

Team 10: 나항만을 위하여

2019055114 Kyemhee Yoo2019023763 Won Jang

Table of Contents

- Background For Topic
- Process of Project
- Results and Simulation
- Discussions

Background for Topic / 주제선정 배경

Why Port Facility?

하나의 물체? NO 하나의 시스템? YES

역할분담

유겸희

선박, 트럭, Assembly, DMU Kinetics, 영상

장원

크레인 1, 크레인 2, Assembly, DMU Kinetics

Project Explanation / 프로젝트 설명

1. 선박을 통해 컨테이너가 들어온다



2. 선박의 컨테이너를 컨테이너 크레인으로 들어 트럭으로 이동

4. 트랜스퍼 크레인으로 컨테이너 운반

3. 트럭으로 컨테이너 운반

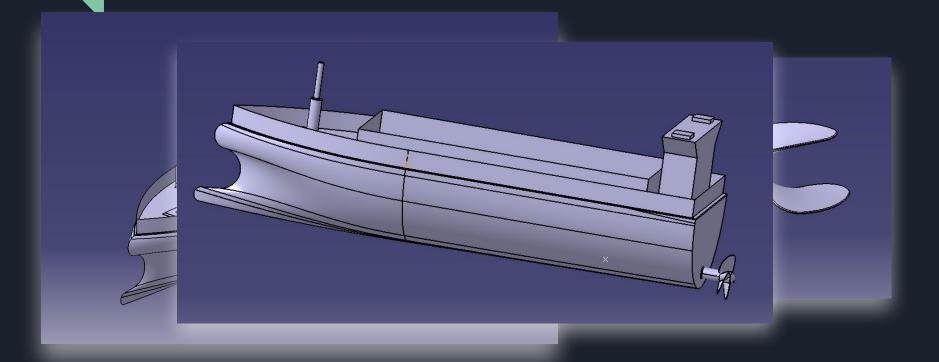
Project Explanation / 프로젝트 설명 (참고자료)

C Crane Size = 1000 * 4000 T ⓒ혀���iᠷiফ্eSizeSizeS000015000* 1200 - 기준 Ship Size = 10,000 * 3,000 Truck Size = 400 * 1500



Process of Building / 설계 과정

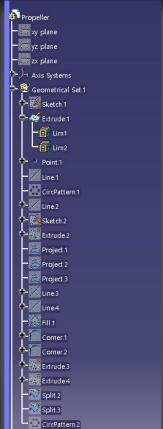
Container Ship + Propeller / 선박 + 프로펠러

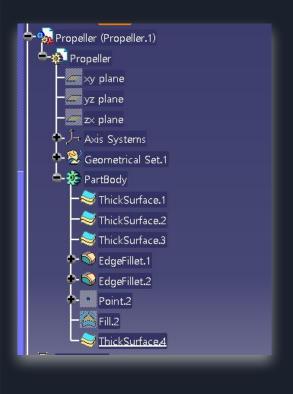


참고: https://www.youtube.com/watch?v=VKpvg1fbJHQ&t=30s

Container Ship + Propeller / 선박 + 프로펠러



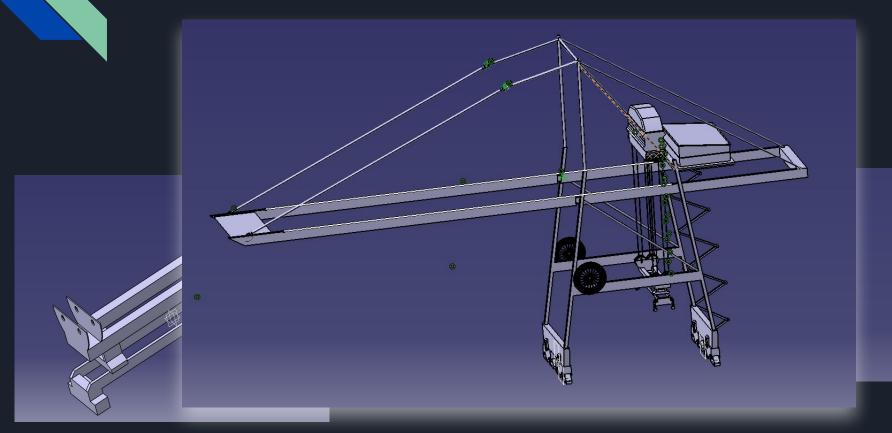


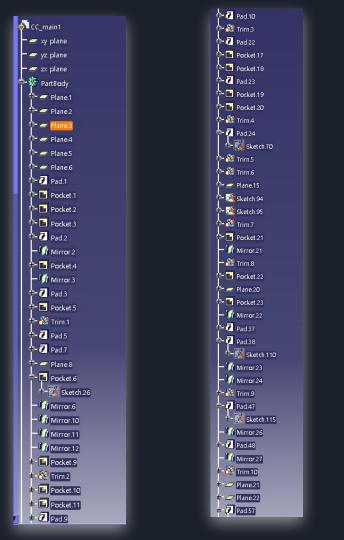


Container Crane / 컨테이너 크레인



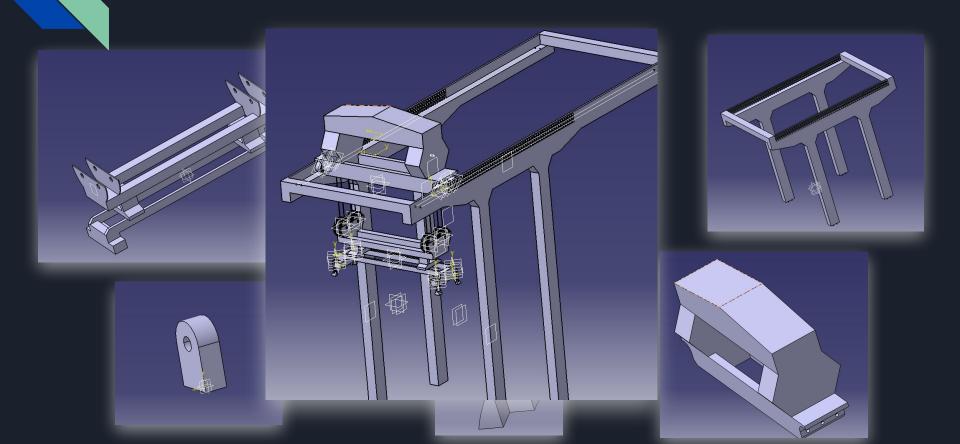
Container Crane / 컨테이너 크레인







Transfer Crane / 트랜스퍼 크레인



Trans yz plane

TC_main_part1 PartBody Pad.1 Pocket.1 Pad.2 **∳-** Pad.3 Plane.1 Plane.2 −in Mirror.2 Plane.4 Plane.5 Pocket.2 Pad.4 Pad 6 **9- 7** Pad.8 Pocket.4 Plane.7 +- 7 Pad.9 -Mirror.3 Pocket.5 ∳-**∂** Pad.10 -- Pad.11 Sketch.18 +- Pad.12

> +-7 Pad.13 +-7 Pad.14 +-7 Pad.15

+ - Plane.8

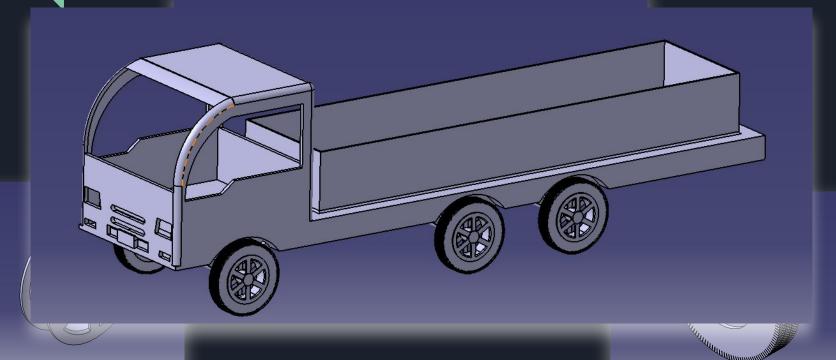
±-

── Plane.9

. 랜스퍼



Trailer Truck / 트레일러 트럭



참고(truck head): https://www.youtube.com/watch?v=5c-qMzyiBzo&t=78s

Trailer Truck / 트레일러 트럭





contradict)

Cocyana recyanata

Cocyana recyanata

Cocyanami recyanamita

Cocyanami recyanamita

Cocyanami recyanamita

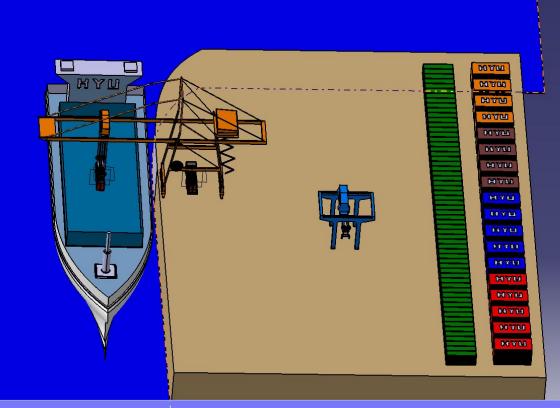
Cocyanamita

Co Chande Parris (CC) bande Parris () Chande Parris (CC Junes Parris J)
Chande Parris (CC Junes Parris J) Car hands Parts (CC hands Parts e) Vacchands Part (CC) and (Part) (Vacchands Part (CC) and (Part)) Condepart (Colorde Parts) Vacchande front reciponde front of Vacchande front reciponde inhealth Vacchande inhealth (conjunts inhealth Vicacinte interlicacinte interlic Vicacinte interlicacinte interlic Vicacinte incacintelli TCPskgami (TCPskgami)) TC_oundanc_relation (TC_oundanc_relations)) VetChande Part (TC) unde Part ()
VetChande Part (TC) unde Part ()
VetChande Part (TC) unde Part () VettChande, Parts of Chande, Parts Ju VitChande Part (TChande Part) VITChands Part (TChands Partin) Vaticial internal store into action of the series VITCW_ote_WheelsTCW_ote_Wheels Office of the street of the st Can Mheel (Con Mheel) Congress (Congressor) Copp Wheel (CC.) (Wheels) CC.so,Wheel (CC.so,Wheels) Vaccap, Wheel (CCap, Wheelig TICAD WHAT ITCAD WHAT TO SO, Wheel ITC SO, Wheelig VITC. op, Wheel oTC. op, Wheeley TICAD Wheat (TCAD Wheats) TCap Wheel (TCap Wheels) COM, W., and Part LOW, W., and Part Lip ON Winds Part LOW Winds Part Ju Ow, W., the Part HOW, W., the Part Li COM Mines Part COM Mines Partle COW, W. who Parts (OW, W. who Parts). Is OW, W., who from 1000, W., who from 31 NOW, W., stee Parts (OW, W., stee Fart) Ap NOW W. who Parts 10W W. who Parts. It NOW W. and Parts HOW W. and Parts Ju NOW, W., day Pared (OW, W., day Pared A) Valle Winds Parts (DW Winds Parts) OW, W., etc. gam (OW, W., etc. game.)) OW Winds game (OW Winds game) Voltagem (OK,W,nbs.gemil) OW, W, other game in OW, W, other game of COW, W. who gams (OW, W. who gams.) Com, W., who gams (OW, W., who gams)) OW W. who gams now W. who gams II VXXW_wire gams nXW_wire gams of VXXW, who game nOW, W, who game () OW Winds game IOW Winds game J NOW, W., who games HOW, W., who games I VXXX, w., stre. game 1000, W., stre. gamery VOW, W., stor garet (OW, W., stor garet.))
VOOW, W., stor garet (OW, W., stor garet.)) VOOR WINDS SHITT COM WINDS SANTAL WOW, W., stee gunt 10W, W., stee guntles Virgater (fregater.)

Villed, often (Tind, often)

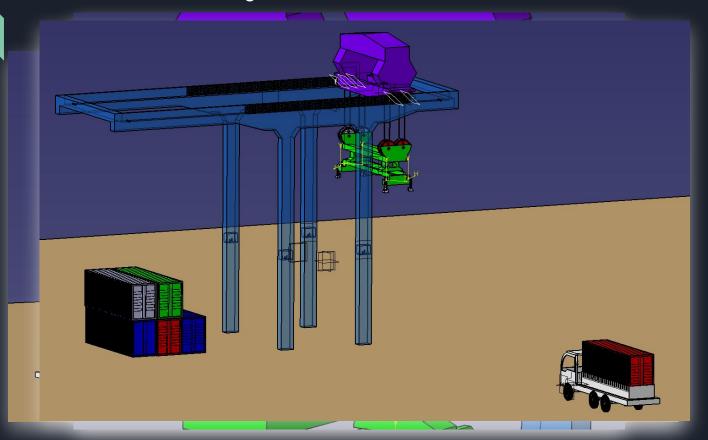
Villed, the (Tind, the 7)

Villed, the first (Tind, the first (I))





Assembled System / 전체 시스템



Results and Simulation / 결과 및 시뮬레이션

DMU Kinematics



```
♀-시뮬레이션
  ⊕-‡∰ Simulation.1
  ⊕-‡∰ Simulation.2
  💠 🗱 Simulation.3 long
  • Simulation.4 after
  Simulation.5 before
  Simulation.6 short
  ♦-‡ Simulation.7 go
  ⊕-‡∰ Simulation.8 back
  ⊕-歳
<!-> 시뮬레이션.1
  ♥-★️ 시뮬레이션.2
  ♥-‡₩ 시뮬레이션.3
  ❤️★※시뮬레이션.4
  ♣-☆
시뮬레이션.5
  ♣ ★ 시뮬레이션.6
  ❤️-‡️ॐ 시뮬레이션.7
  ♥-歳፟፟ 시뮬레이션.8
  ⊕-‡️※ 시뮬레이션.9
```

DMU Kinematics

```
Applications
    - Mechanisms
       Mechanism.1_truck_tc, DOF=0
          Mechanism.2_UP, DOF=0
          Mechanism.3_WIRE, DOF=0
          Mechanism.4_CATCH, DOF=0
          Copy of Mechanism.1_truck_tc, DOF=0
          Copy of Mechanism.3 WIRE, DOF=0
    Copy of Mechanism.2_UP, DOF=0
    Simulation
    1st.Simulation.1
       6th.Simulation.2 CATCH after
    4th.Simulation.3 catch before
    ♦ @ 2nd.Simulation.3 UP
    * 3th.Simulation.2 BEFORE GO
      5th.Simulation.4 DOWN
    * 7th.Simulation.1 with up
      8th.Simulation.3 with go
    🛊 🗯 9th Simulation 3 with down
    🔹 🕮 10th. Simulation 4 catch final
    📤 🕮 11th. Simulation.5 up final
```

```
Sequences
    Sequence.1
           1st.Simulation.1
        2nd.Simulation.3 UP
        3th.Simulation.2 BEFORE GO
        4th.Simulation.3 catch before
        5th.Simulation.4 DOWN
        6th.Simulation.2 CATCH after
        7th.Simulation.1 with up
        8th.Simulation.3 with go
        9th.Simulation.3 with down
        10th. Simulation.4 catch final
        11th. Simulation.5 up final
```

Simulation

Youtube Link



Discussions / 고찰

Difficulties?

01	Part Design	 복잡한 형상을 구현하기 위해 Reference 많이 필요 Crane Outsourcing X
02	Generative Shape Design	 선박 Outsourcing X -> 제작에 대한 학습 필요 선박 제작시 원하는 형태의 surface 제작 어려움 (여러번 반복제작)
03	Assembly	 각자 맡은 역할을 Assembly할 시 규격이 안맞는 경우 여러개의 컨테이너와 크레인 구축 - 사이즈가 너무 큼
04	Simulation / Kinematics / Over All	크레인 파트에서 현실 도르래를 구현하지 못함 Sequence에서 연결지점에서, 각 파트별 시뮬레이션에 겹치는 부분이 있었다 프로젝트 파일이 너무 커서 Kinematics 구현하는데 시간이 매우 오래 걸림(Sequence)를 다 완성하지 못함 기술적 한계(컴퓨터) (영상 중 카메라 앵글 변화)

Possible Improvements?

01	Part Design	• 각 파트 별 디테일 추가 예) 트럭의 문고리, 크레인 난간
02	Generative Shape Design	● Truck 제작시 Part Design만이 아닌 GSD도 같이 사용한다
03	DMU Kinematics	 선박의 프로펠러 및 이동경로를 제외한 다른 기능 추가 예)닻을 내린다/안테나 회전
04	Simulation / Over All	 사이즈를 작게 만들어 시뮬레이션 효율 증가 크레인 및 트럭을 더 만들어 디자인 추가 - 역시 사이즈를 줄여야 가능

감사합니다

A&P