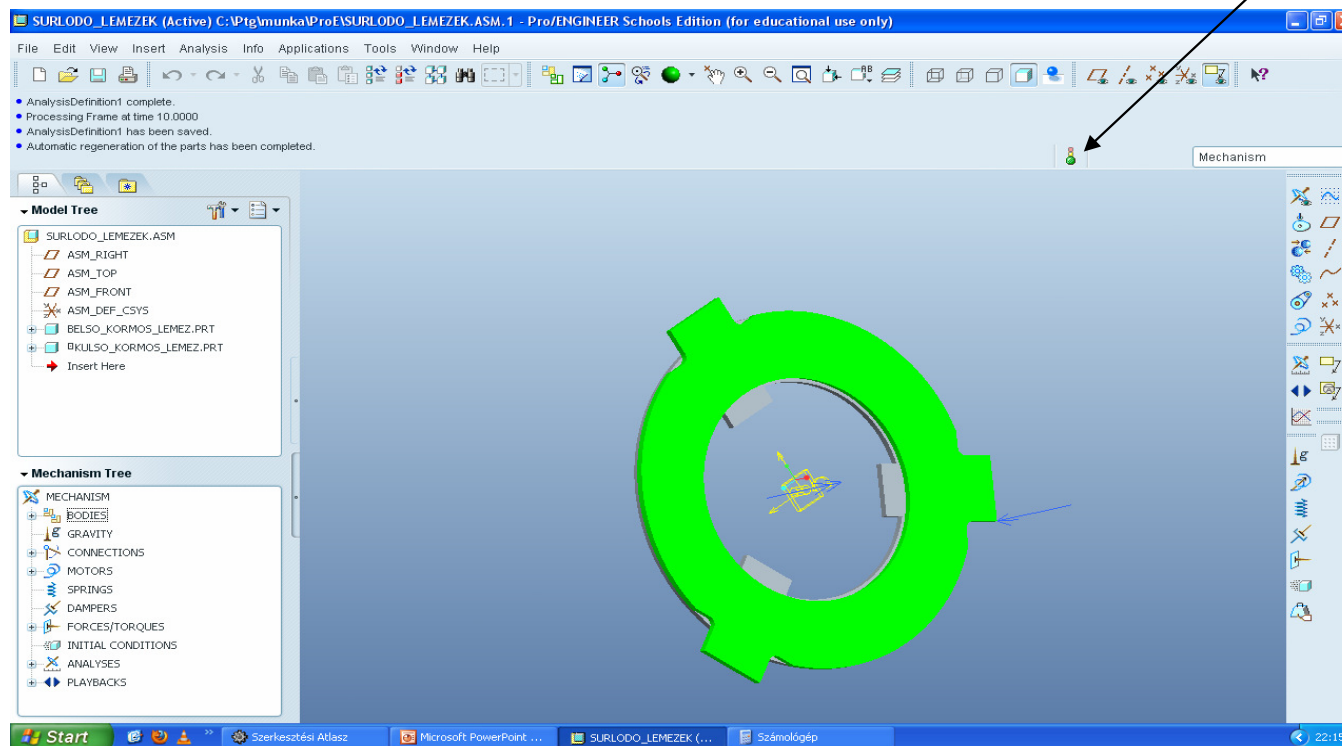
# Itt lehet filmfájlba kimenteni (sok időt tud elvenni)



Ha részletesebb videót, mérési görbéket akarunk, növelni kell a képkocka számot. Analysis, edit definition/ frame rate = 100, utána OK!!!!



Azért nem RUN, mert nincs teljesen frissítve, újragenerálva a modell, ezt jelzi a sárga lámpa. Tehát ctrl+g!, attól vissza áll 0-ba, ill zöld lesz a lámpa



# Mechanizmus fában JE run, aztán visszajátszás

- A görbék elemzését!



# Több lemez

- Össze kell rendezni egy cylinder kényszerrel a tengelyeket, egy planarral a súrlódó felületeket, itt kell a rotation axist definiálni, ill. a súrlódó felületek közt lévő tényezőket, és egy harmdik kényszerrel a körmök oldalait összerendezni, ami planar legyen.

**Jó munkát!**