EDEM 과 RecurDyn의 연동 해석, 이렇게 적용해보자!

서준원

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1.   RecurDyn Product Introduction

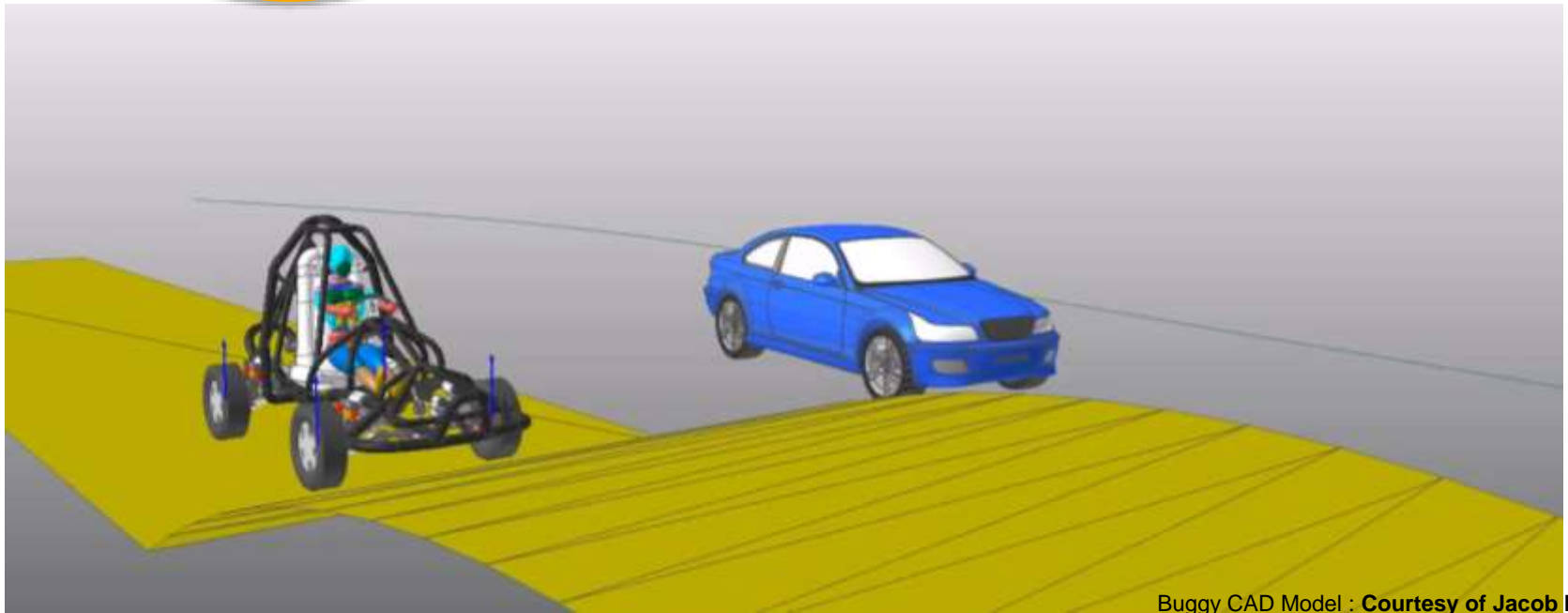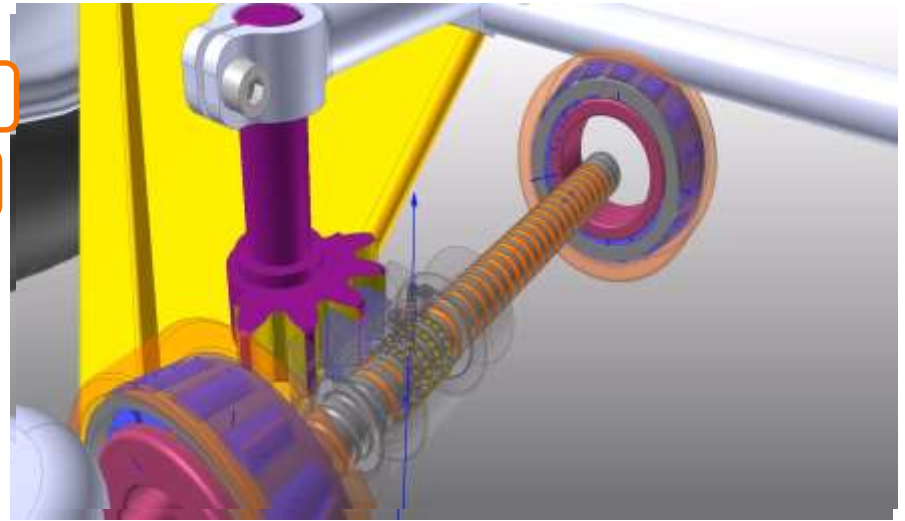# What is "RecurDyn" ?

MBD
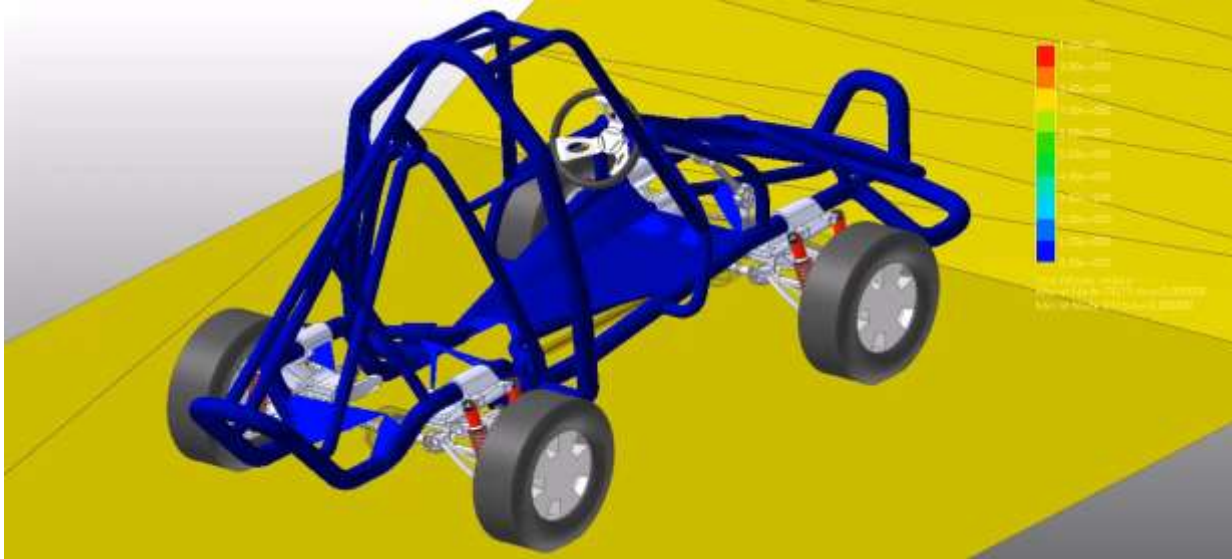**(Multi Body Dynamics)**

Contact

Reaction Force

Vibration

Buggy CAD Model : **Courtesy of Jacob Hustad**

What is "RecurDyn" ?
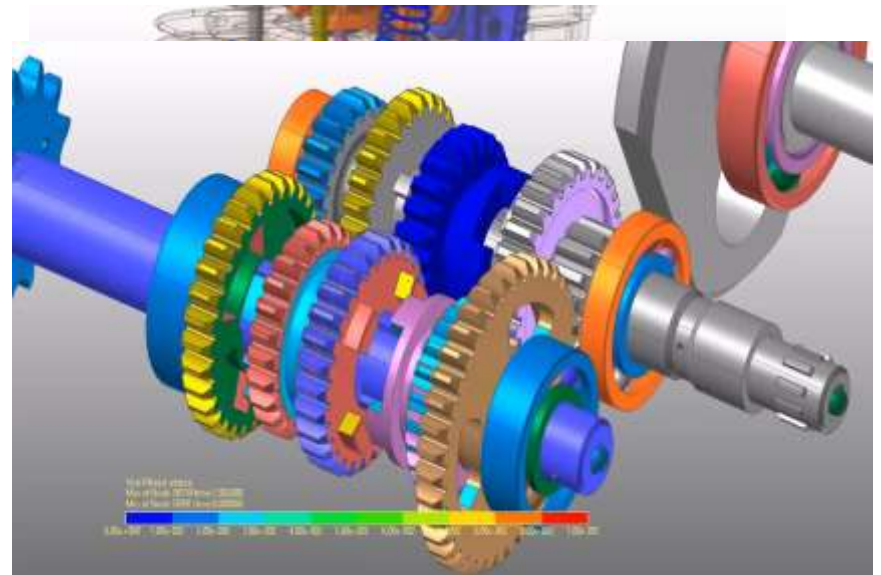

MFBD
(Multi Flexible Body Dynamics)

Fatigue

Flexiblility

Durability

What is "RecurDyn" ?

MBD

(Multi Body Dynamics)

Control

(Co-simulation with the other solution)

MFBD

(Multi Flexible Body Dynamics)

Multi-physics

Hydraulic

Electronic control

Fluid dynamics

DEM particle

RECURDYN X EDEM™

2.　　EDEM + RecurDyn
Co-simulation application

1. Soil Road Simulation

Make a difference particle behavior
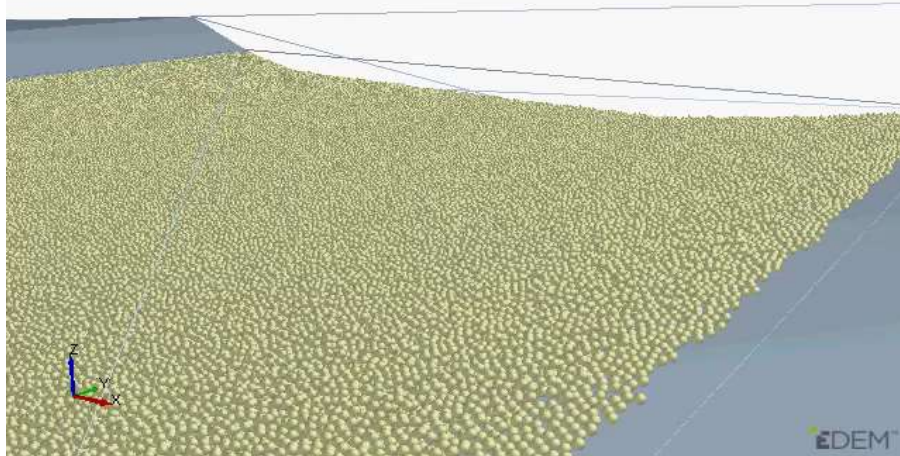from particle contact model

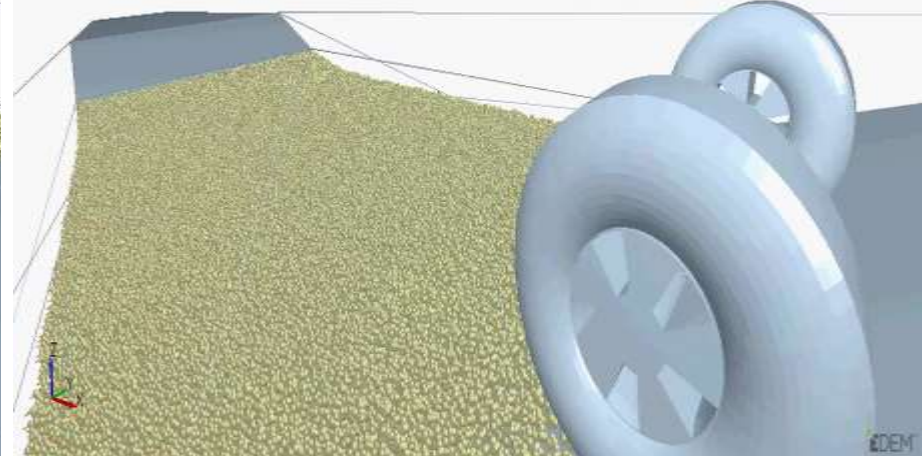| Hertz-Mindlin | Hertz-Mindlin + JKR | Hysteretic spring | Hear transfer |

Various contact models are available in EDEM!
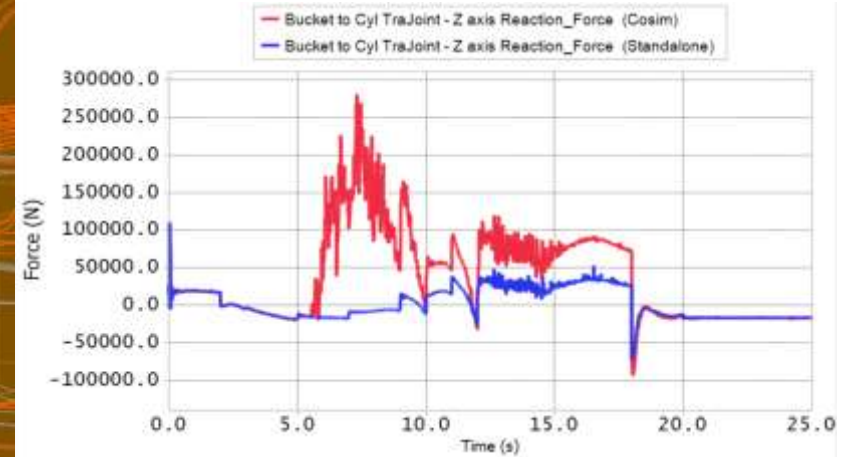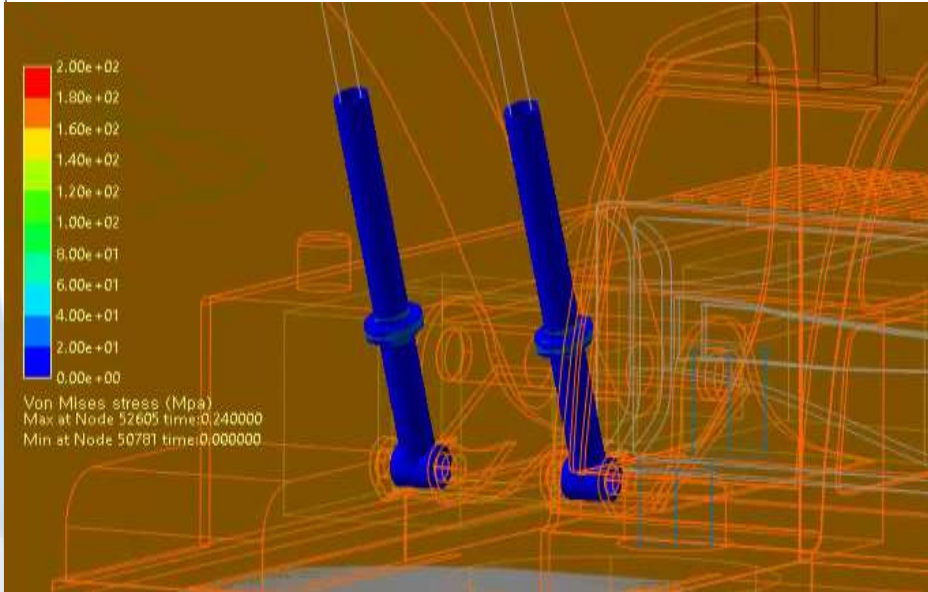

Hertz-Mindlin model

Hertz-Mindlin + JKR model

2. Heavy Equipment

◆ Excavator

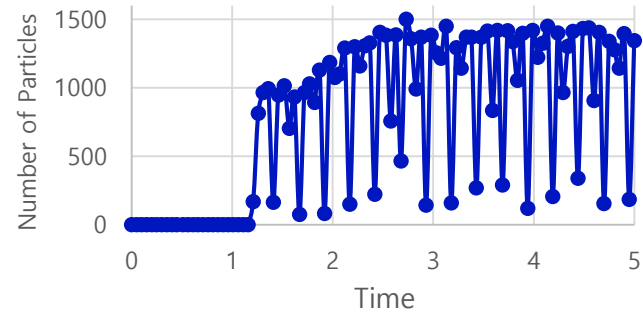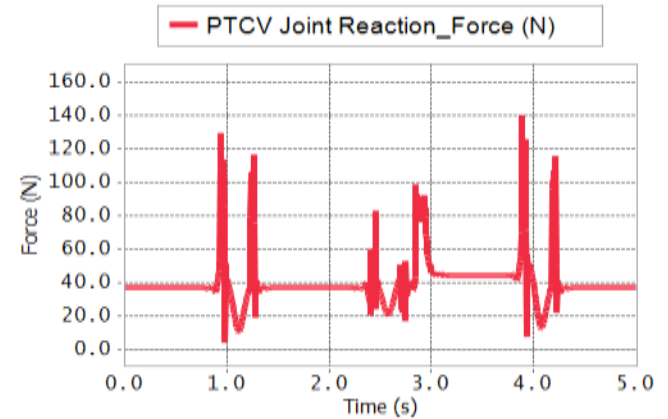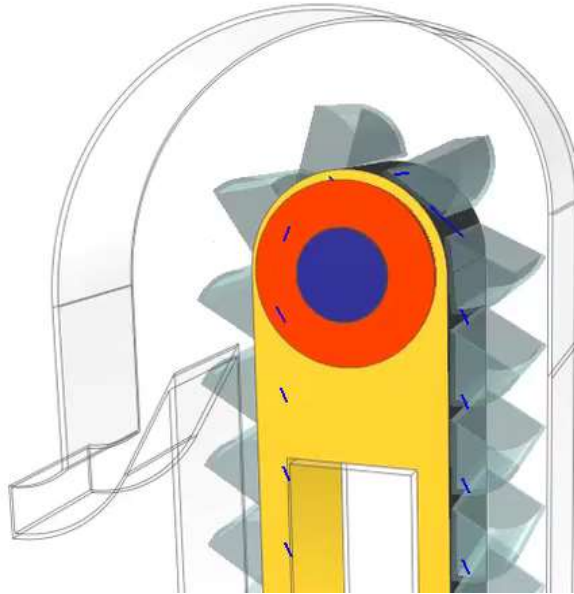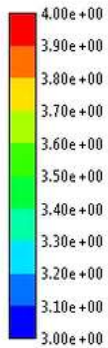Using the whole system modeling, We can give all results of joint reaction force!

We can generate various particle type and give the external force!

RECURDYN

EDEM™

3. Agricultural Ⅰ

◆ **Bucket Elevator**

3. Agricultural Ⅱ

◆ **Multi Co-simulation (Dynamics + DEM + Control)**
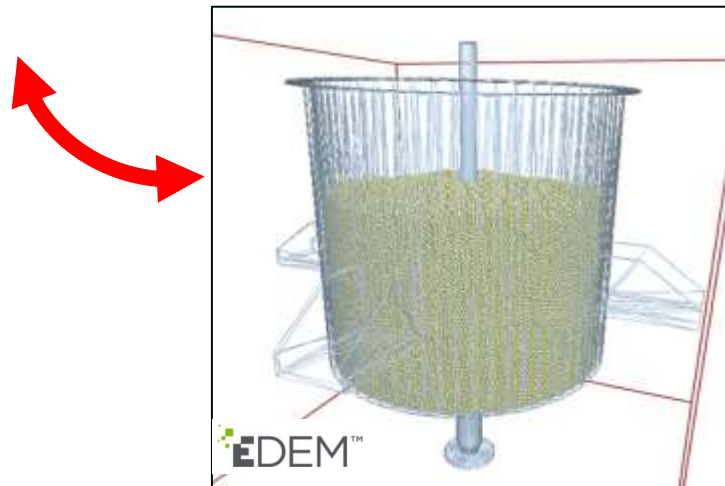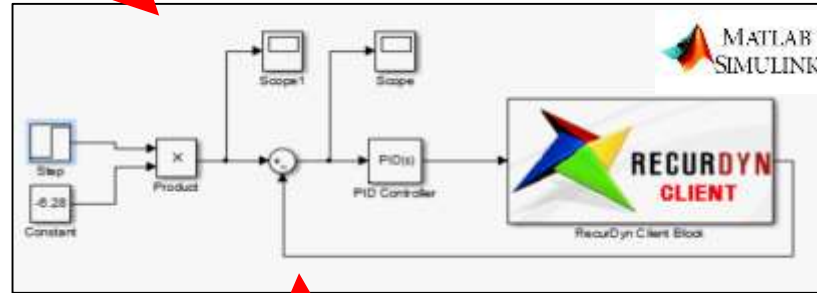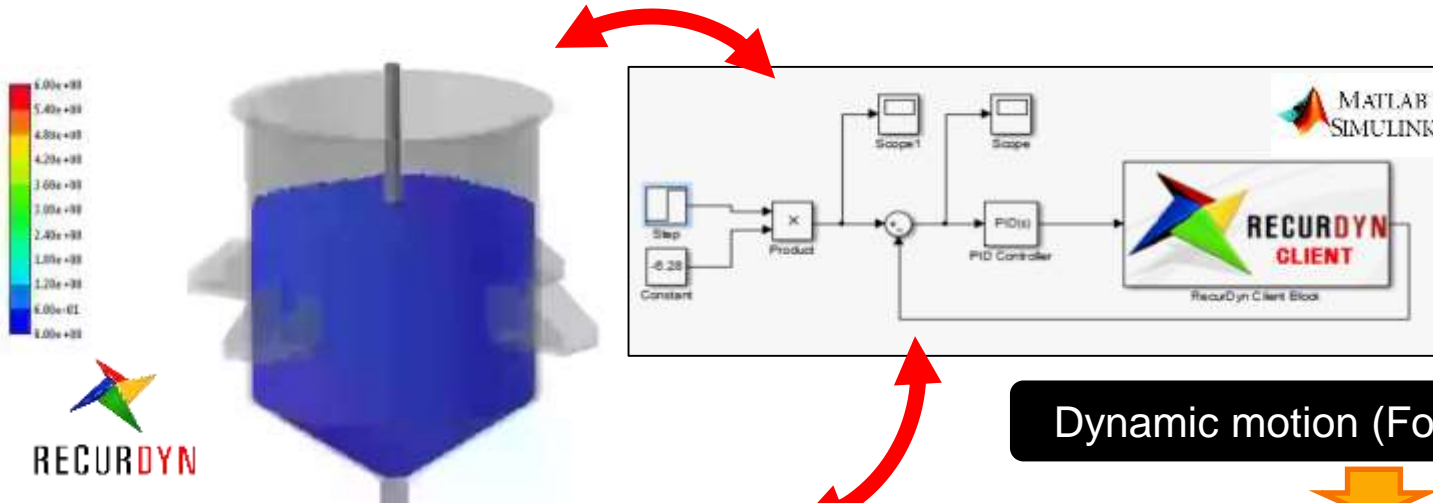
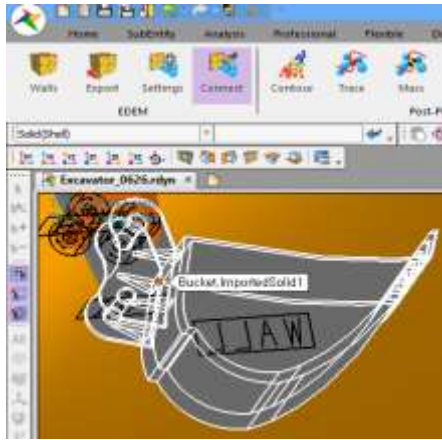Dynamic motion (Force) Modeling

⬇

Dynamic motion (Force) Modeling
+ RPM vs Force Control

⬇

Dynamic motion (Force) Modeling
+ RPM vs Force Control + Grain
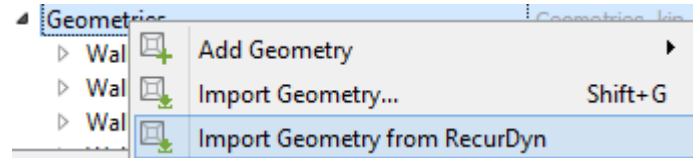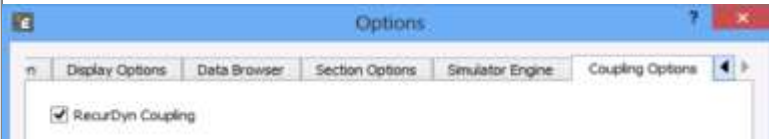DEM Particle including

⬇

More accurate solution acquired!

3.   Interface setting

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Interface Setting

- ◆ **Design the Dynamic model**
- ◆ **Wall define**
- ◆ **Export the wall file (format : *.stl)**

- ◆ **Design the DEM model**
- ◆ **RecurDyn Coupling option "ON"**
- ◆ **Import the RecurDyn geometry**
- ◆ **Coupling server icon "Play"**

Simulation start in RecurDyn → RecurDyn call EDEM

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Conclusion

◆ **Advantage of Co - simulation (EDEM + RecurDyn)**

➤ **Perspective of EDEM**

- ✓ **Enable to represent more complex dynamic behavior**
- ✓ **Whole system analysis is possible using RecurDyn solver**
- ✓ **Stress analysis of flexible body component can predict**

➤ **Perspective of RecurDyn**

- ✓ **External particle force can be realized using powerful solution of EDEM**
- ✓ **Specific particle geometry and more accurate material also can applied**
- ✓ **Various particle contact model can available (ex: Cohesion, Bonding, Heat transfer)**

The solutions are enhanced by feedback from each result!

감사합니다.

RECURDYN