

D5200-240 Top-slewing Tower Crane

Application in Modular Construction

 ZOOMLION

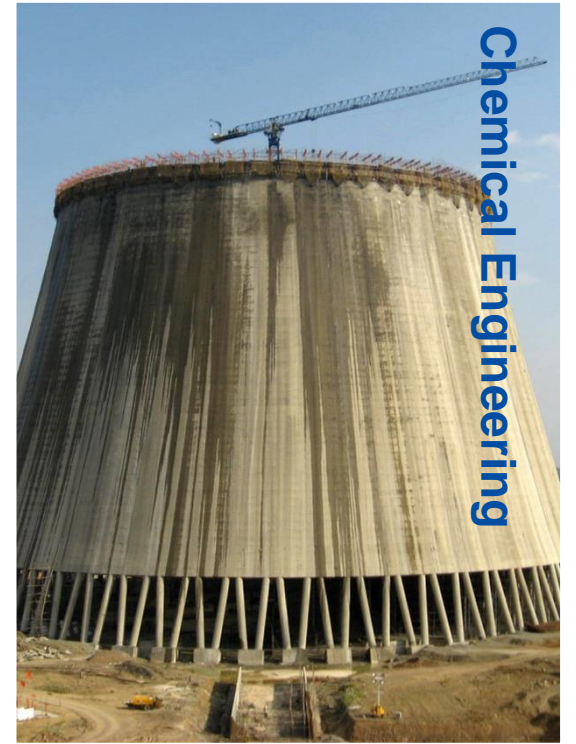
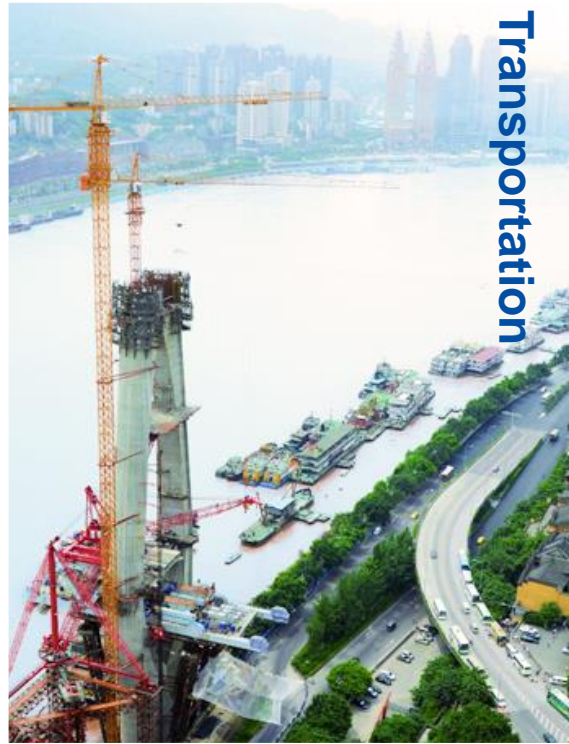




Chapter 1

Project Background

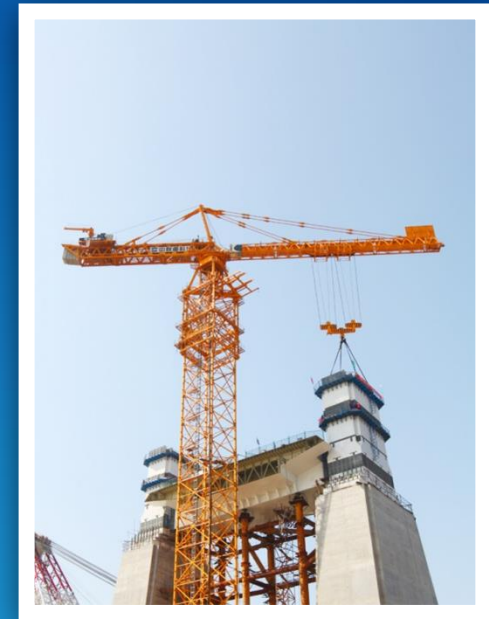
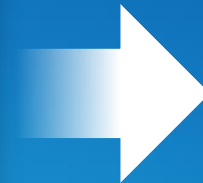
Increasing mega construction projects



Inevitable Trend: Modular Construction



Prefabricated Modular Construction



On-site Installation

Ma'anshan Bridge Project in China: "Double - 200" Lifting Capacity required



Working Radius
23.7m

Lifting Weight Lifting Height
220t 200m

Load Moment
52000kNm



The Key Technical Challenge to Develop Ultra-large Tower Crane: **Double 200**



A tall, slender tower under construction, illuminated with white lights against a dark blue background. A large tower crane is positioned next to the structure, also illuminated. The tower has a series of horizontal sections, possibly floors or platforms, and a complex lattice structure. The crane has a long jib extending to the right.

Chapter 2

Breakthrough technologies

Key Point

Heavy duty loading & Ultra-high lifting

Hoisting Winch

**Structural
Technology**

**Assembly
&
Disassembly**



Breakthrough 1 :

“Double 200” hoisting winch and related safety control

Rope Capacity **2800m**

“Double 200” Hoisting Winch

Lifting Weight Lifting Height

240t 210m





Breakthrough 1 :

"Double 200" hoisting winch and related safety control

Dual
Hoisting Winches

Dual
Hoisting Ropes

Dual
Hooks



Uniform loading

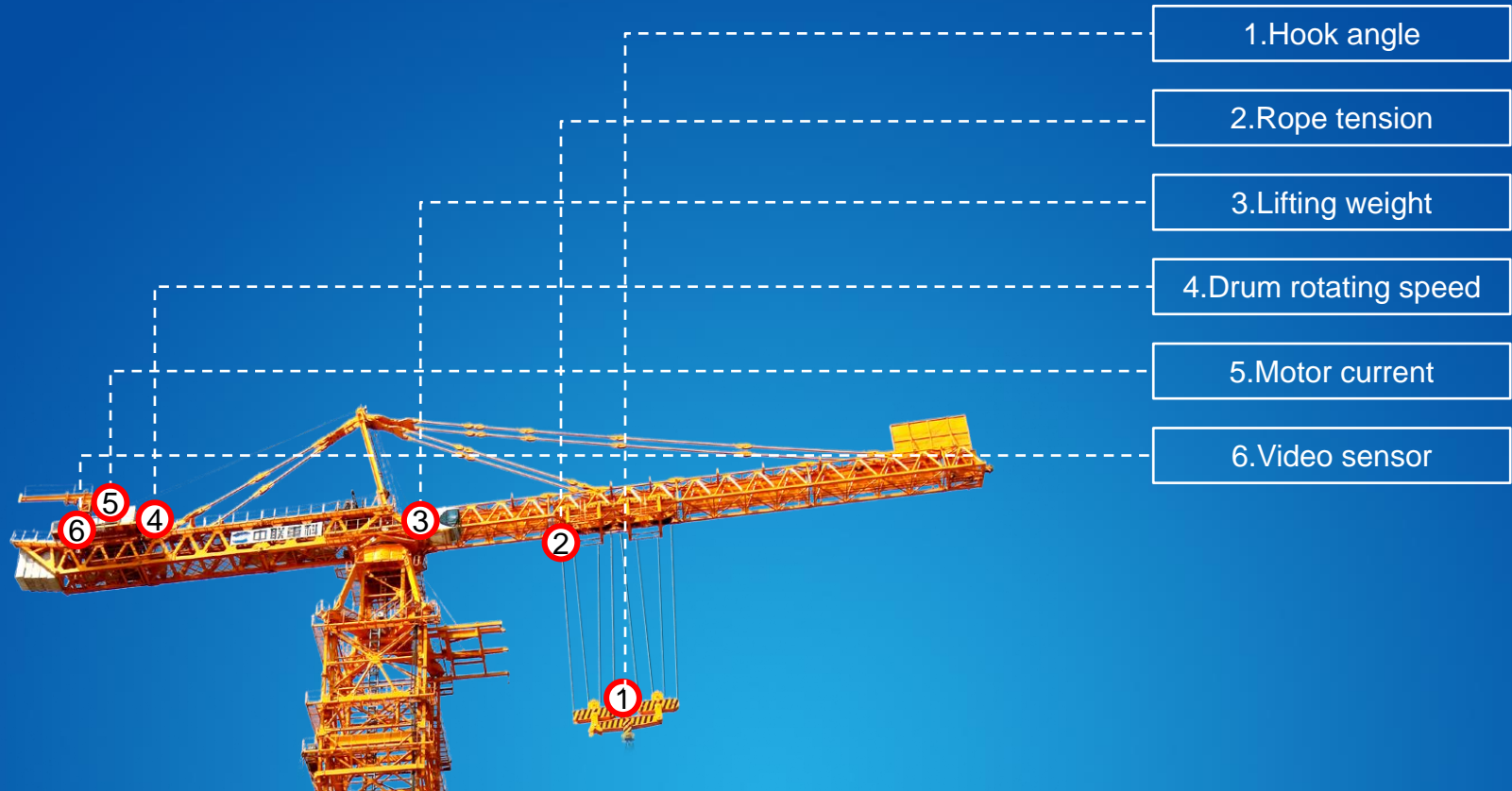
Synchronous lifting

Safety Control



Breakthrough 1 :

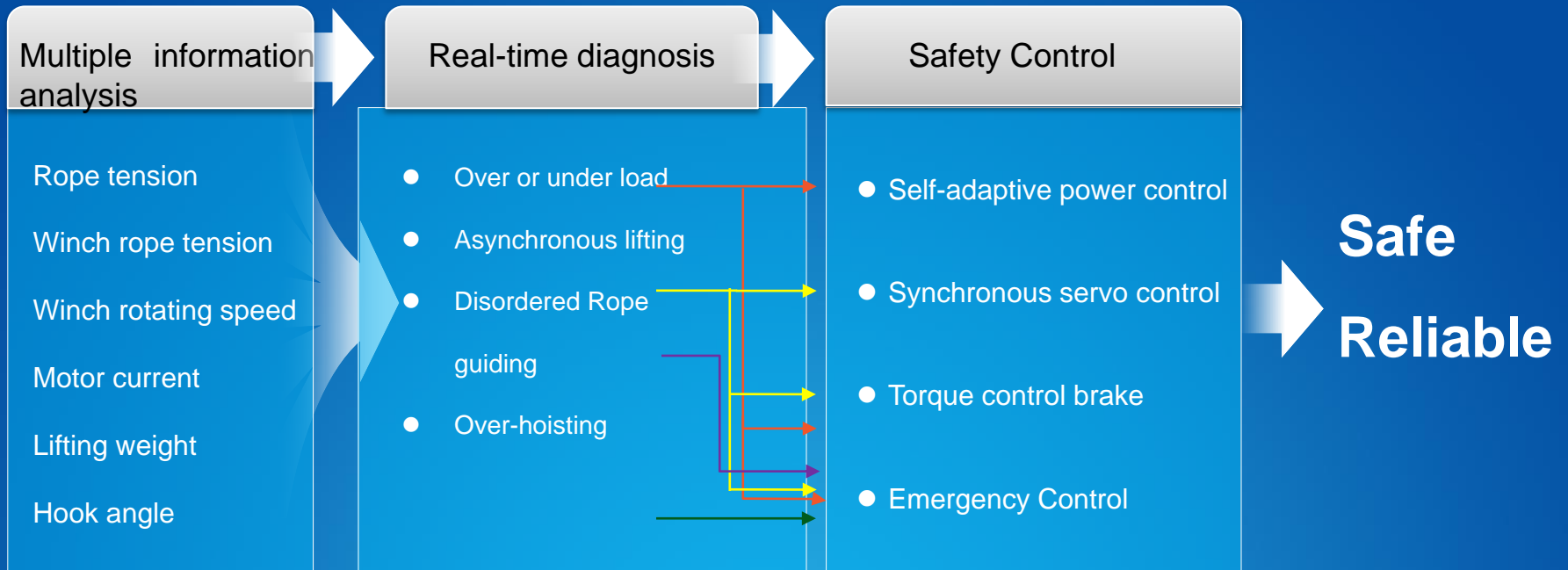
"Double 200" hoisting winch and related safety control





Breakthrough 1 :

"Double 200" hoisting winch and related safety control



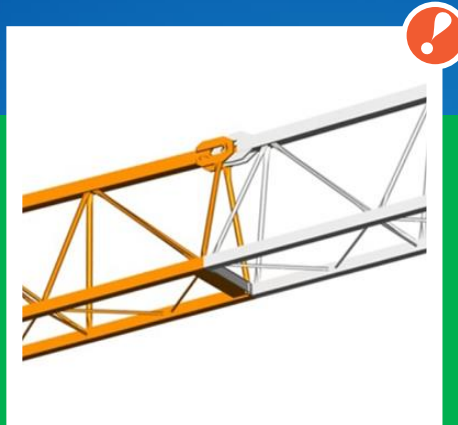


Breakthrough 2 :

Structure both for heavy load and transportation



Traditional slewing assembly



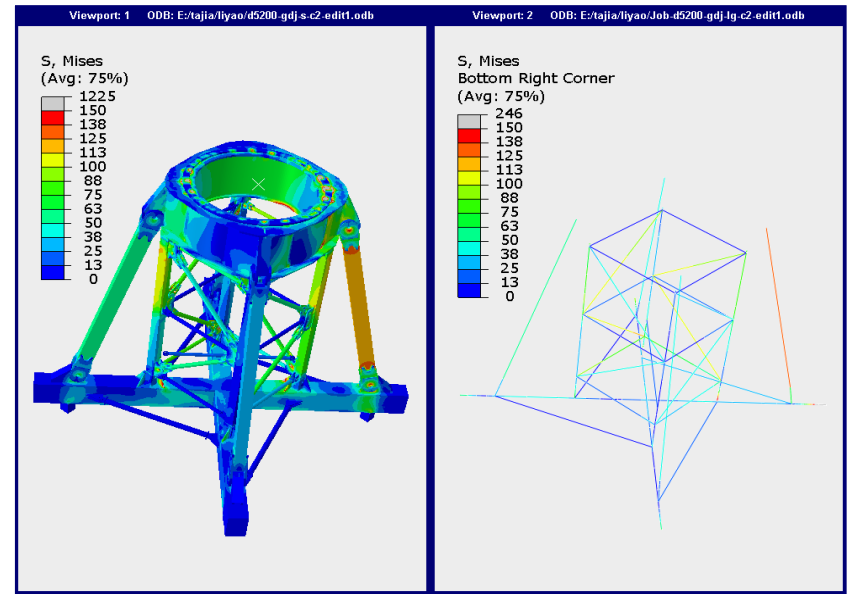
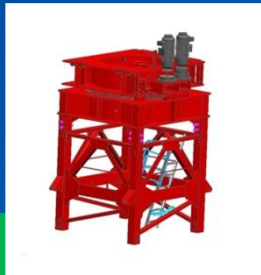
Traditional Jib section



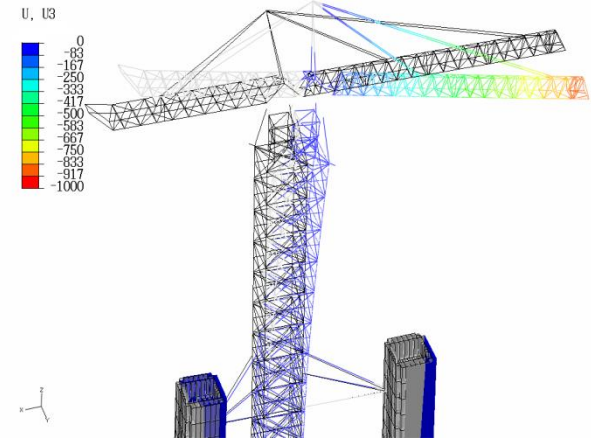
Unable to meet the demands on transportation

Solution1 :

lattice structure with radial shape for the slewing assembly



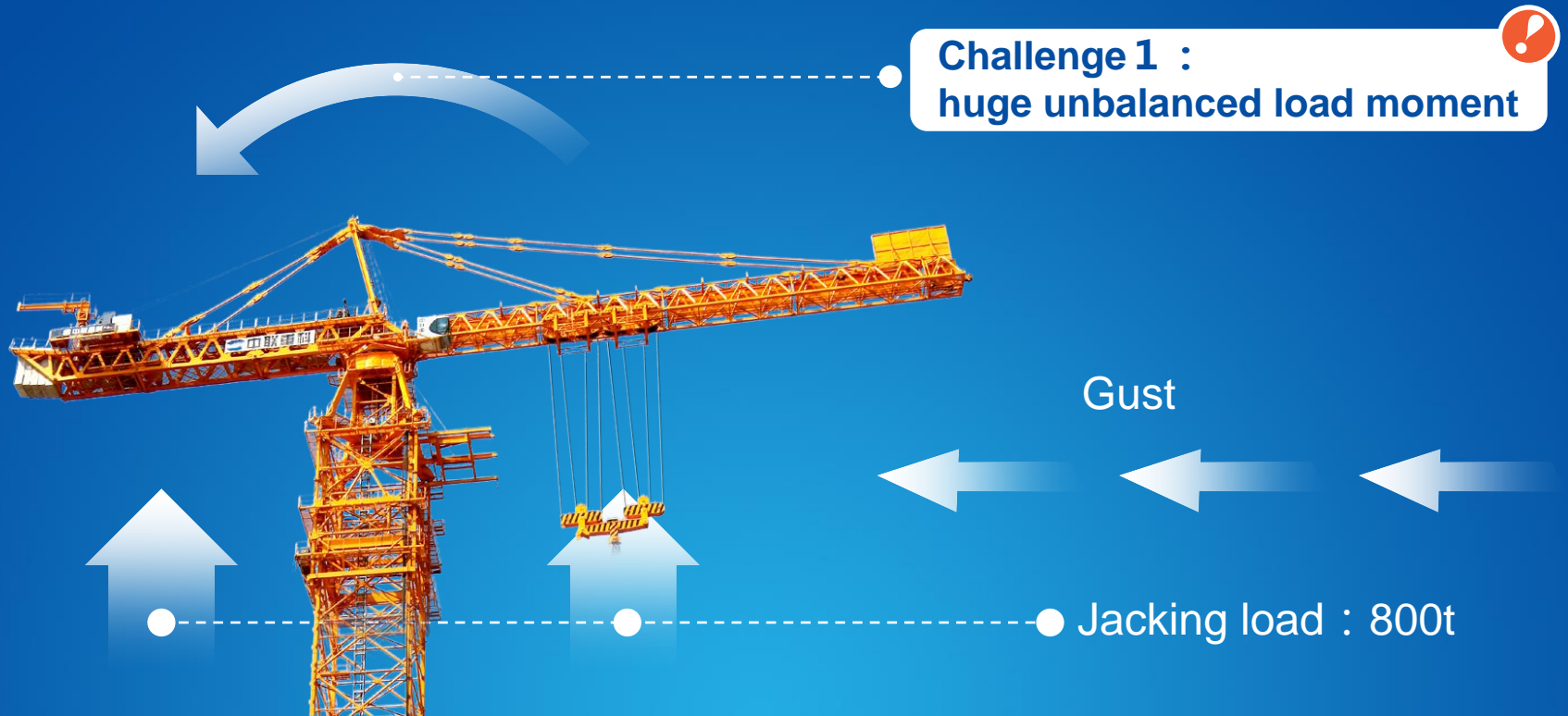
Solution 2 : trapezoid cross section for the crane jibs





Breakthrough 3 :

Ultra-large tower crane assembly & disassembly



Challenge 2 : Manual hammering no more works



200m

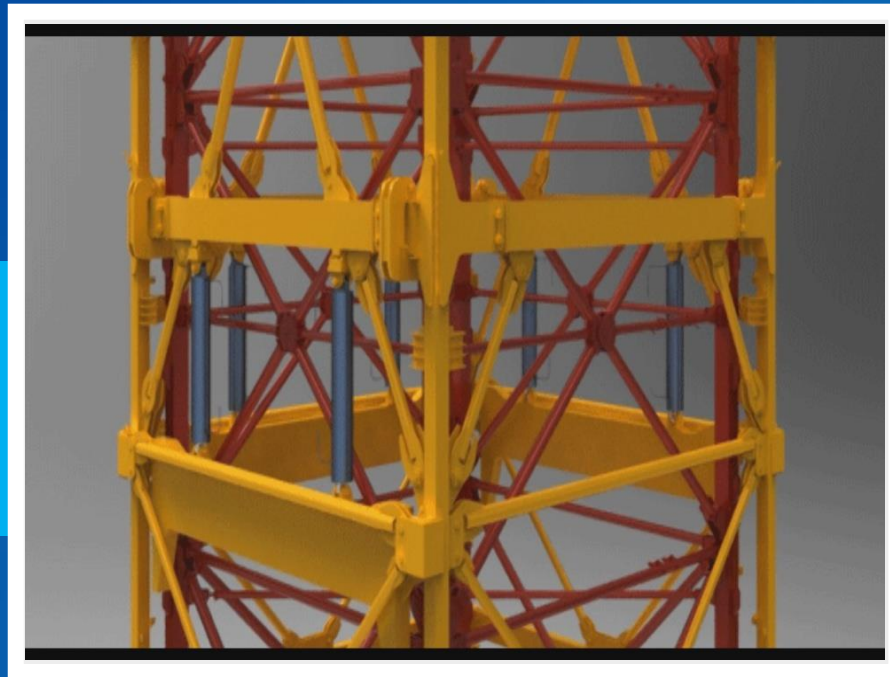


Installation Height
200m

Pin Weight
20kg

Solution 1 :

Jacking with six synchronous cylinders on three sides



Uniform load
Synchronized jacking
Stable climbing

Jacking capacity over 800t

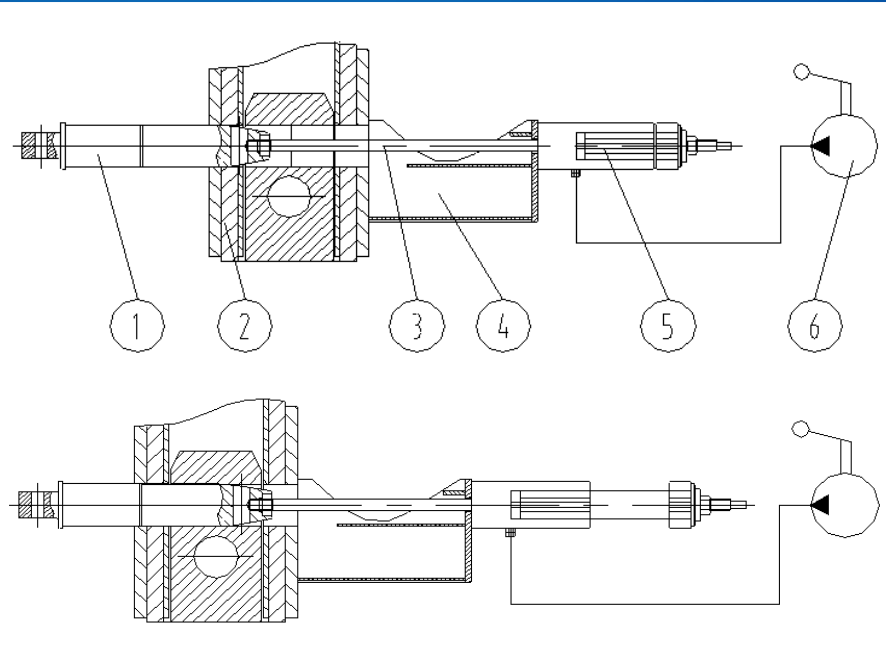
Solution 2 : automatically trolley moving for self-balance while jacking



Wind speed
20m/s

Solution 3 : Portable electro-hydraulic device for pins assembling

Light weight, suitable for aerial working



Technical specification (1)

Max. Load moment	53160 kNm
Max. Load capacity	240 t

Technical specification (2)

Max. Lifting height	12 falls	210 m
	8 falls	310 m

Technical specification (3)

Max. lifting speed (240t)	7.5 m/min
Min. sustained lifting speed	0.35 m/min
Slewing speed	0.4 r/min

Technical specification (4)

Max. Jacking weight	1050 t
Jacking speed	0.28 m/min
Total power	465 kW

Technical specification (5)

**Allowed wind speed
in jacking process**

20 m/s

**Allowed wind speed
out of service**

51 m/s

40m jib lifting performance


Radius (m)	9.0 ~ 22.15	40
4 falls (t)	80	80
6 falls (t)	120	120
8 falls (t)	160	112.8
12 falls (t)	240	111.0

50m jib lifting performance

Radius (m)	9.0 ~ 21.01	50
4 falls (t)	80	80
6 falls (t)	120	89.4
8 falls (t)	160	76.8
12 falls (t)	240	75

60m jib lifting performance

Radius (m)	9.0 ~ 19.5	60
4 falls (t)	80	65.2
6 falls (t)	120	64.2
8 falls (t)	160	51.7
12 falls (t)	240	50

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Chapter 3

Construction Case

D5200 working on Ma'anshan Bridge construction site (Video)





The last lift on Ma'anshan bridge pier
240t load up to 210m high

The last lift on Ying Wuzhou bridge pier

D5200 enables these two bridges saved construction period and project cost

Ma'anshan Bridge

Save (€) : **approx.147 million**

Yingwuzhou Bridge

Save (€) : **approx.90 million**



THANKS

 **ZOOMLION**