

카고 크레인

+

Team 소개를 듣다

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목차

0) 주제 선정 이유&팀 명 선정 이유

1) 역할 분담

2) 이론적 요소

3) Part design

4) Assembly Design

5) DMU Kinematics

6) 어려웠던 점 & 한계

7) Simulation 영상

0) 주제 선정 이유



(1) 팀원 모두 자동차에 관심이 있음



(2) 코로나 경기 부양책인 그린뉴딜 중 하나인 대규모 토목공사에 관심

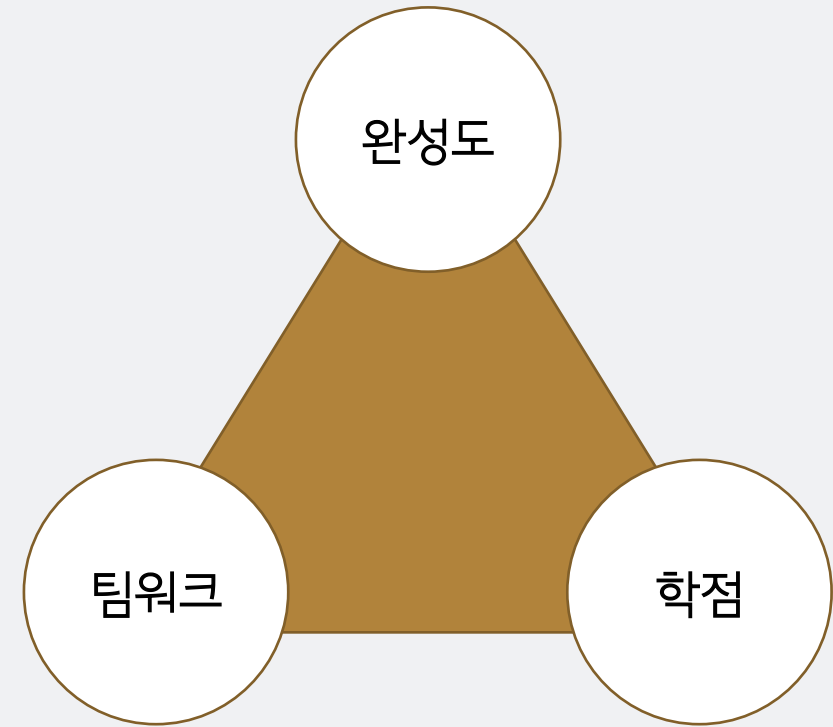


(1) 다양한 mechanism 적용 가능
(2) 토목 공사에 필수적인 장비

0) 팀명 선정 이유



세계의 어떤 것도 들 수 있는
크레인을 만들자



세 개의 목표
모두를 이루자

1) 역할 분담

오정균: 자료 조사

Part design(Crane arm, landing gear(leg))

Assembly, DMU kinematics

김현민: 자료 조사

Part design(Car body, wheel)

Video Editing

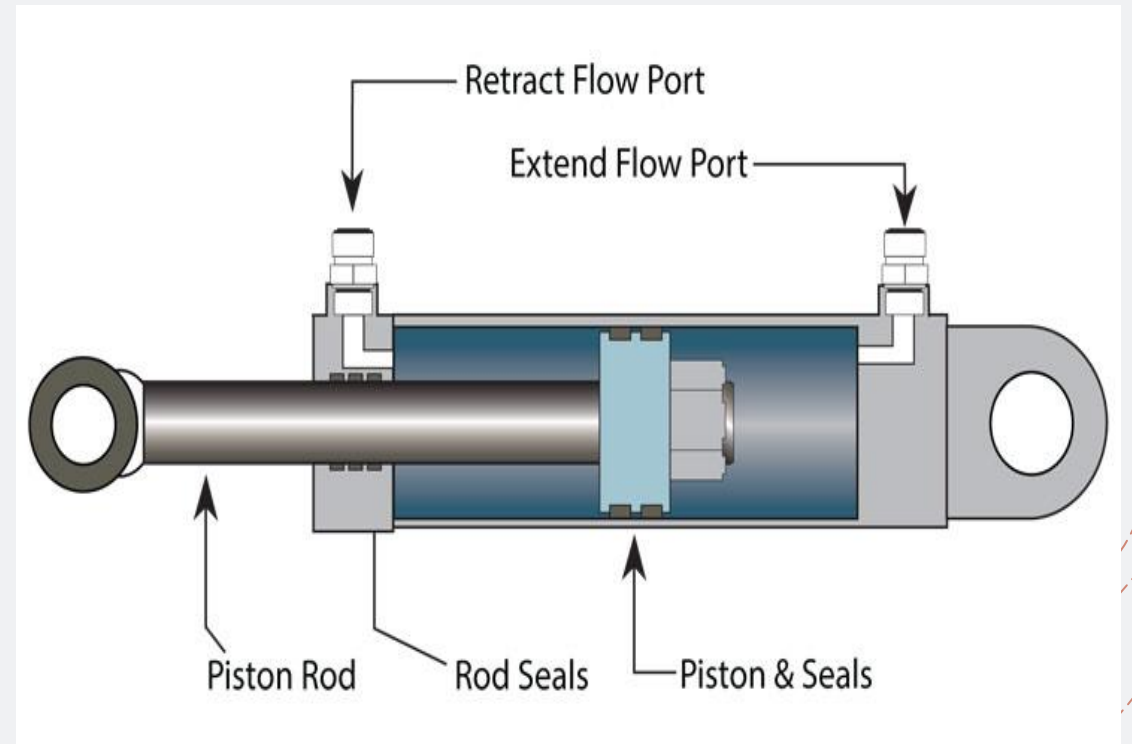
김진겸: 자료 조사

Part design(Crane body)

Powerpoint making

2) 관련된 이론적 요소

*유압 실린더



The background of the slide is a photograph of a construction site at dusk or dawn. A crane is lifting a large, dark, rectangular object, possibly a piece of machinery or a large panel, from the bottom of the frame. The crane's cables and hook are visible. The structure being built is made of dark metal beams and scaffolding. The sky is a mix of purple, pink, and blue. There are some white dashed lines and a yellow curved line overlaid on the image, suggesting a design or engineering theme.

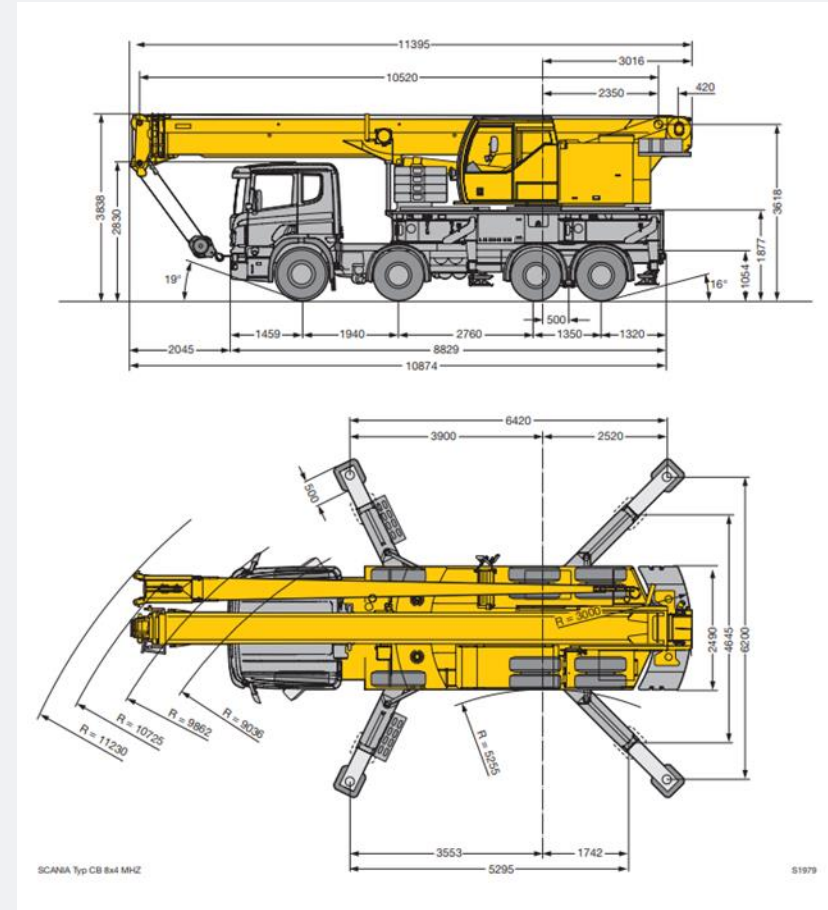
3) Part design

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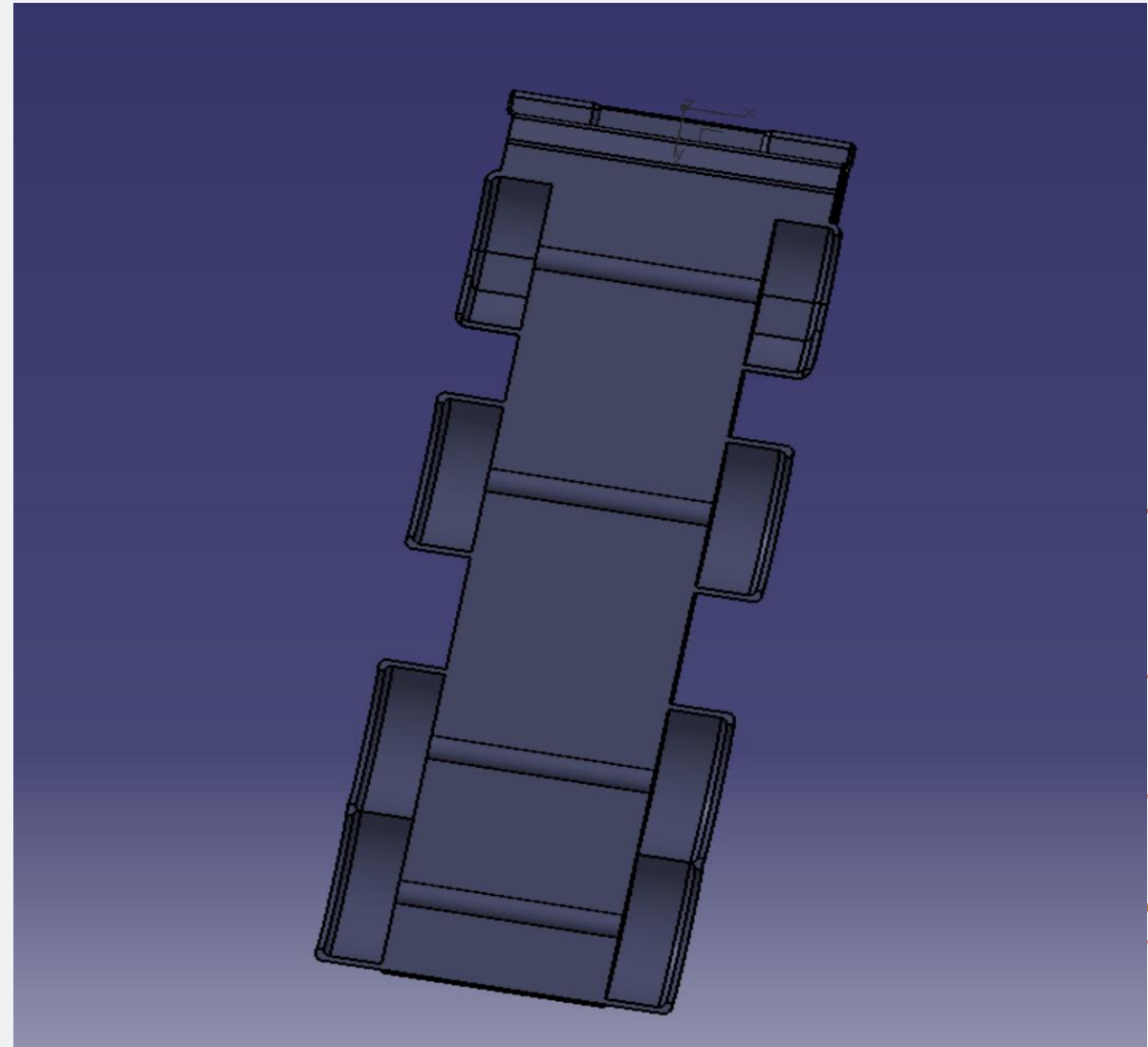
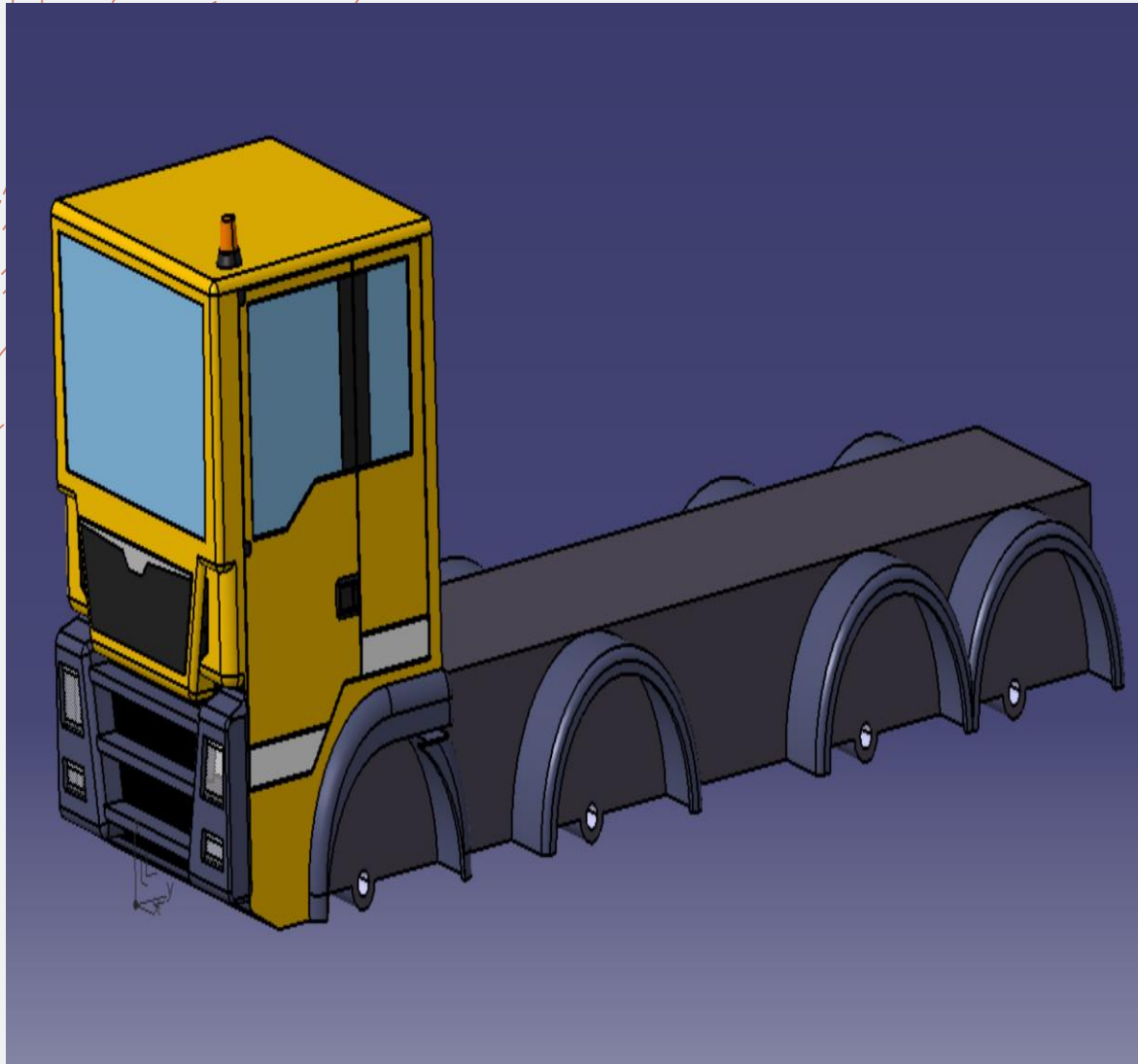
3-0) 모델링 참고자료



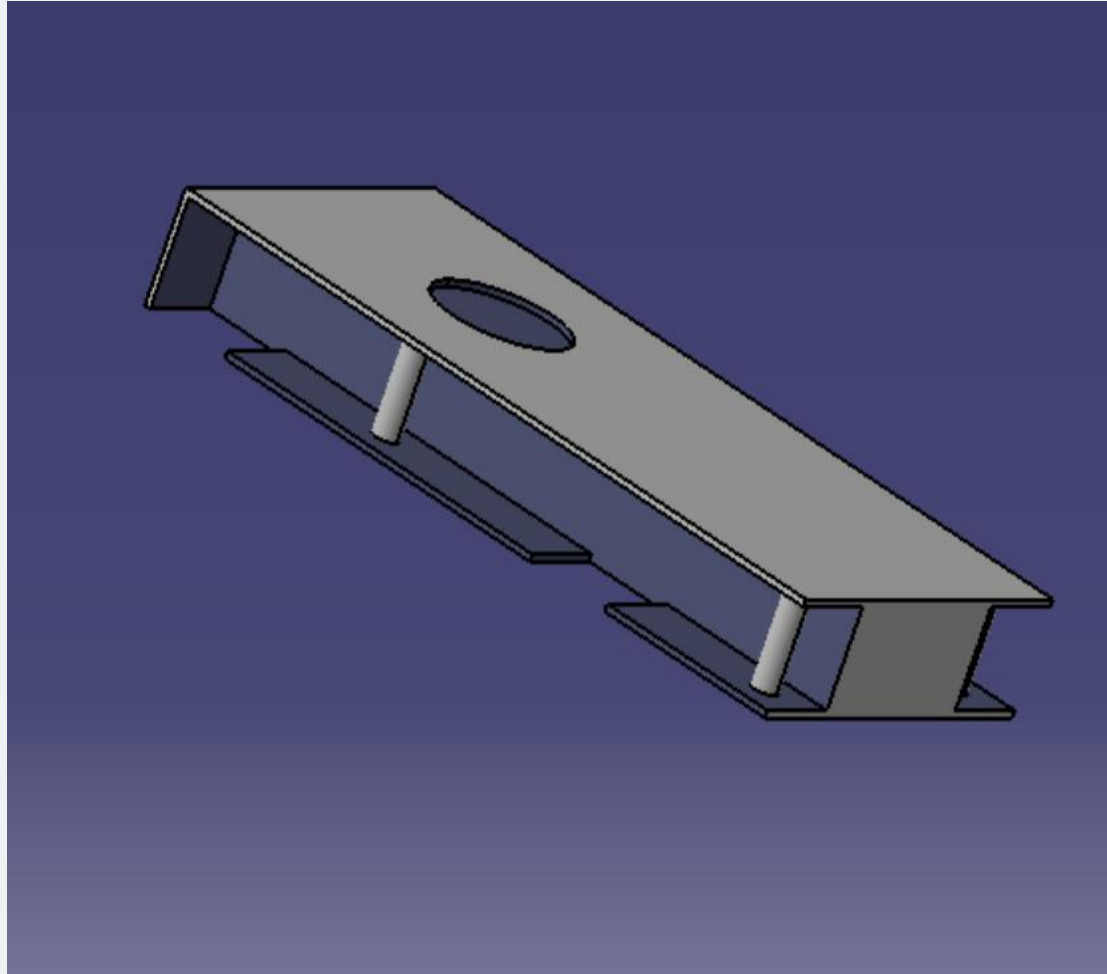
<https://www.youtube.com/watch?v=bLYaxjEltis&t=210s>



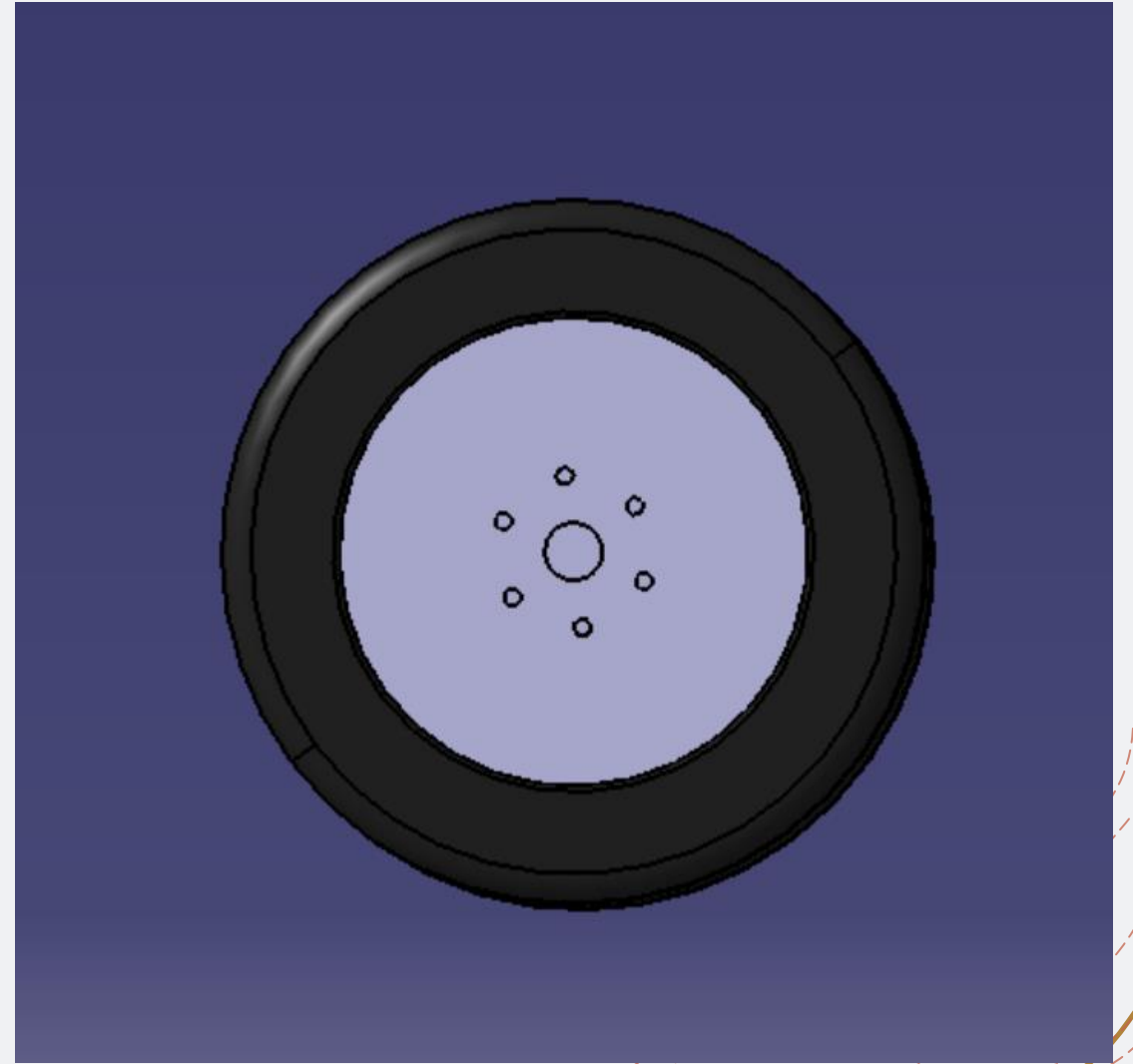
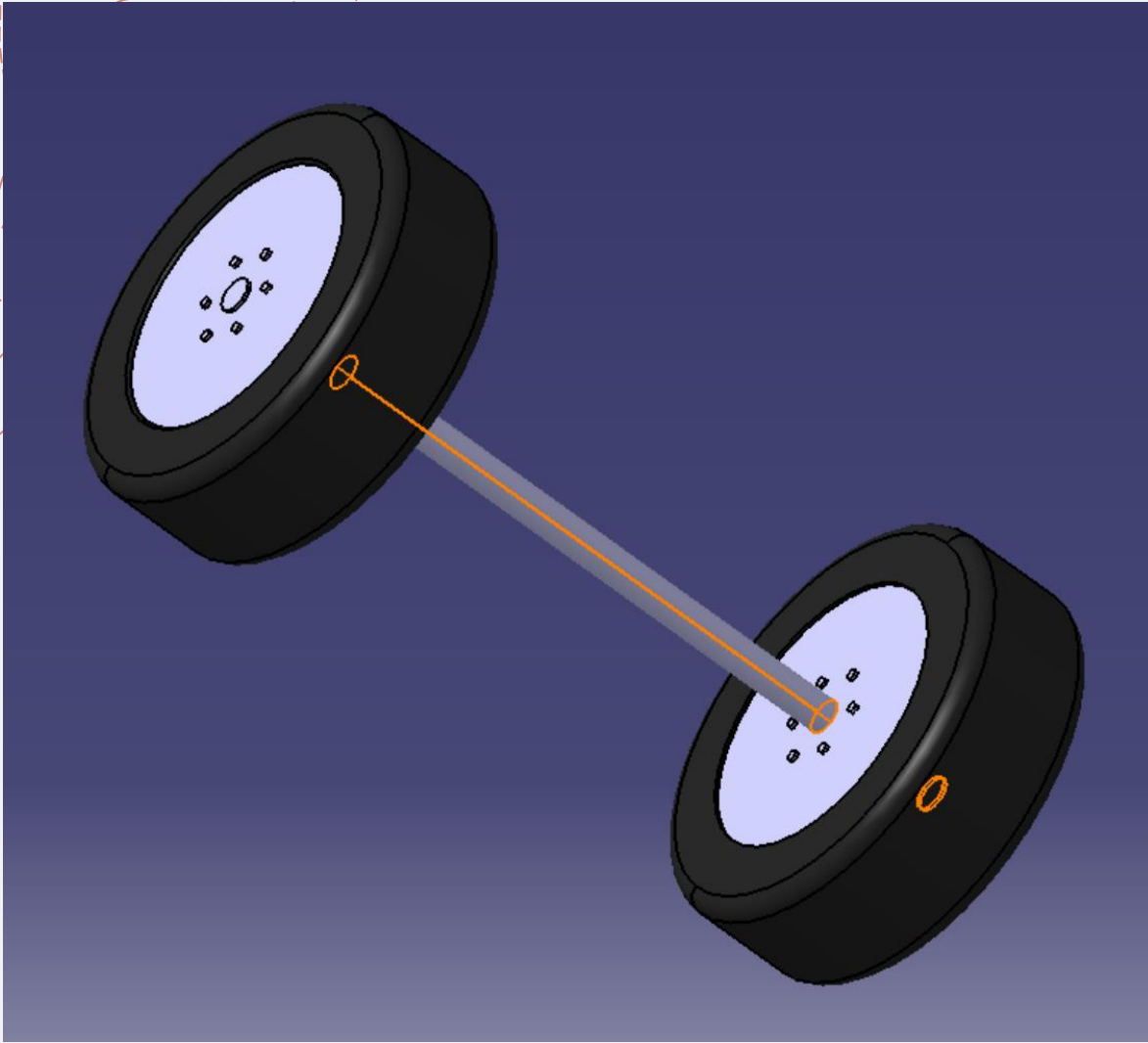
3-1) part design-Body



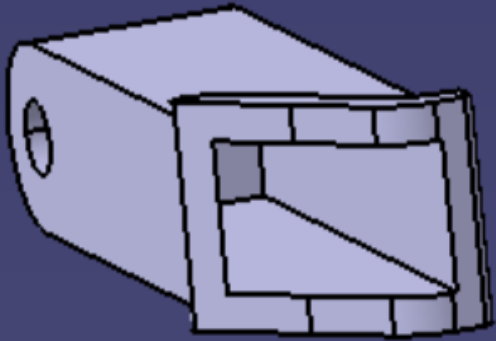
3-2) part design-Side



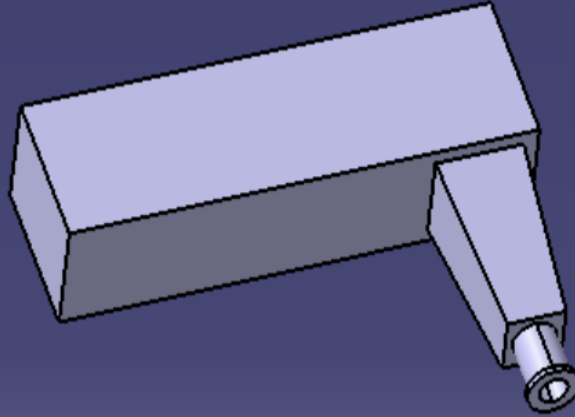
3-3) part design-Wheel



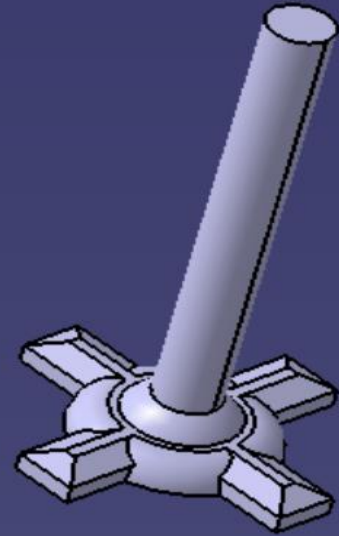
3-4) part design-Leg



Leg 1



Leg 2



Leg 3

A construction site at dusk or dawn, with a crane lifting a large rectangular object. The background is a gradient of purple and blue, with silhouettes of scaffolding and structural elements. A small blue plus sign is located below the text.

4) Assembly Design

4-1) car assemble(Body, Side, Wheel, Leg)

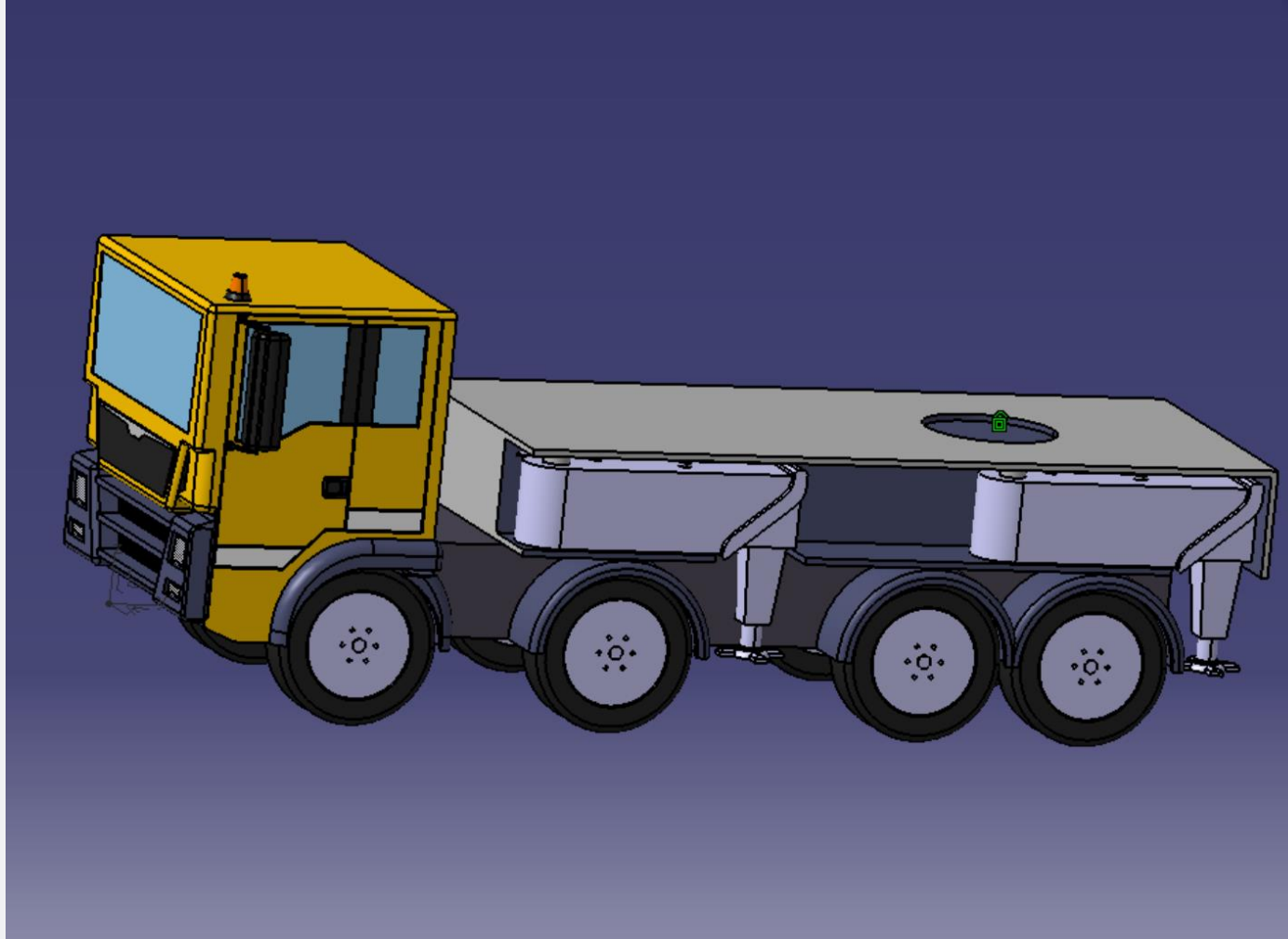


반복되는 부분
(바퀴, 다리) 등은
copy 기능을
이용하여 완성함



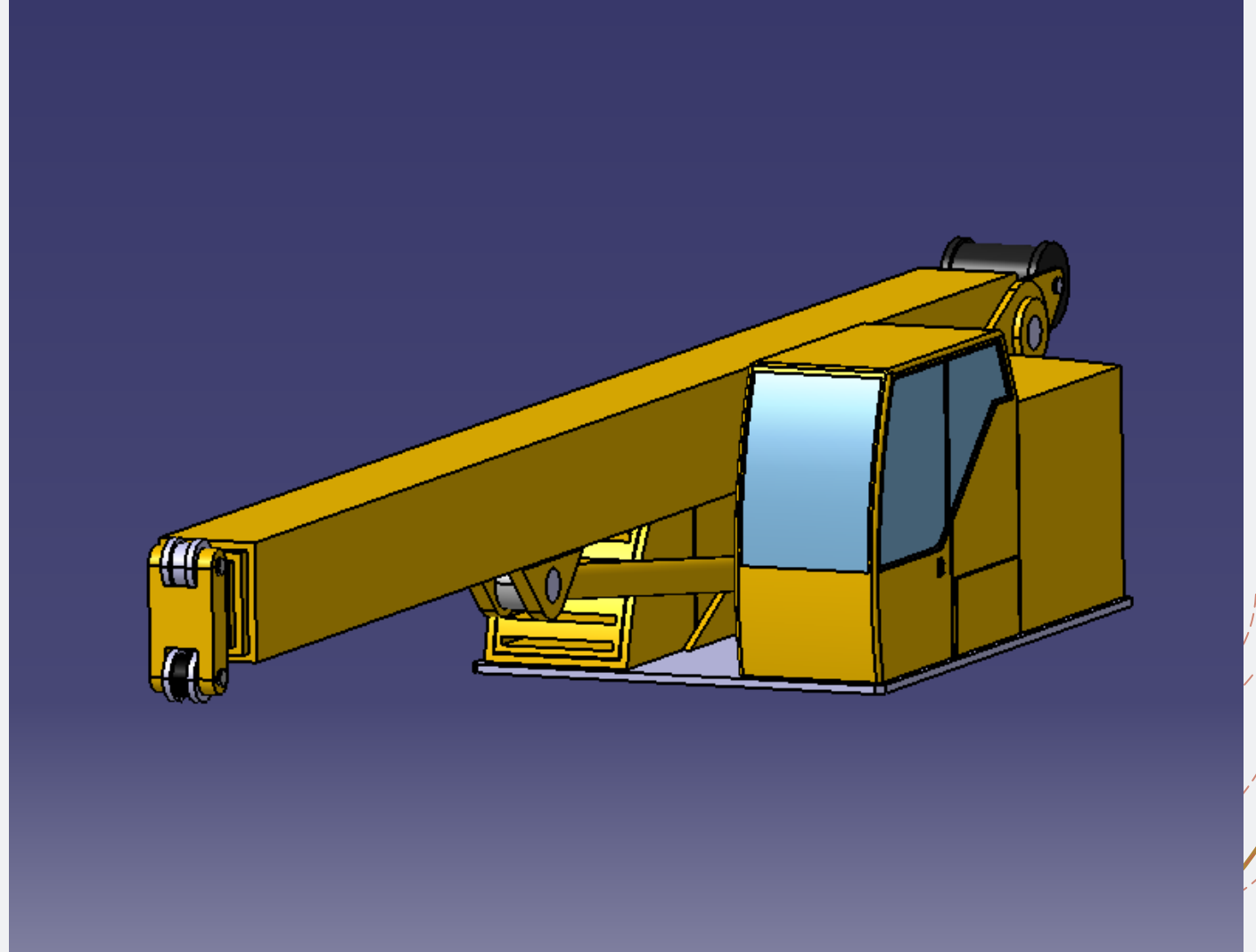
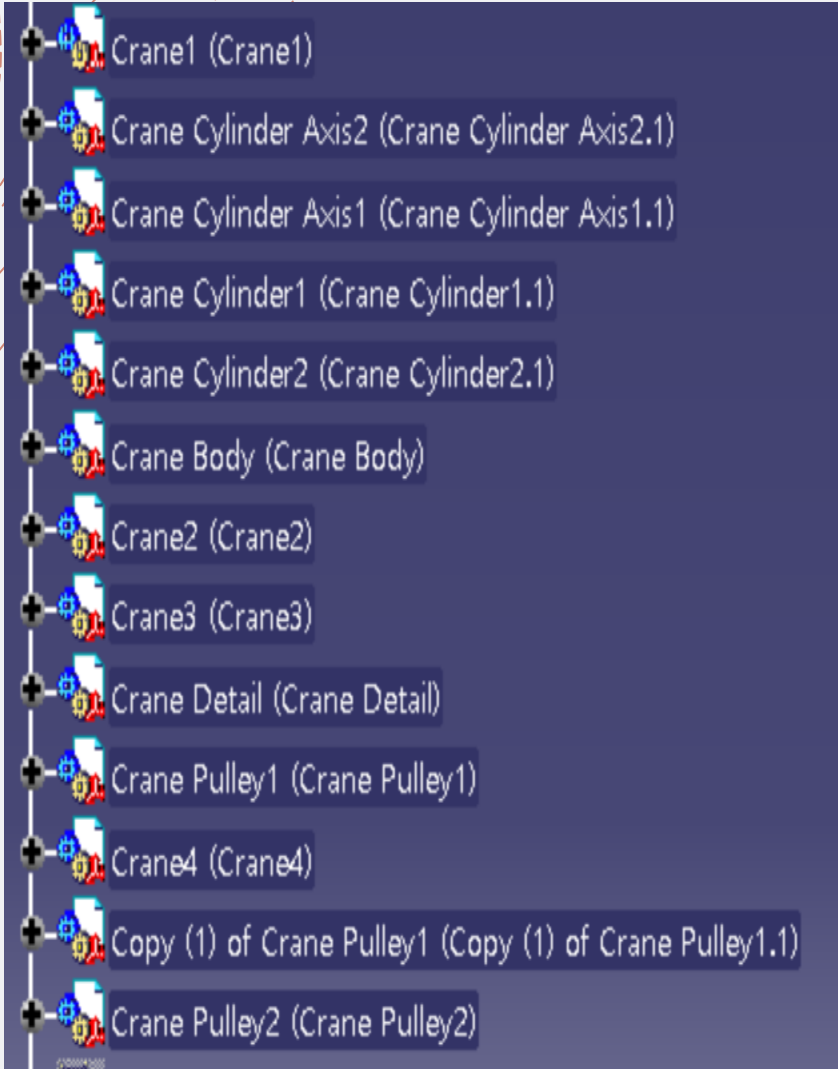
4-1) car assemble

(Body, Side, Wheel, Leg)

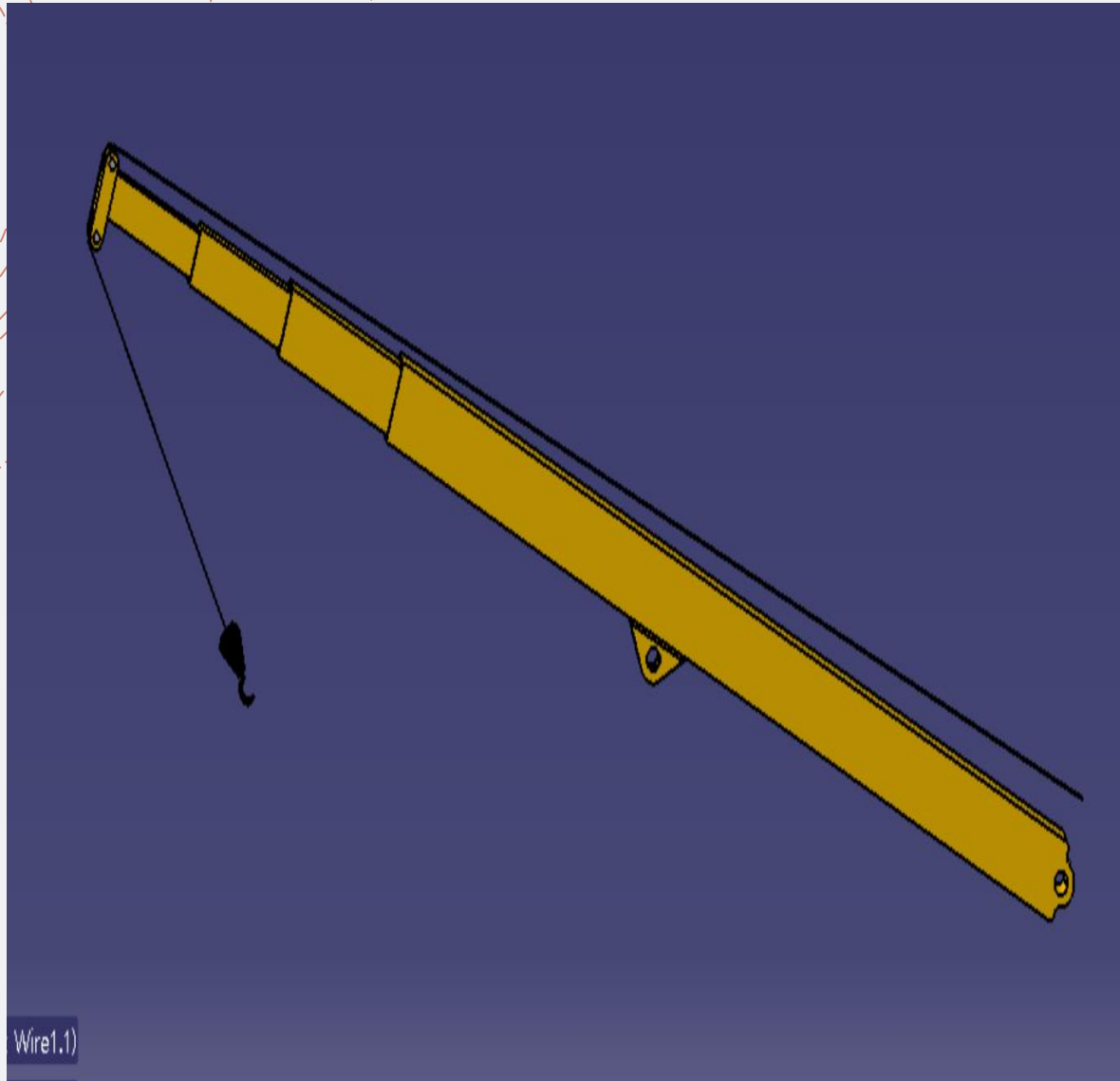


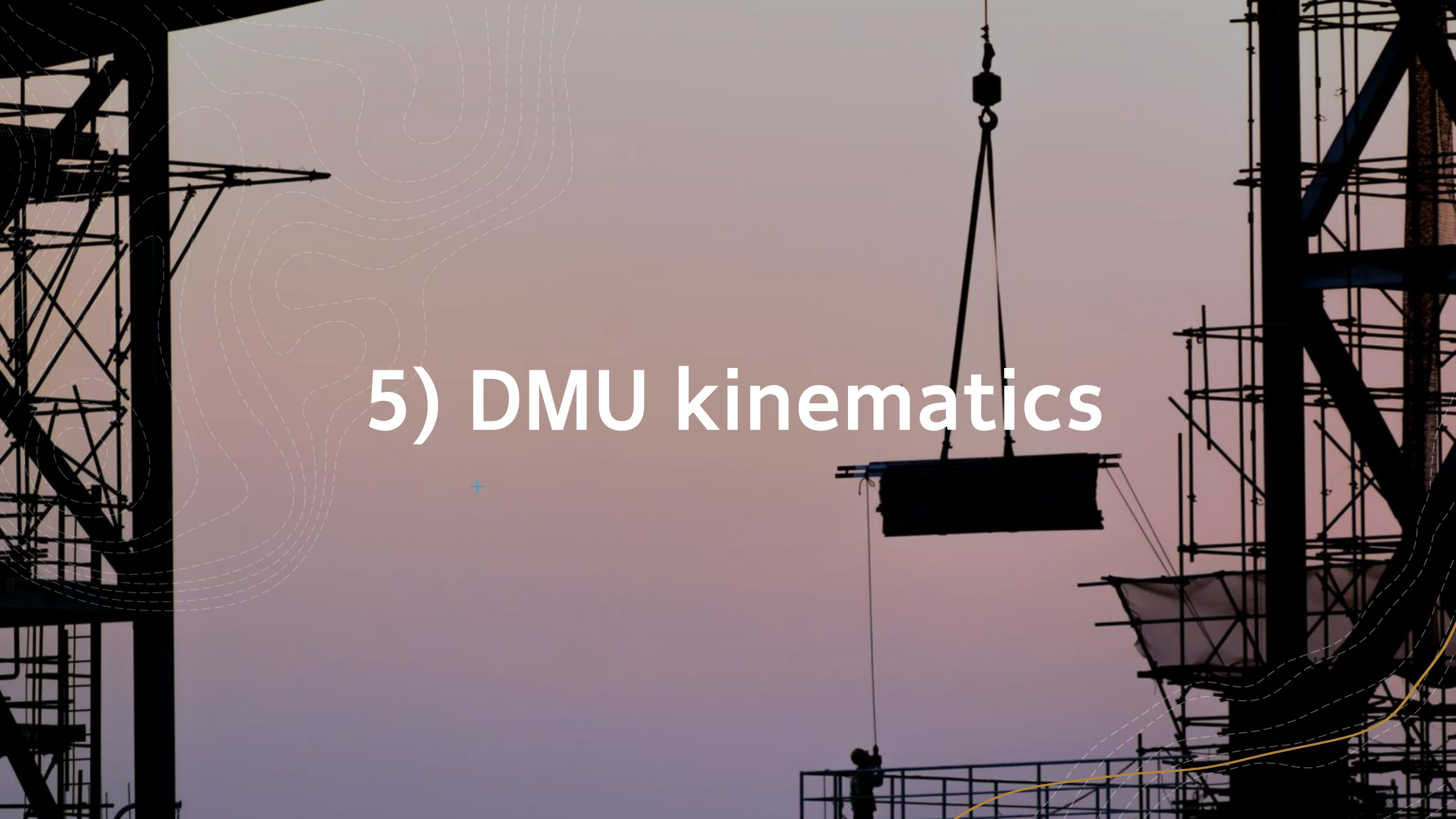
4-2) crane assemble

(Body, Arm, Cylinder, Cylinder axis, Crane Pulley)



4-3) Hook and Wire

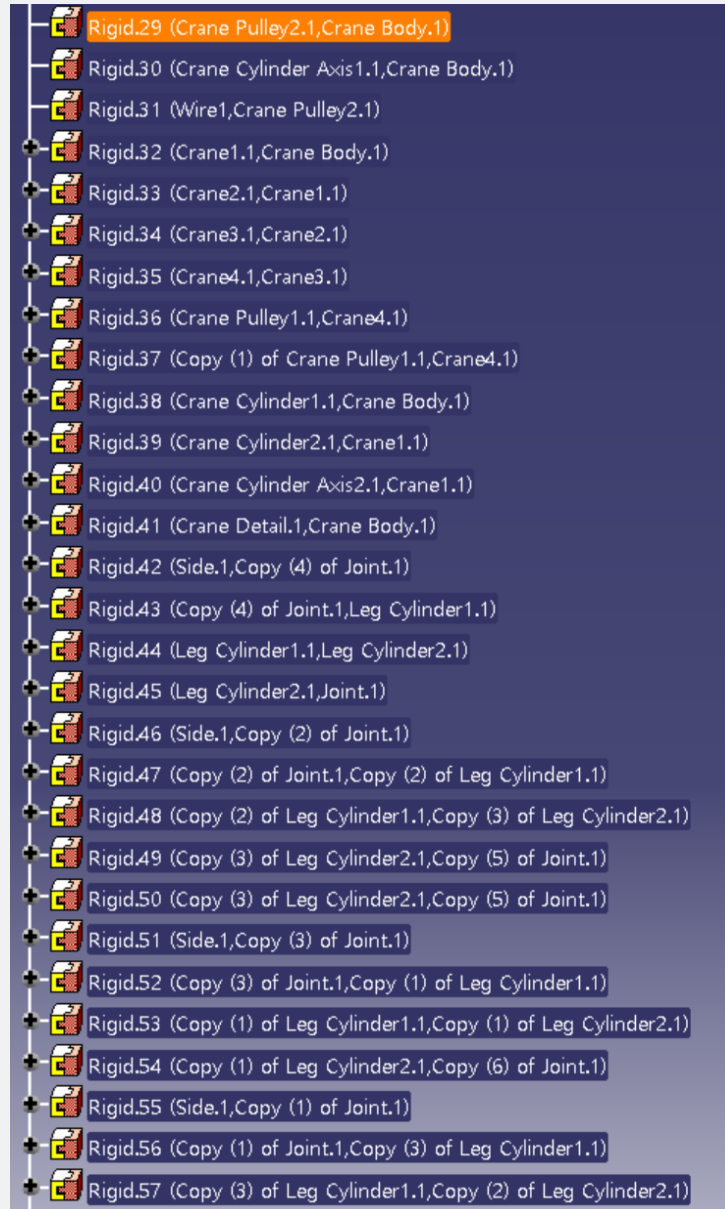
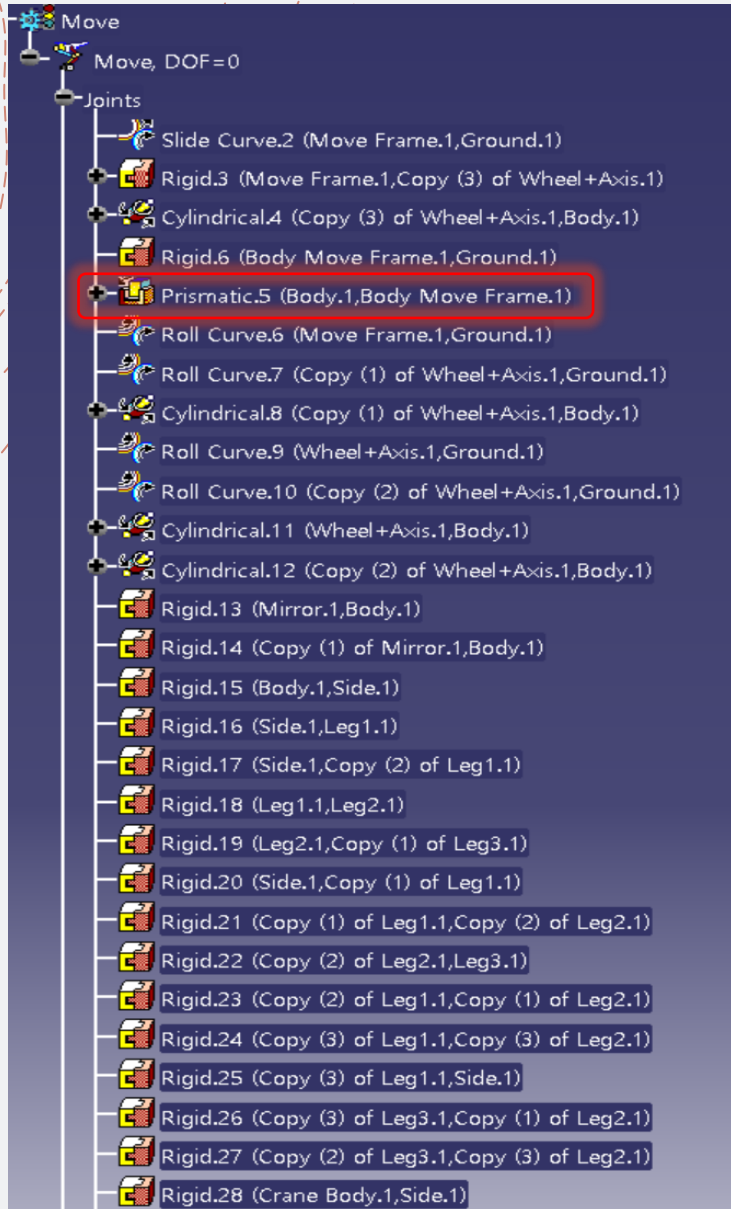




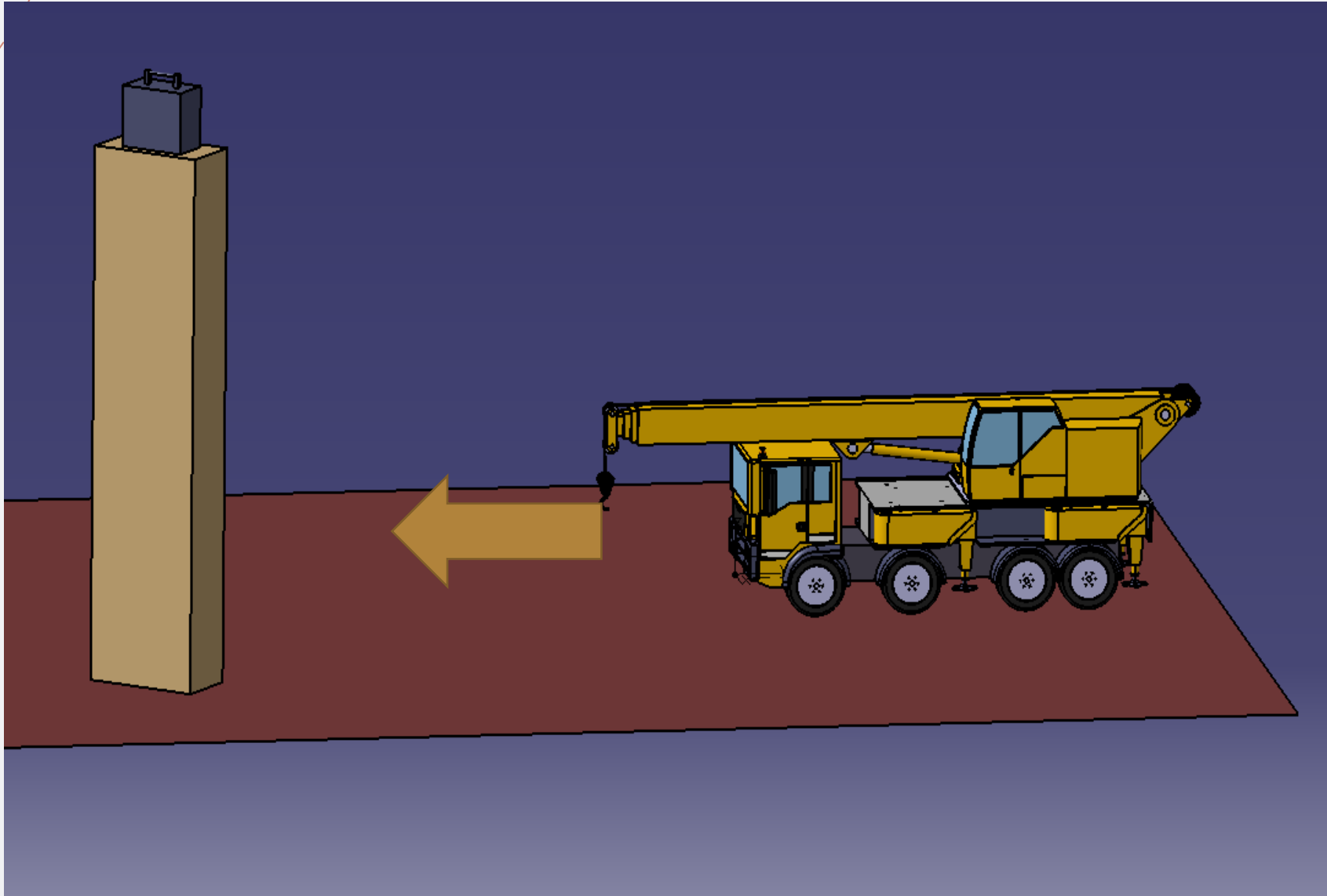
5) DMU kinematics

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5-1) DMU kinematics-move



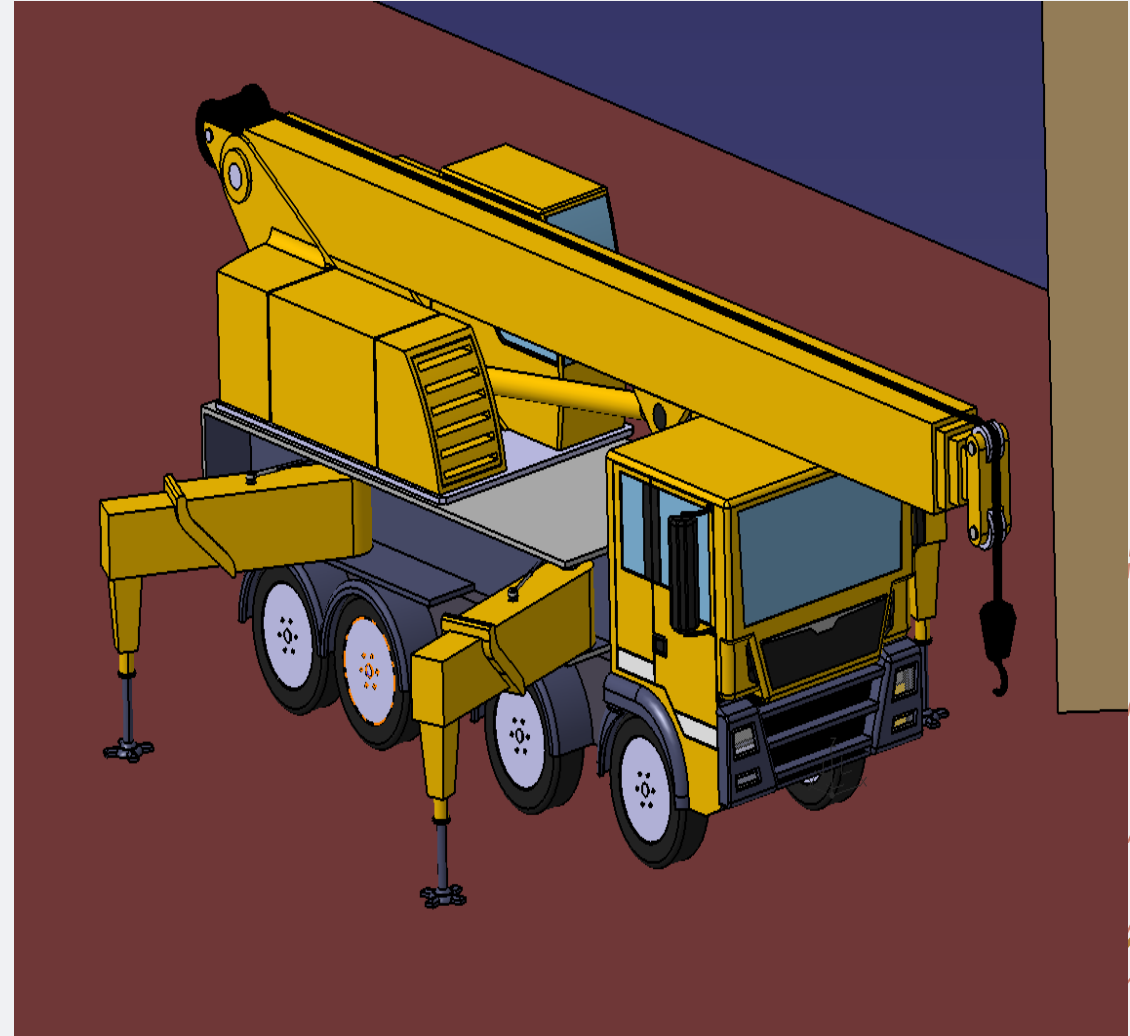
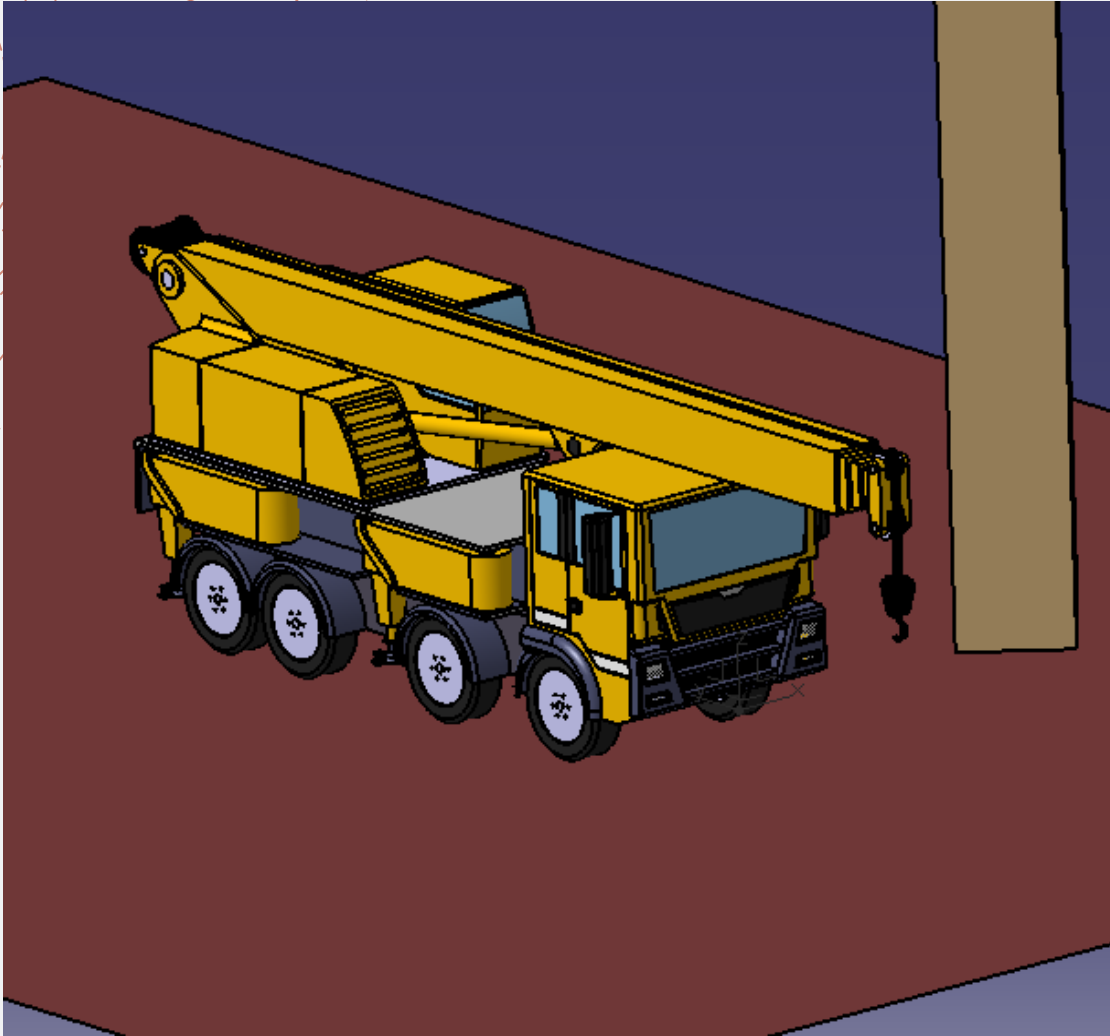
5-1) DMU kinematics-move



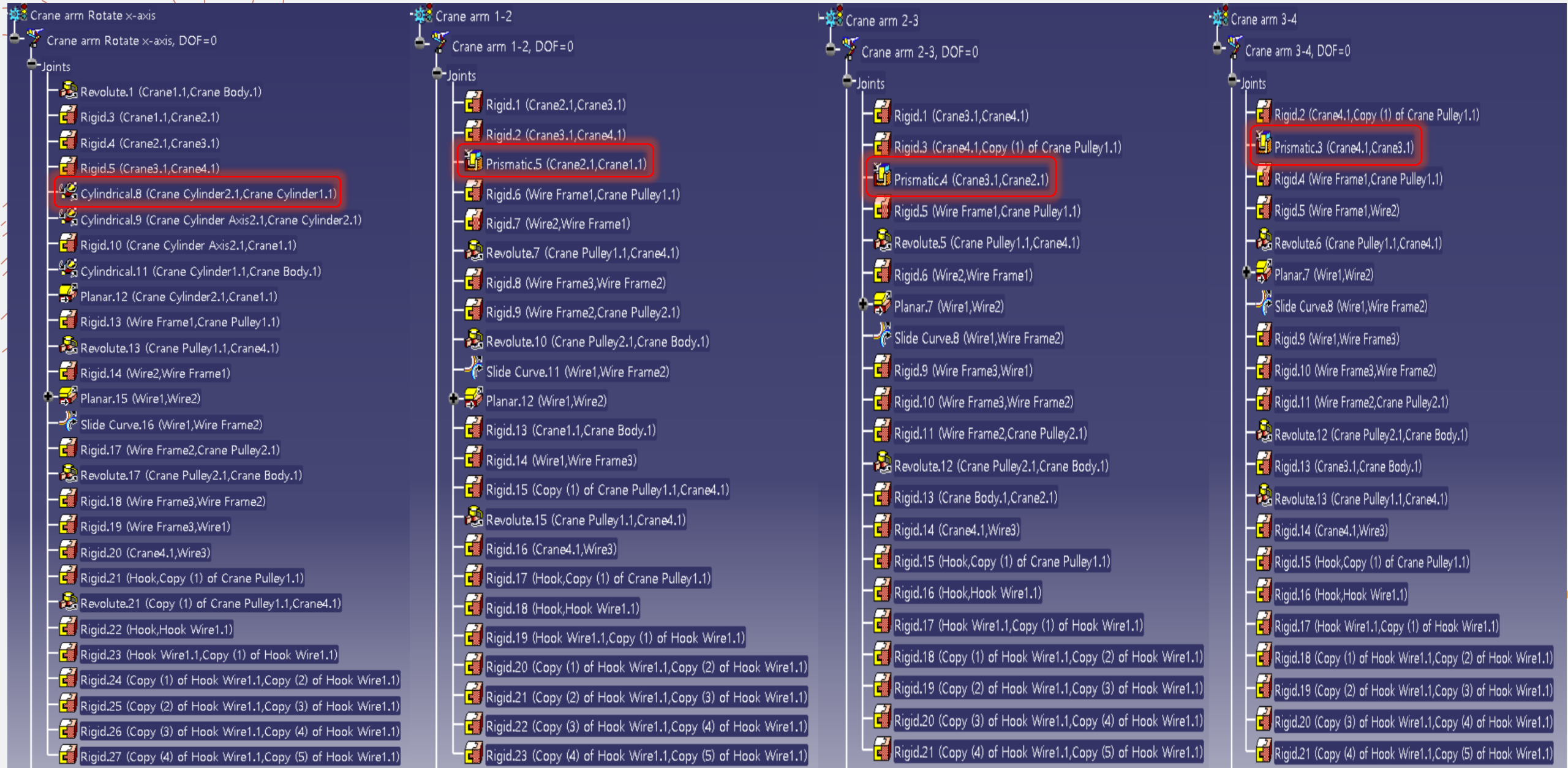
5-2) DMU kinematics-leg landing



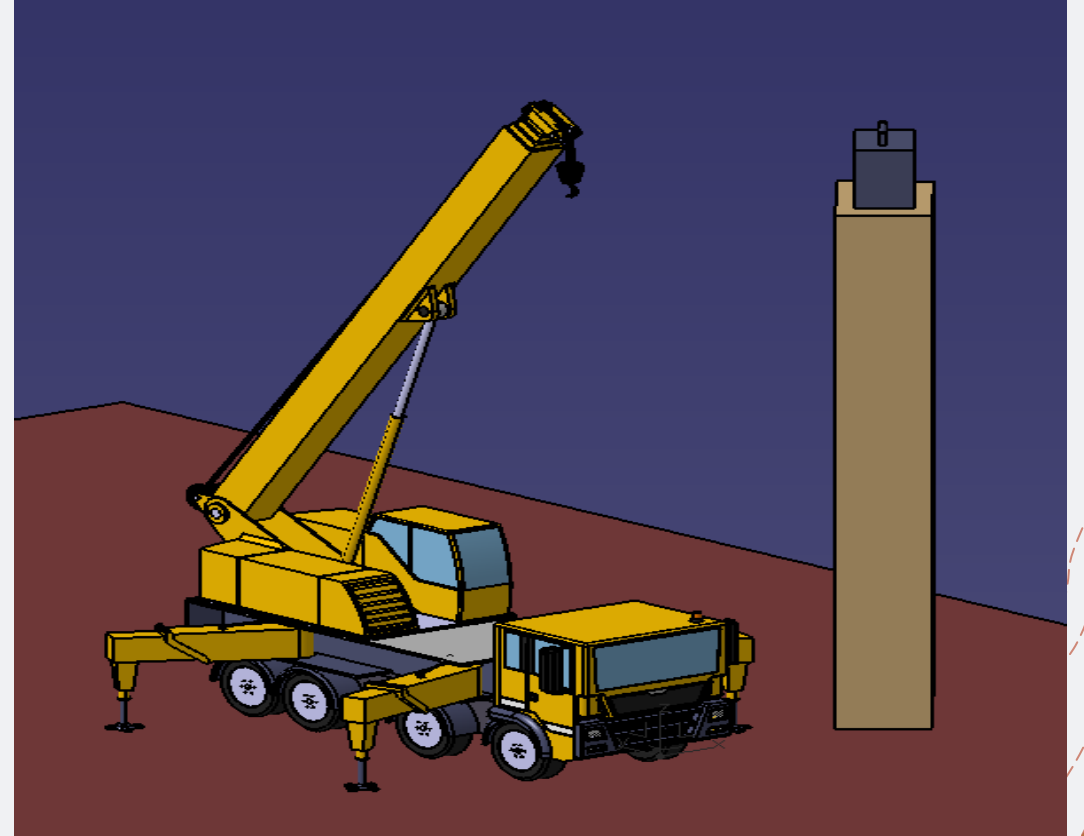
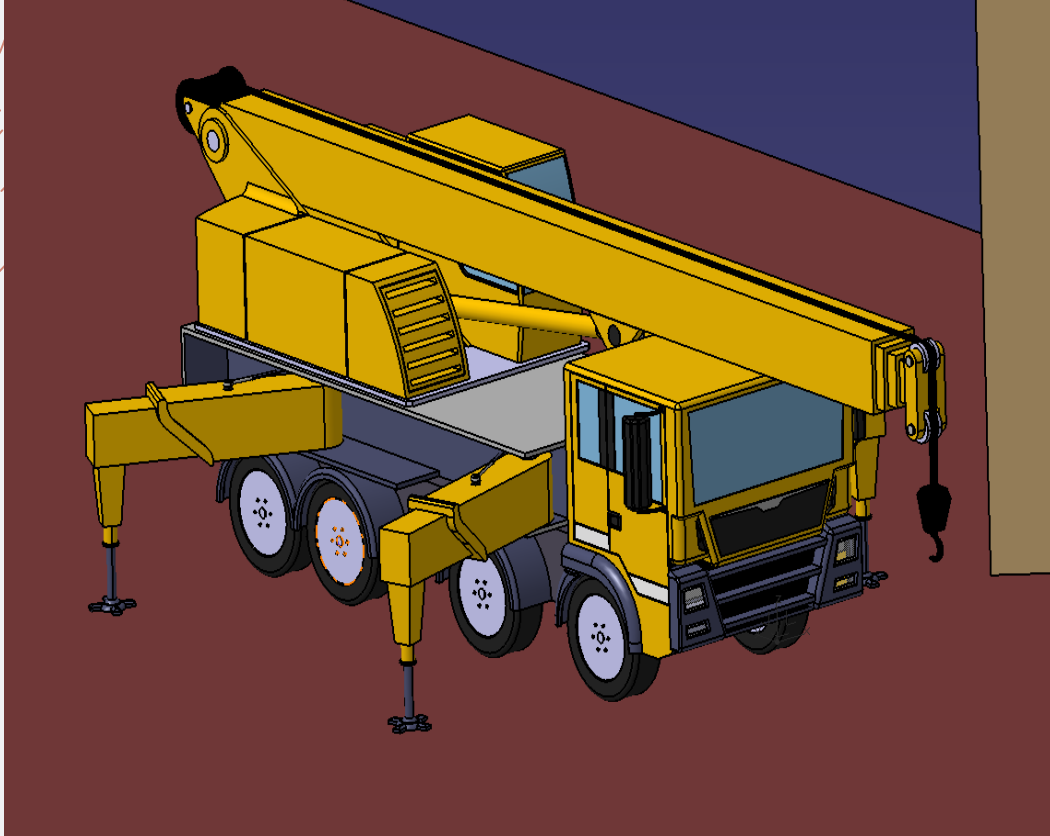
5-2) DMU kinematics-leg move



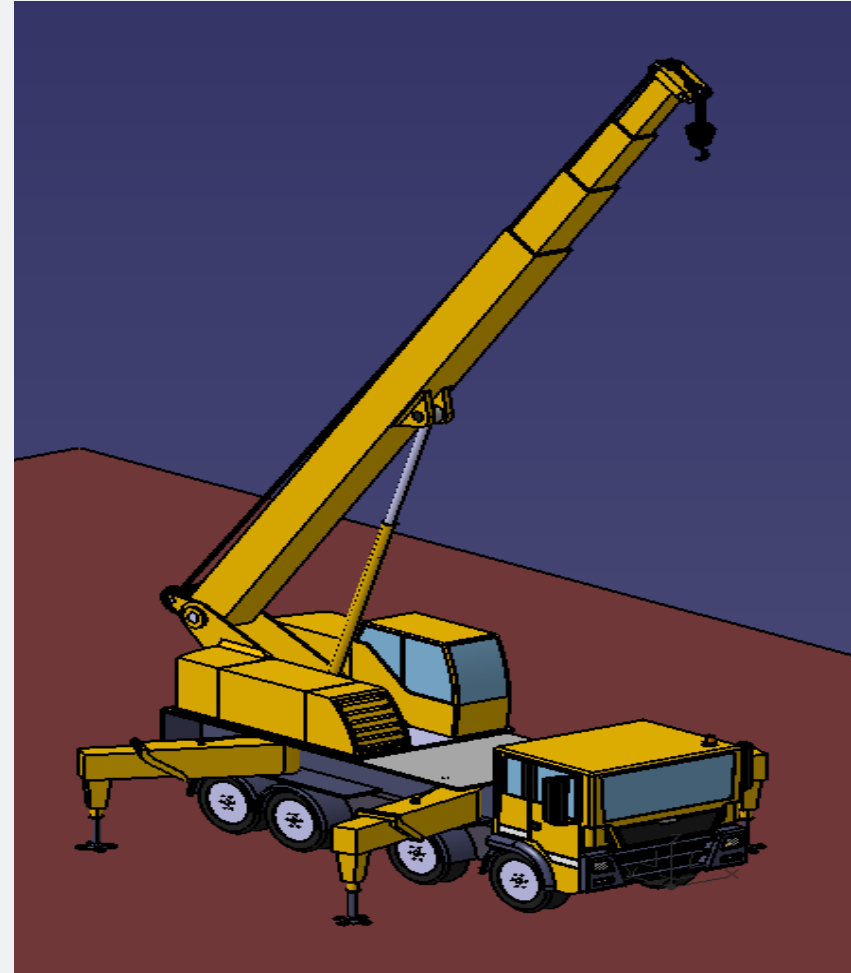
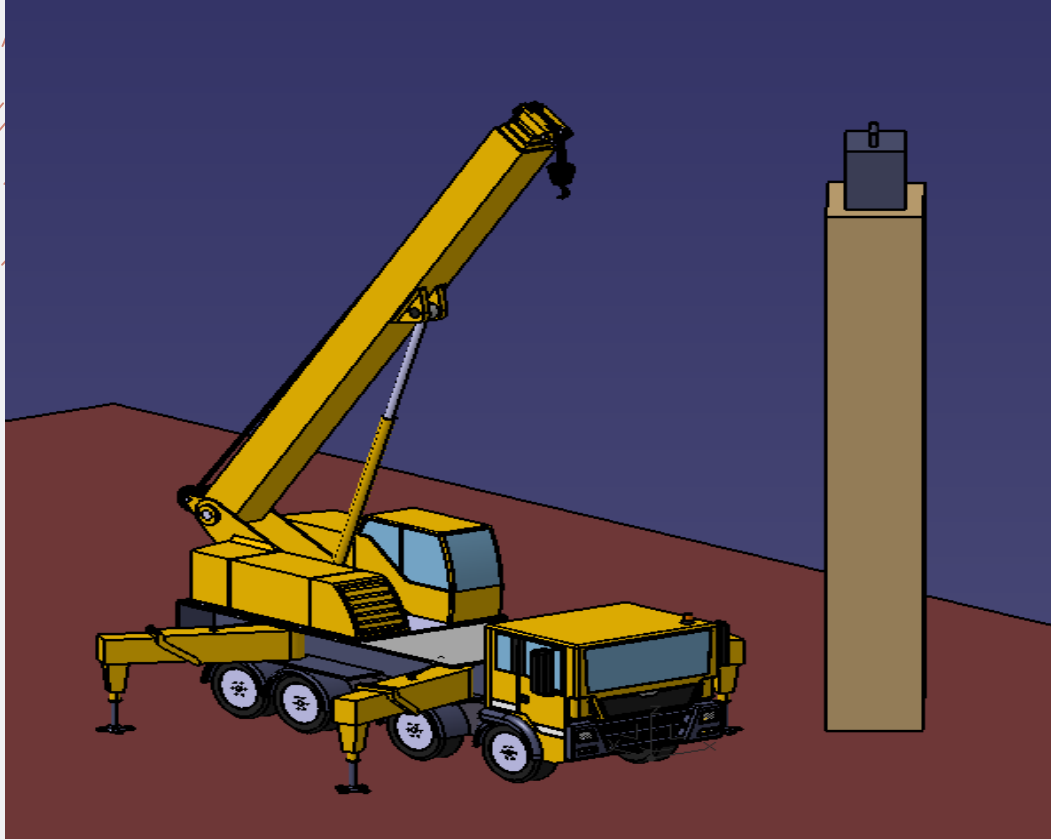
5-3) DMU kinematics-arm move



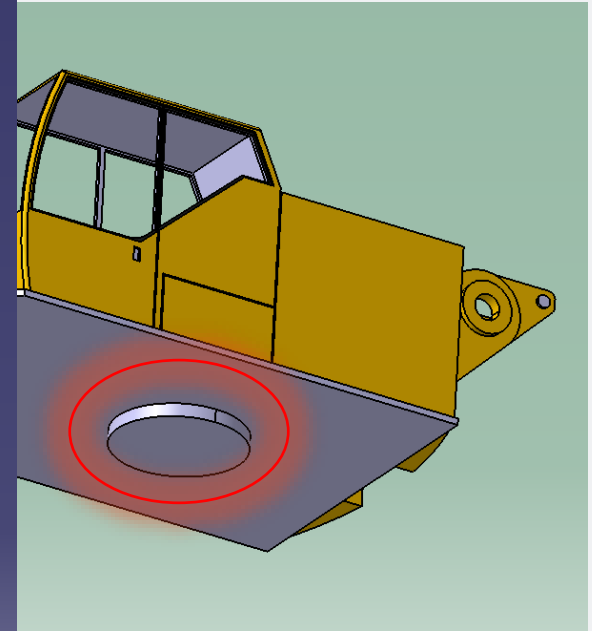
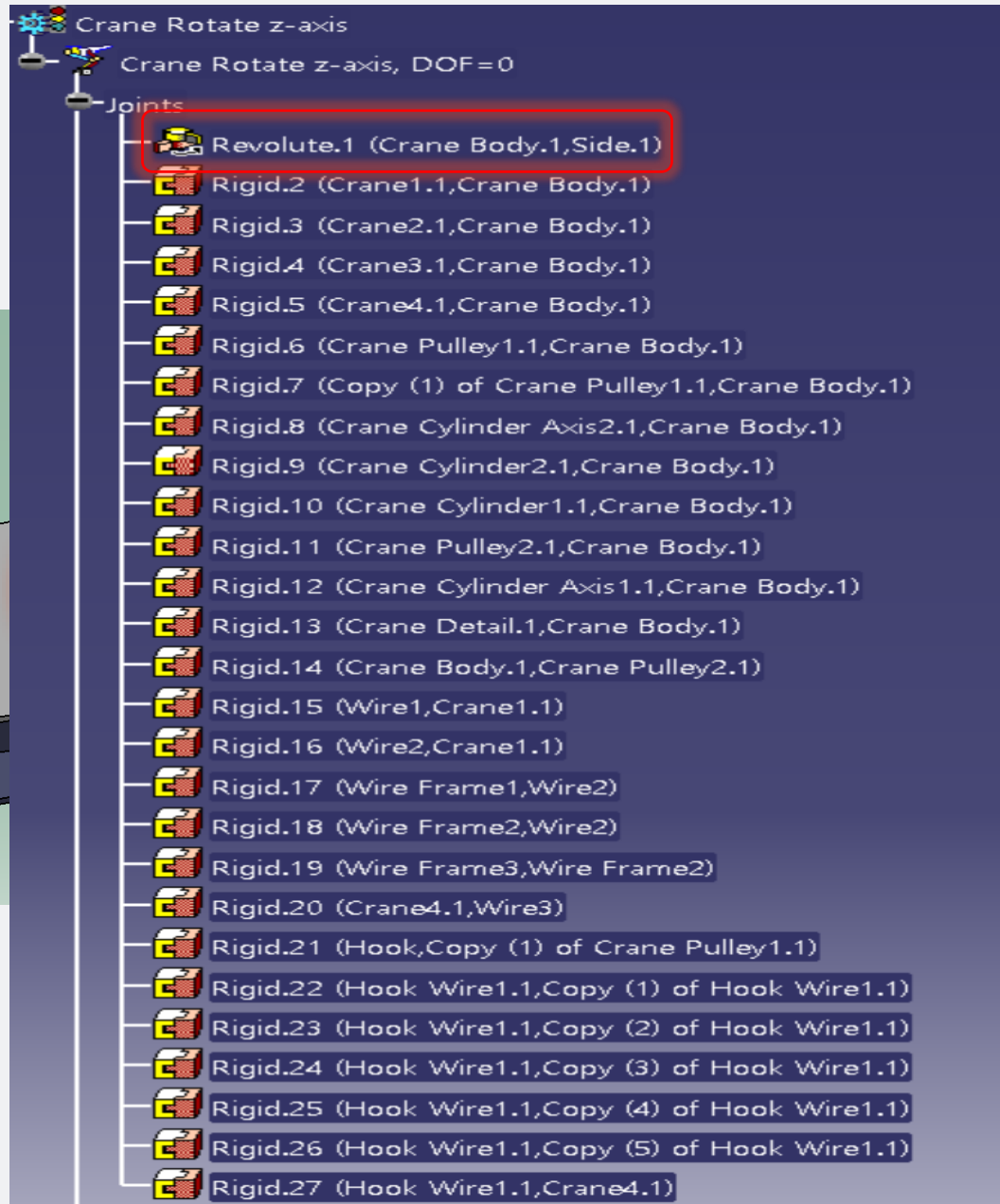
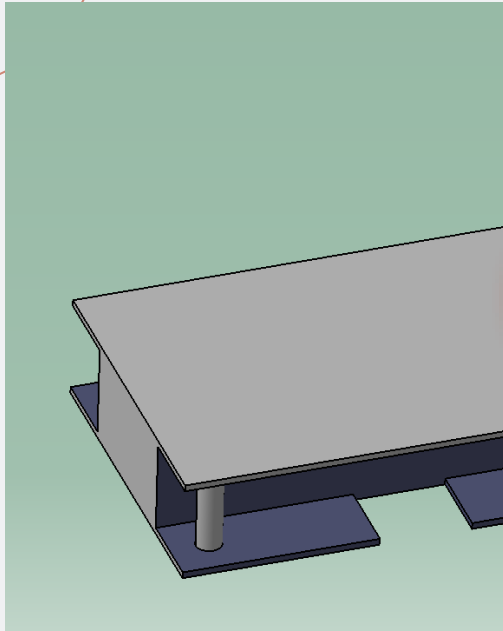
5-3) DMU kinematics-arm move



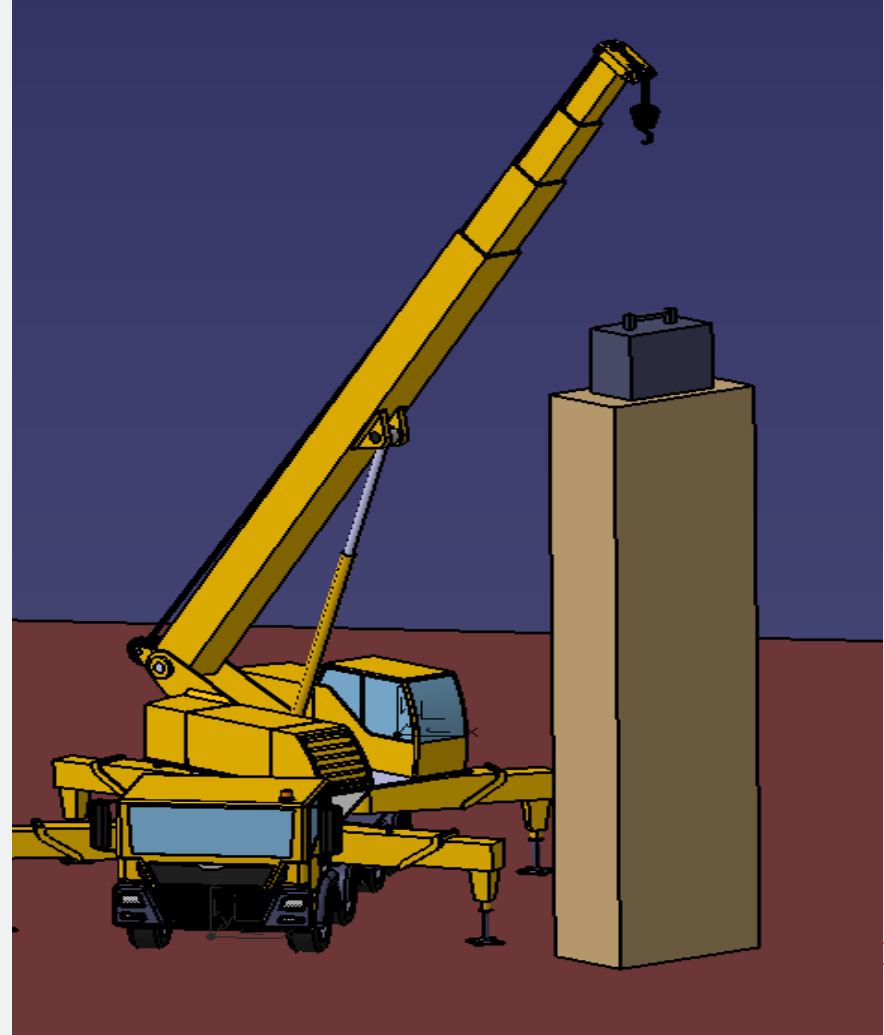
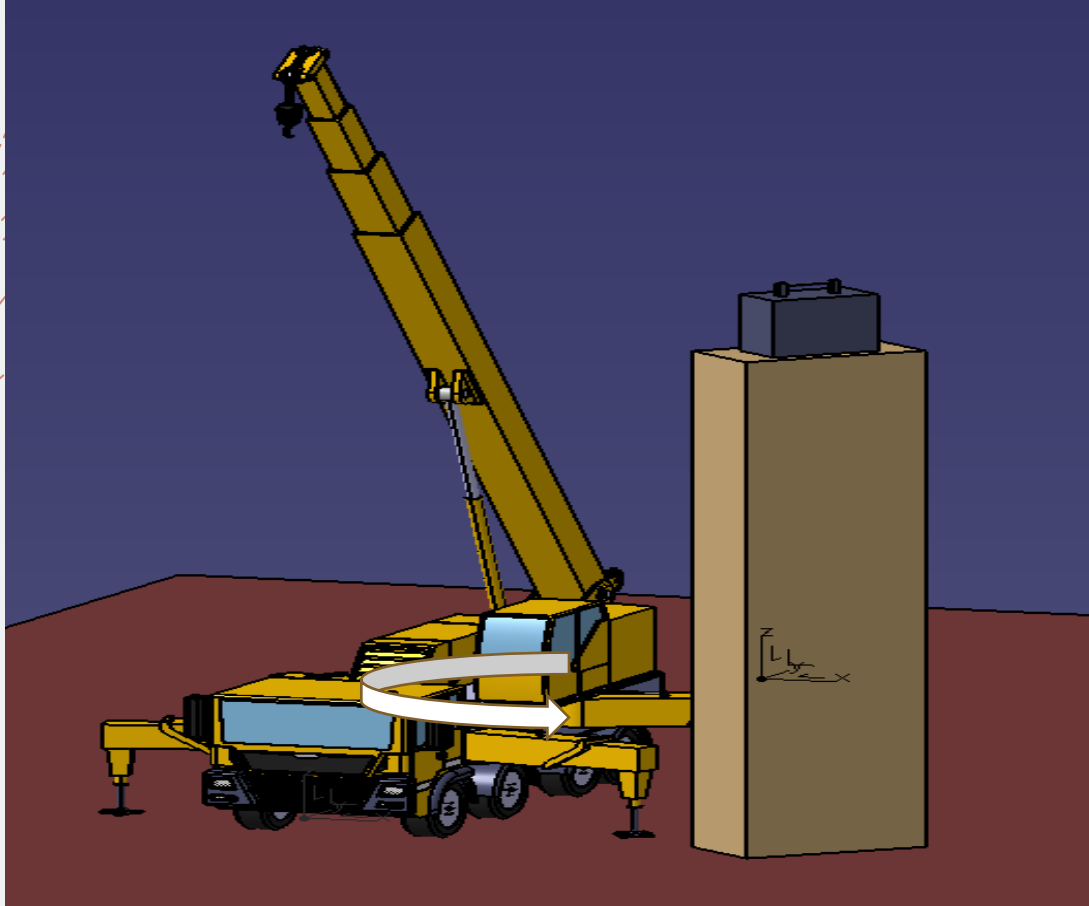
5-3) DMU kinematics-arm move



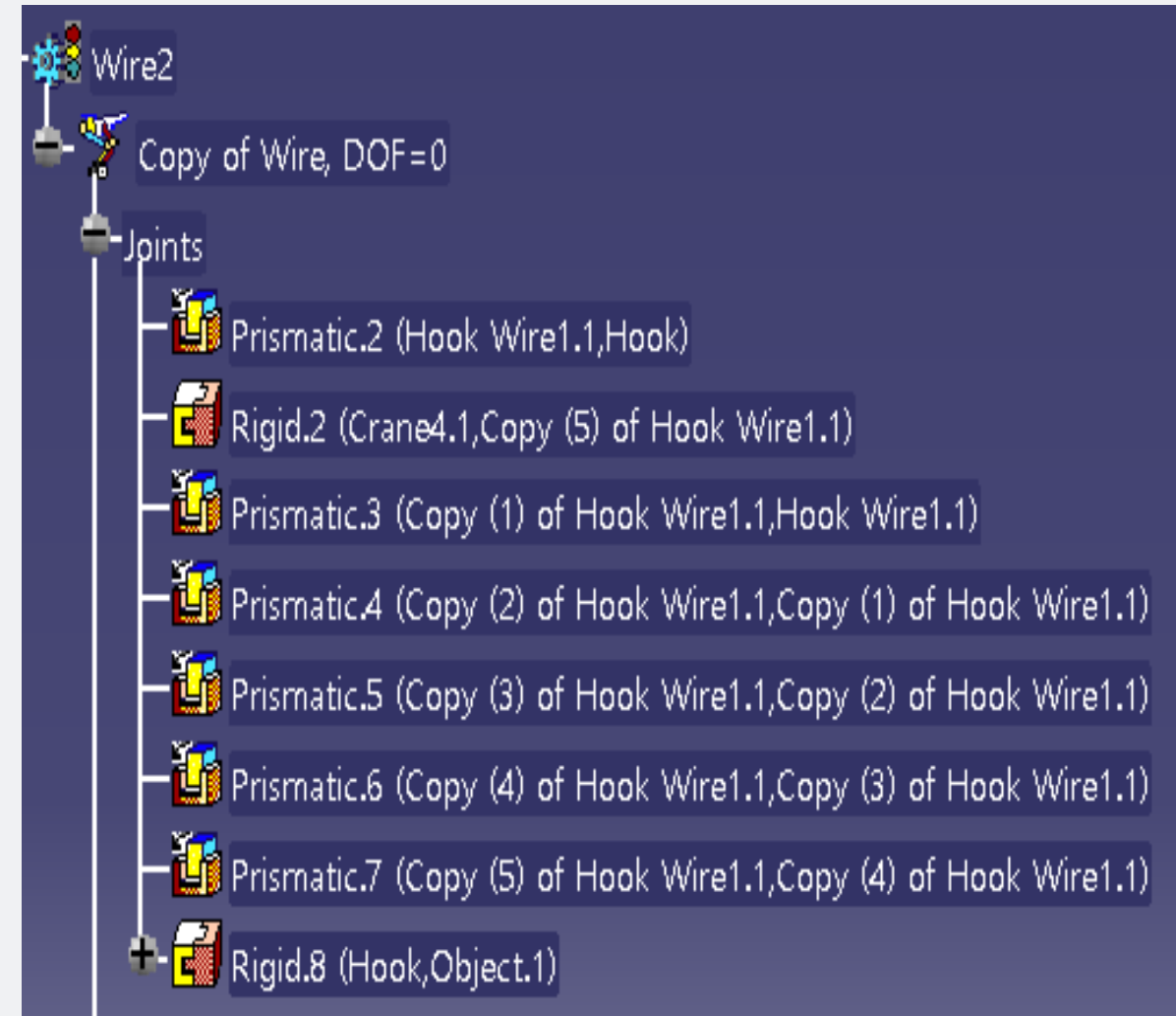
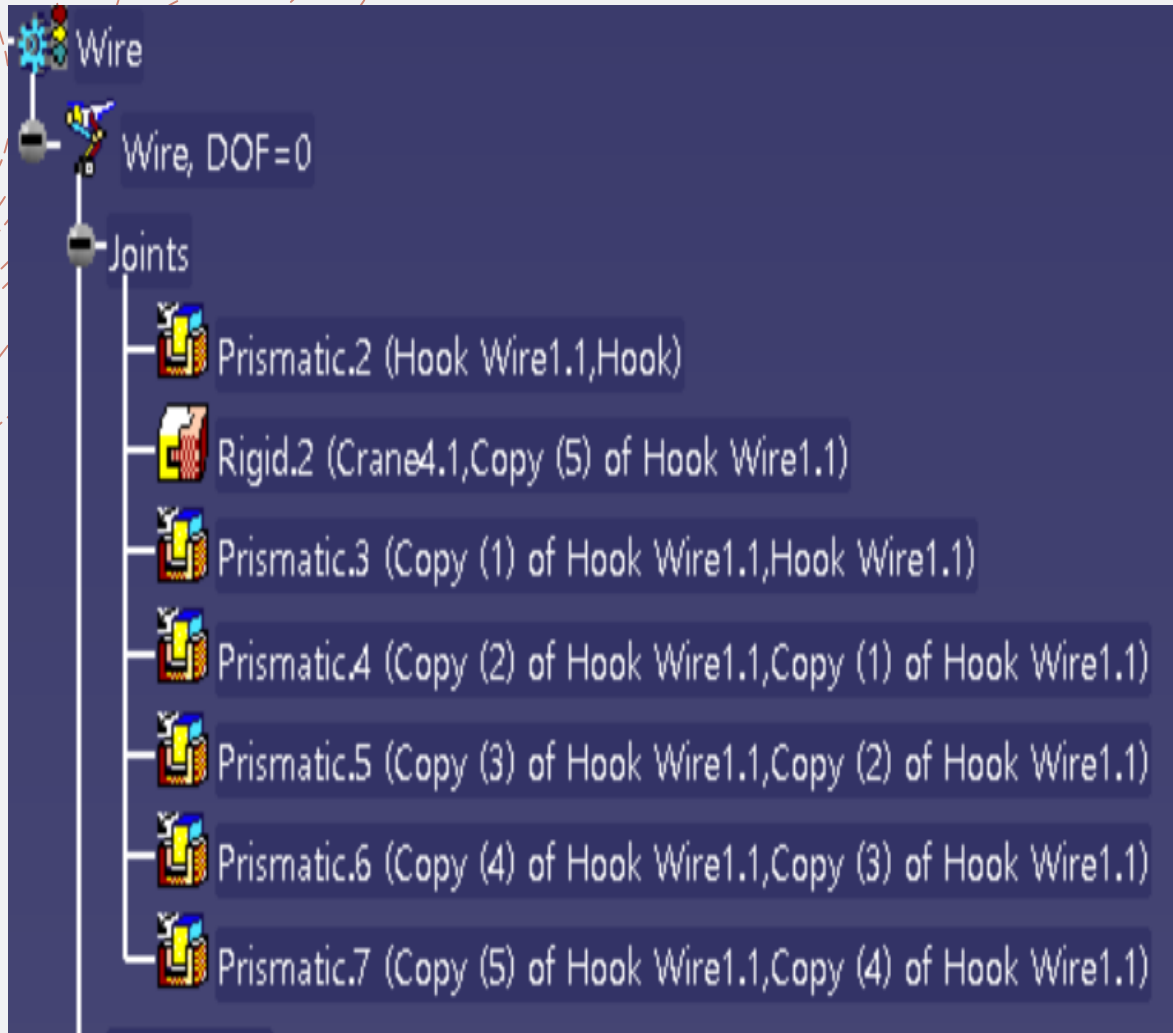
5-4) DMU kinematics-crane rotate



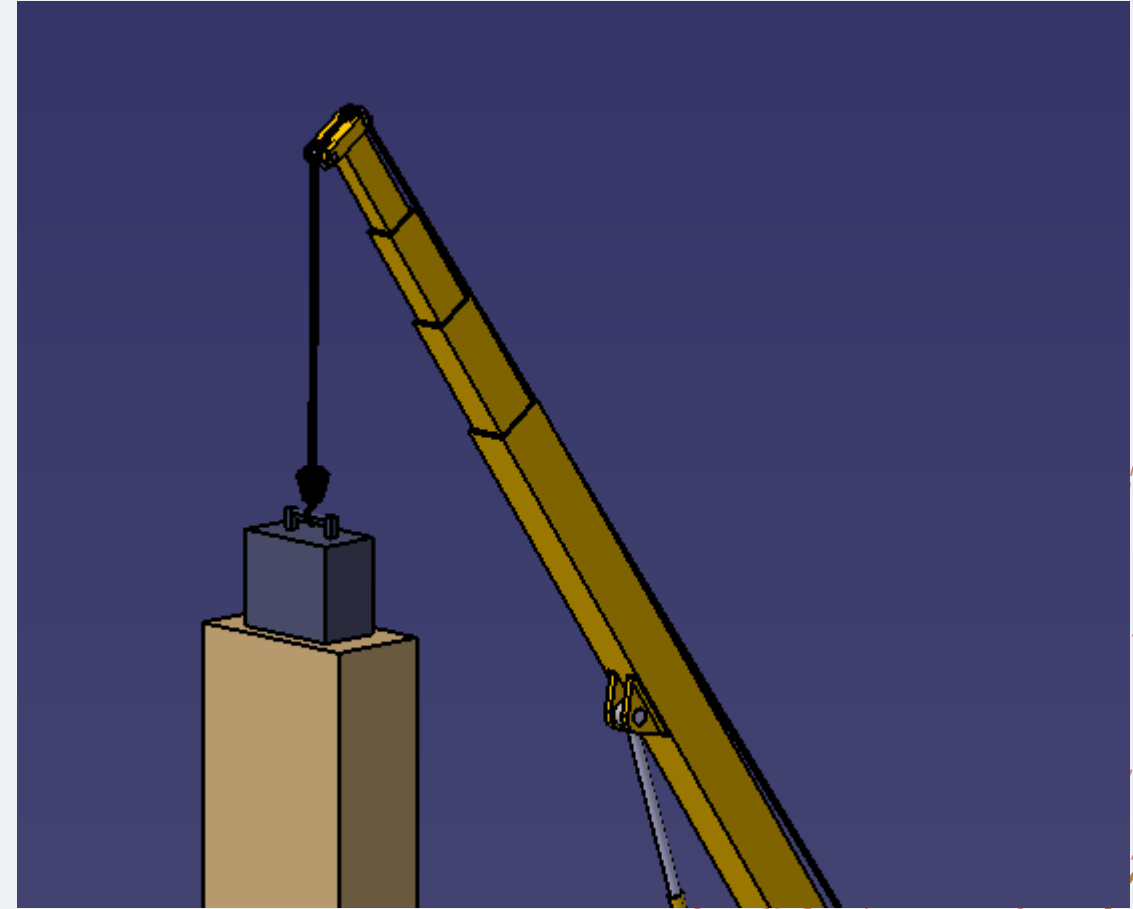
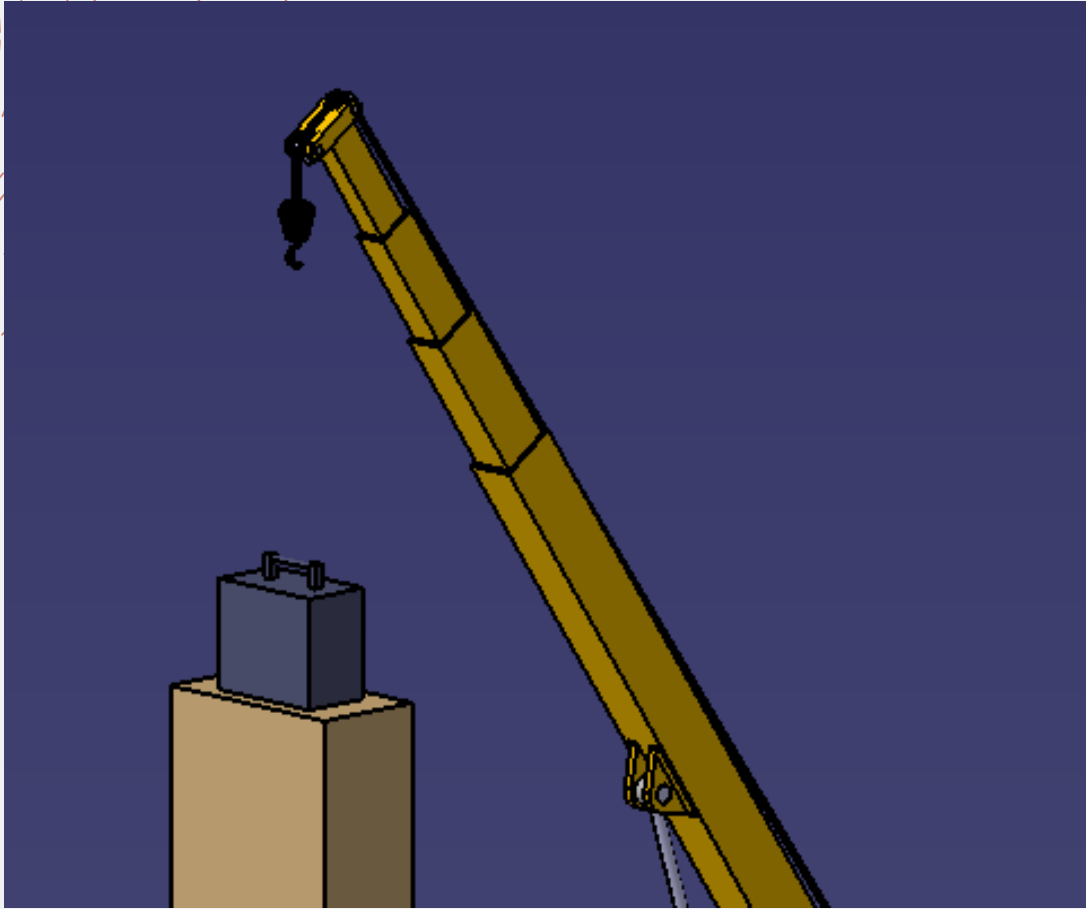
5-4) DMU kinematics-crane rotate



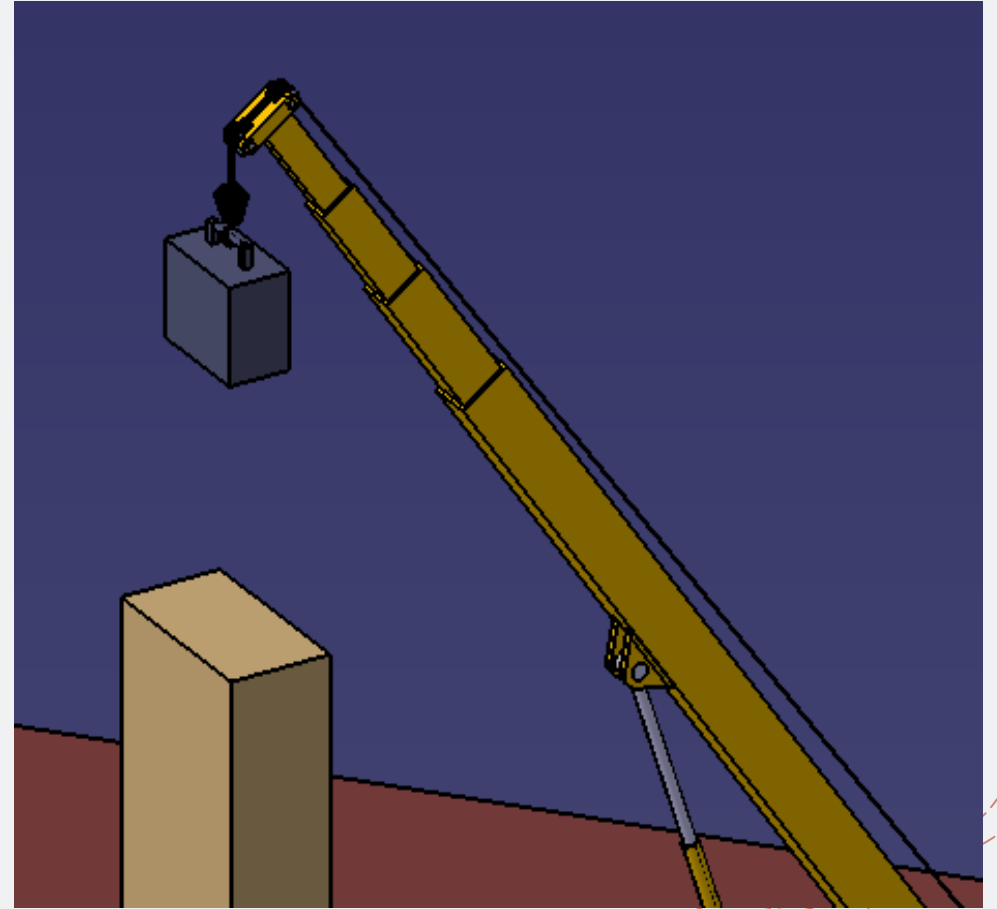
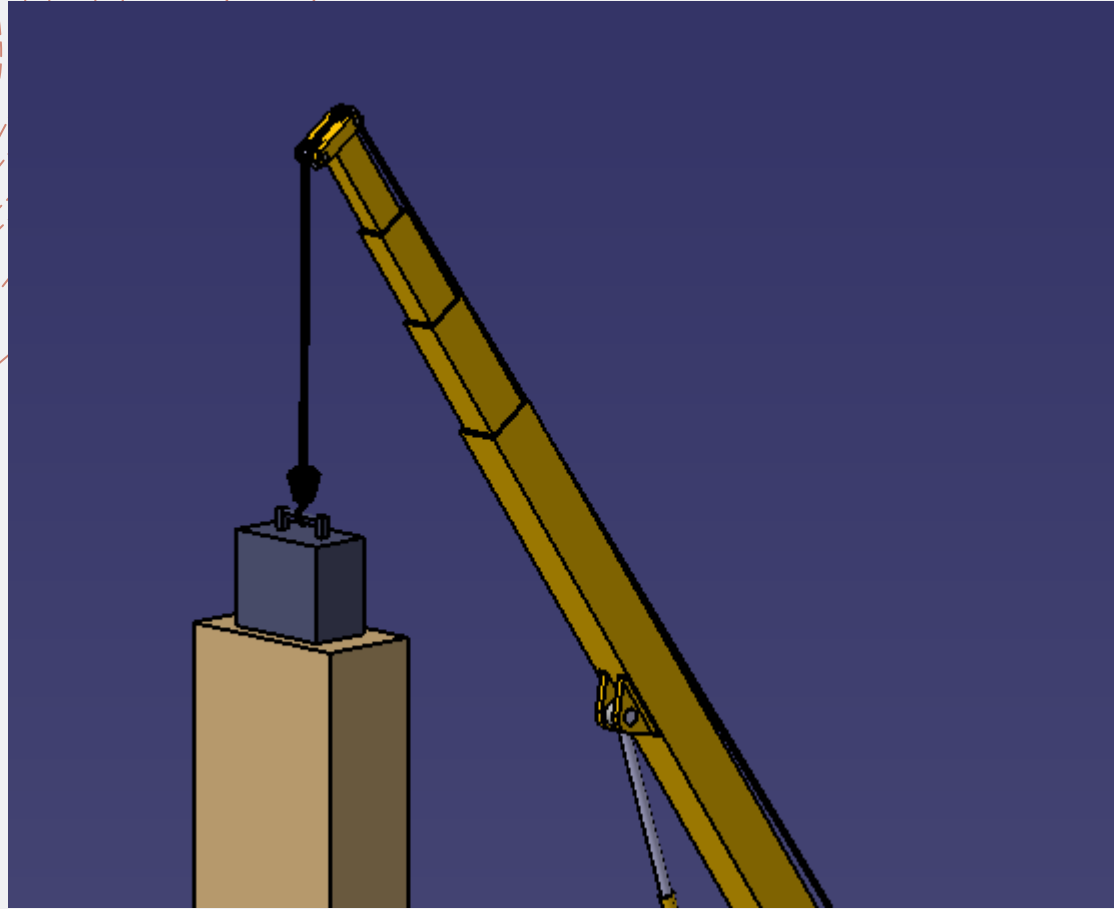
5-5) DMU kinematics-Wire move



5-5) DMU kinematics-Wire move



5-5) DMU kinematics-Wire move



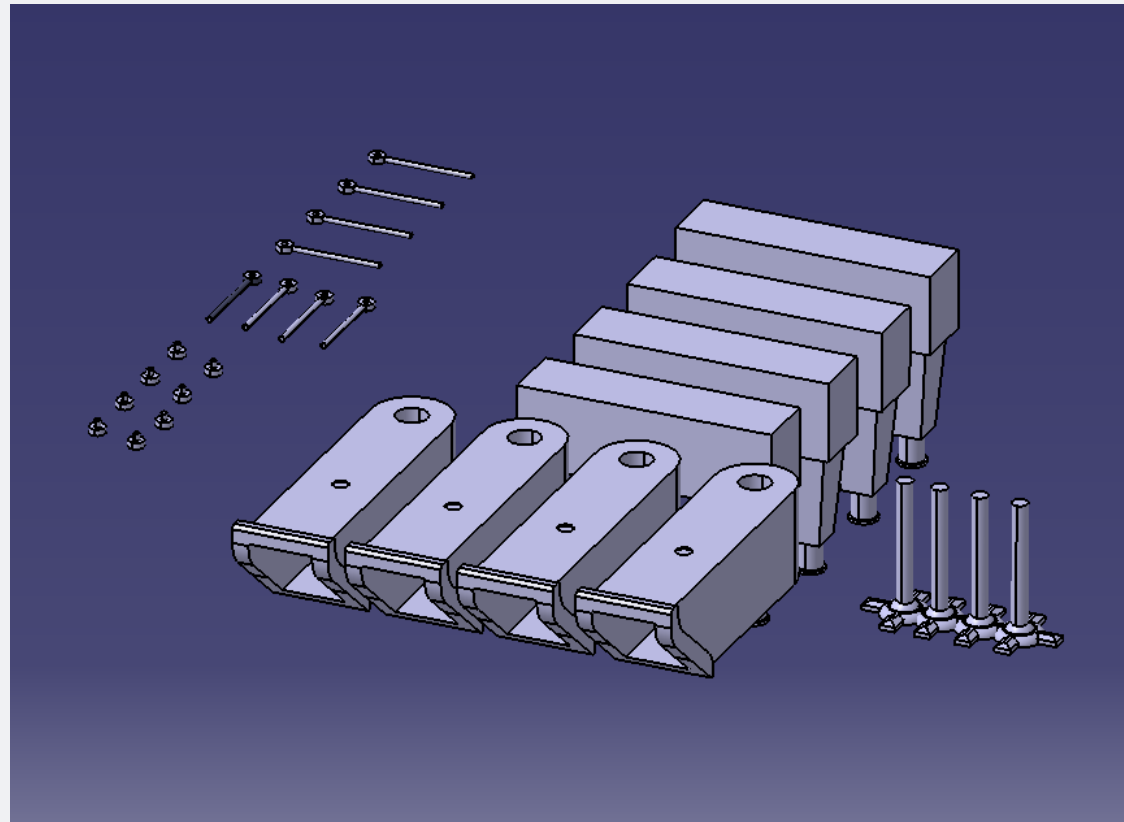
The background of the slide is a photograph of a construction site at dusk or dawn. A large, dark rectangular object is being hoisted by a crane, suspended by thick cables. The structure of the building under construction is visible, with scaffolding and steel beams. The sky is a soft gradient of purple and blue. Overlaid on the image are decorative white dashed lines that form abstract, flowing patterns. A small blue plus sign is located below the main text.

6) 어려웠던 점 & 한계

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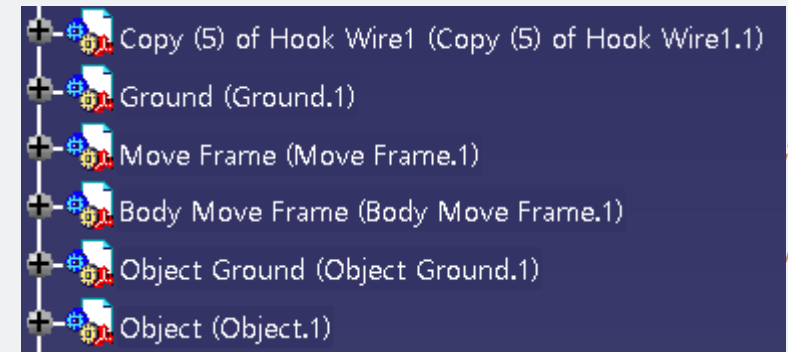
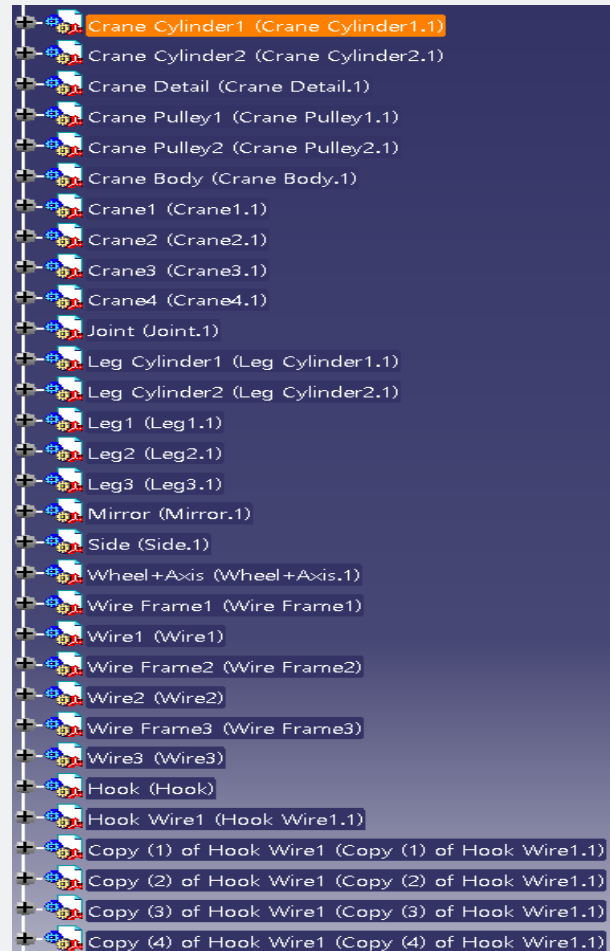
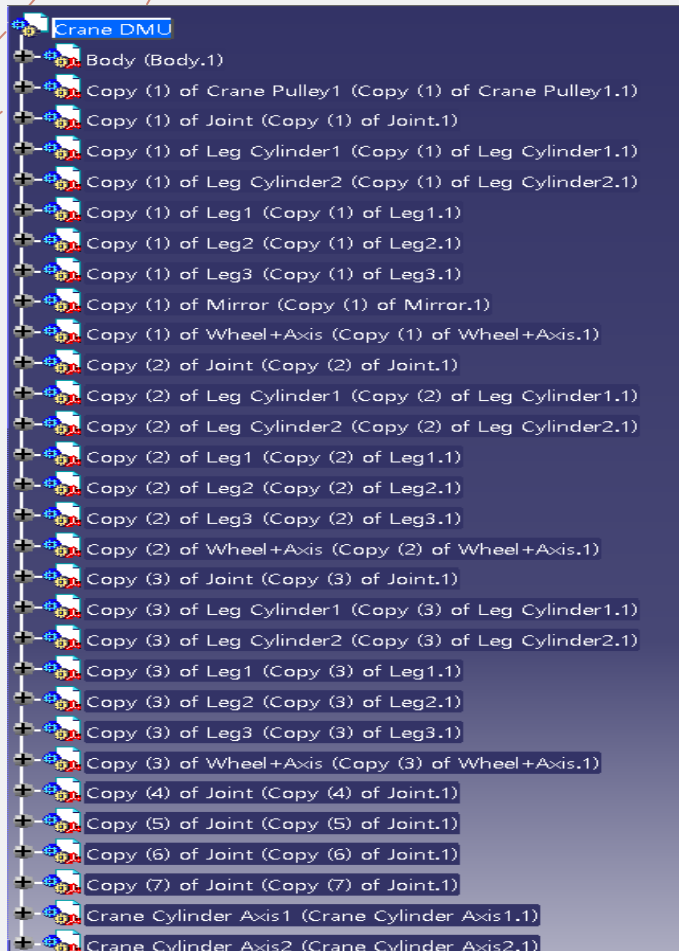
6) 어려웠던 점 & 한계

- + Leg Part들을 Assemble하는 과정에서, 복사한 Part들의 모양이 같아서 잘못 구속을 주는 경우가 생겼다.



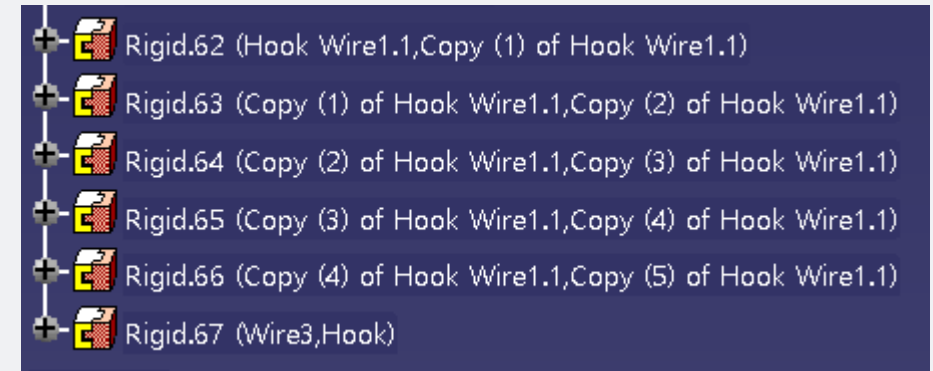
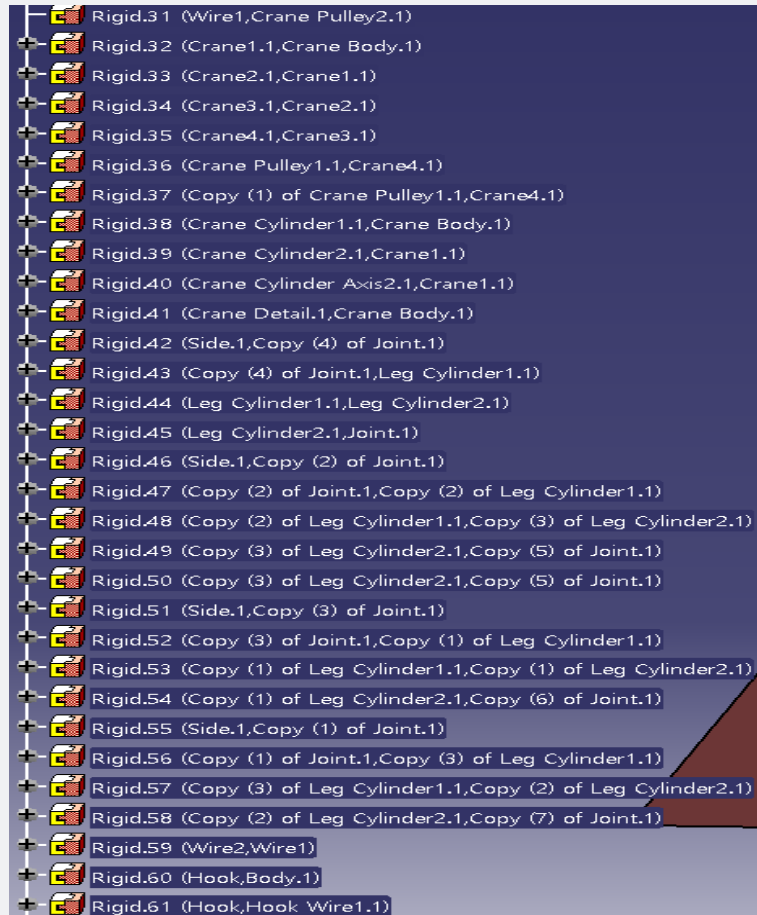
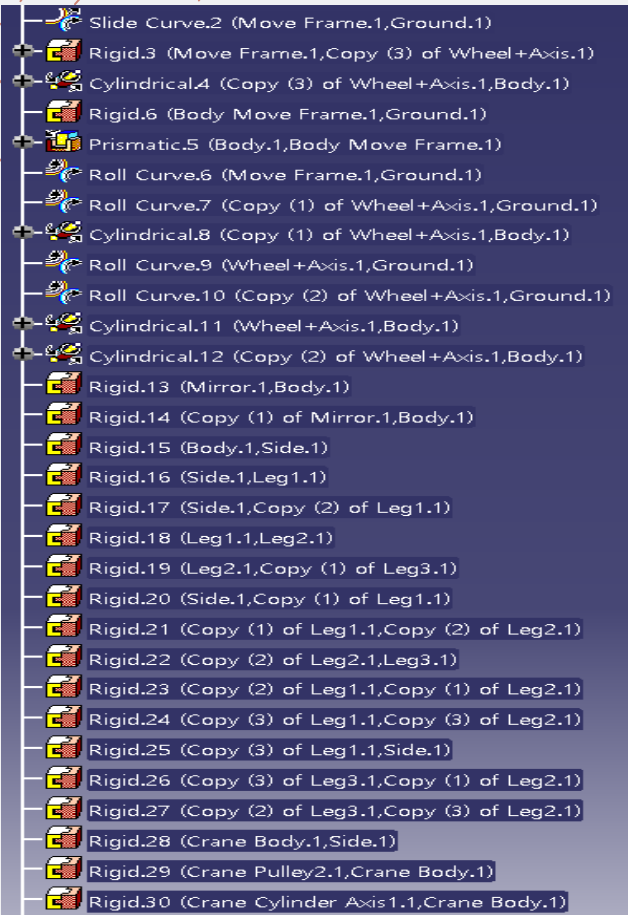
6) 어려웠던 점 & 한계

+ 여러 Part들을 만들어서 Assemble 하여 만들었다 보니 수치가 맞지 않는 등의 문제점이 있었다.



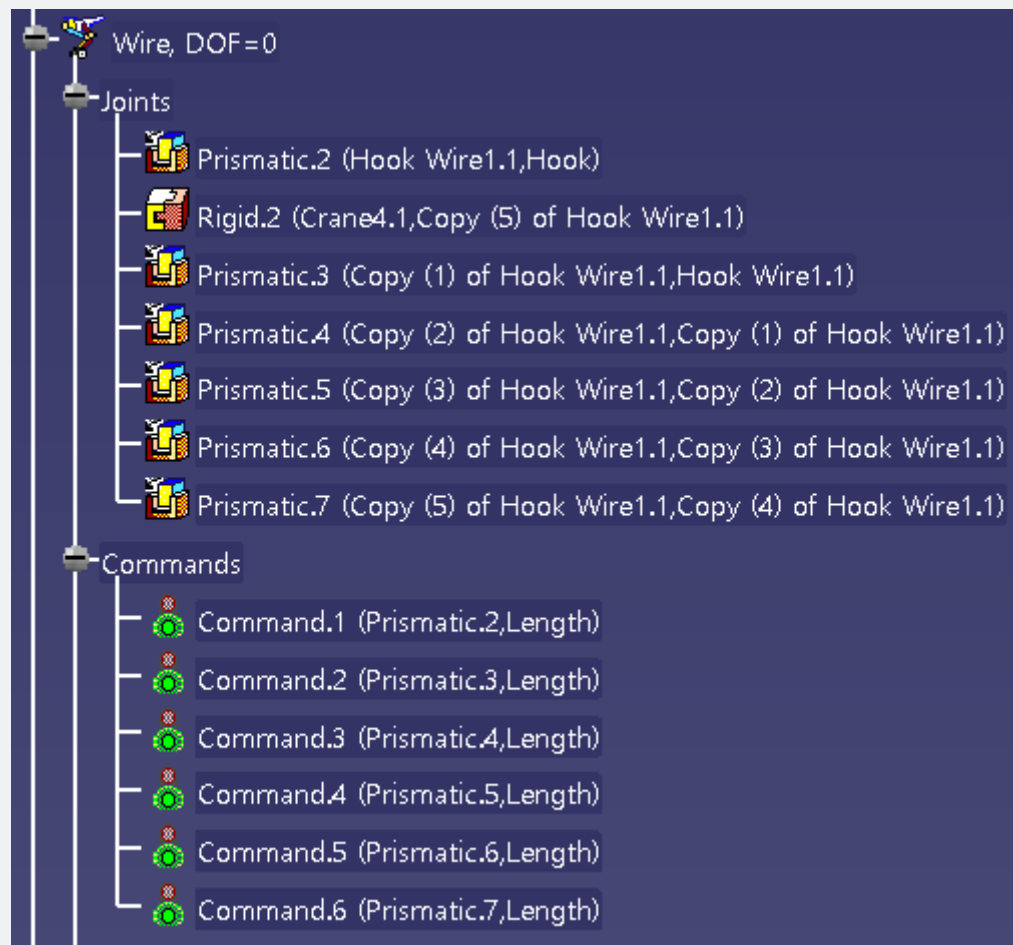
6) 어려웠던 점 & 한계

+DMU Kinematics 과정에서 많은 Part들을 Joint 하다 보니 Mechanism이 over constrained 되는 경우가 자주 발생했다.



6) 어려웠던 점 & 한계

+ Crane의 Pulley와 Wire의 운동을 구현하는데 한계가 있어, 실제와는 다른 움직임으로 구현했다.



7) Simulation 영상



7) Simulation 영상

<https://youtu.be/m3Dz5YZ3FDA>

The background of the slide is a photograph of a construction site at dusk or dawn. A large crane is lifting a heavy, dark rectangular object, possibly a piece of machinery or a large panel, from the bottom of the frame. The crane's cables and hook are visible. The structure being built is made of dark steel beams and scaffolding. The sky is a soft, hazy mix of purple and pink. In the foreground, there are some faint, white, wavy lines that look like topographical map contours. A small blue plus sign is located to the left of the main text.

감사합니다!