Vestas

Wind. It means the world to us.™



New and bigger turbines

Joris Kofman (JOKOF)

VPS, Product Functions, Transport, Construction & Maintenance

New turbines

A platform for rapid development of new turbines

EnVentus Platform, currently announced turbines

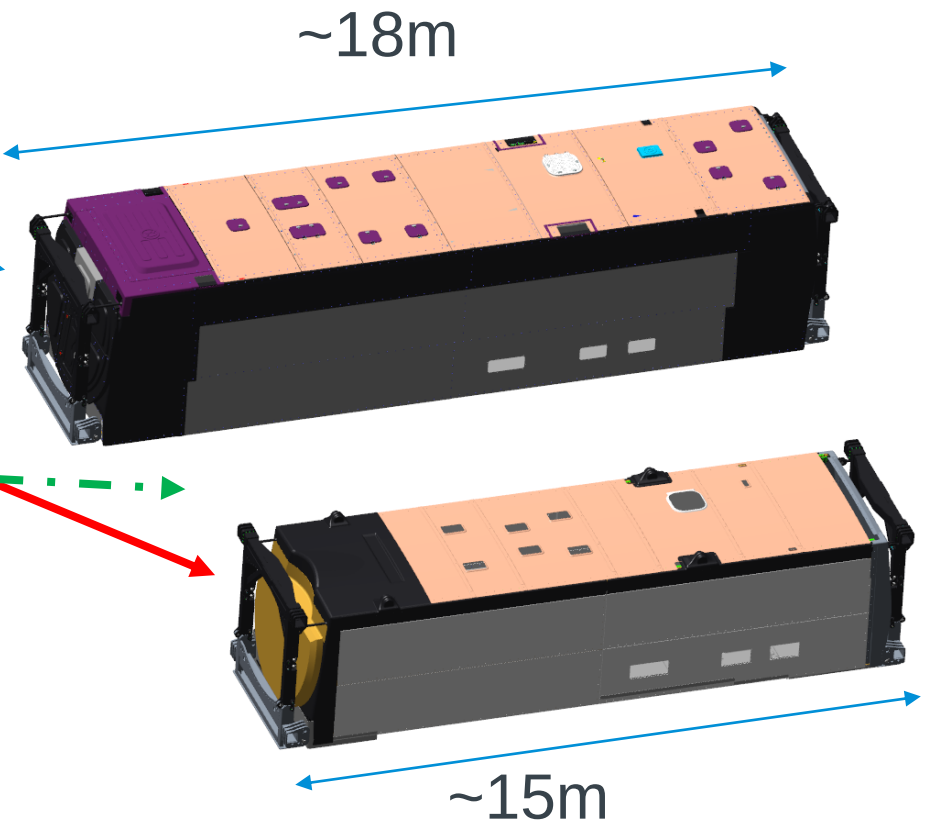
- EnVentus V150 5,6MW
- EnVentus V162 5,6MW
- EnVentus V138 3,0MW

- EnVentus Vxxx Y,YMW

Big variant

Small variant

Medium variant

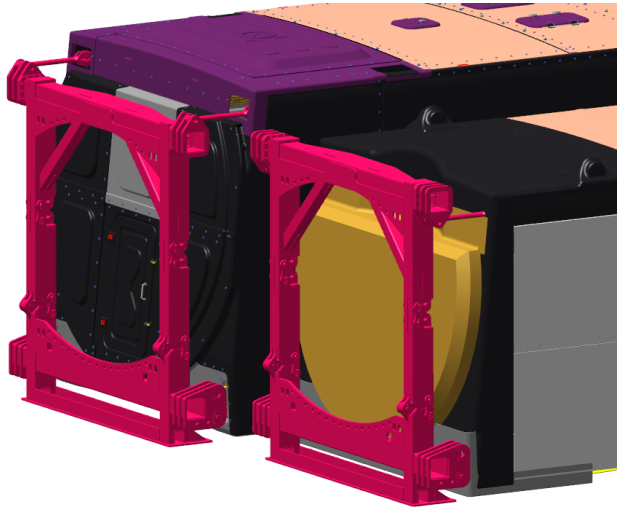


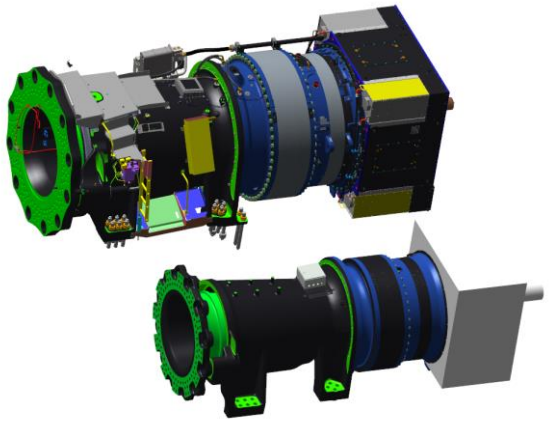
Classification: Restricted

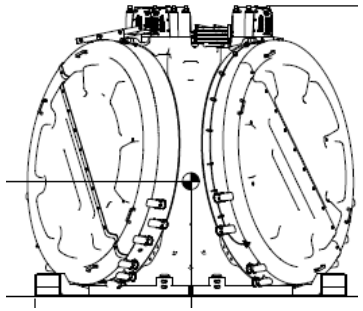
Platform; what is the idea

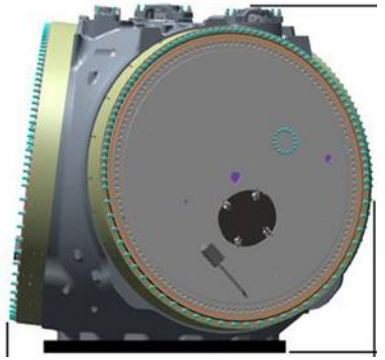
Commonality
Scalability
Reusability
Other *ilities

Means: one problem one solution









Classification: Restricted

Nacelle

2 crane lifting: With tower J hooks

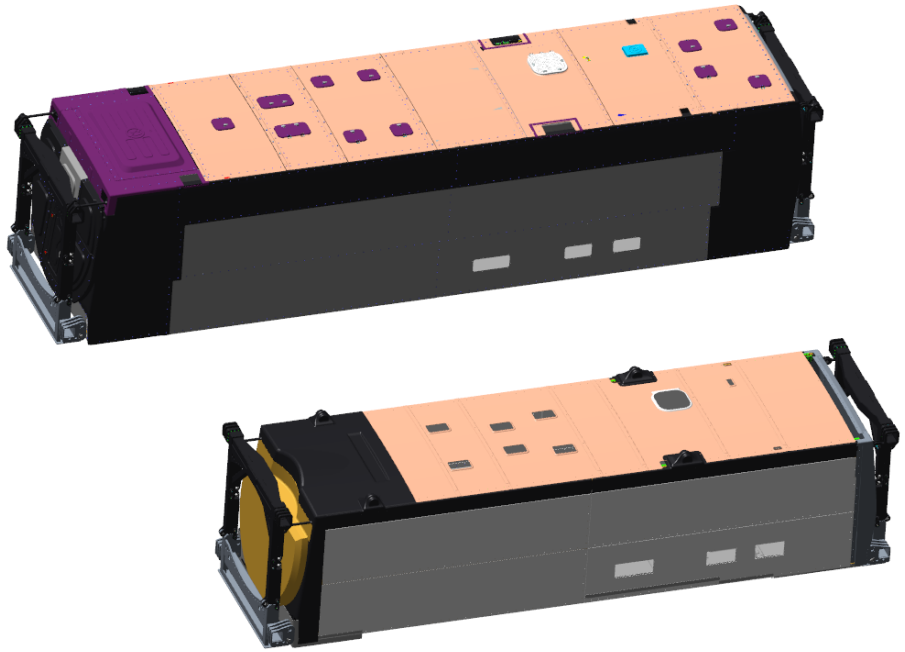
1 crane lifting: With spreader and J hooks

Large foot plate on transport frame for load spreading

Lashing points both high and low for sliding and tipping securing

Twist lock interfaces in bottom of foot plate for sliding securing

No need to touch the nacelle during handling or transport operations



Component	Variant	Length [m]	Width [m]	Height [m]	Weight [T]
Nacelle	Big	18	4,2	4,3	~90
	Small	15	4	3,8	?

Classification: Restricted

Hub

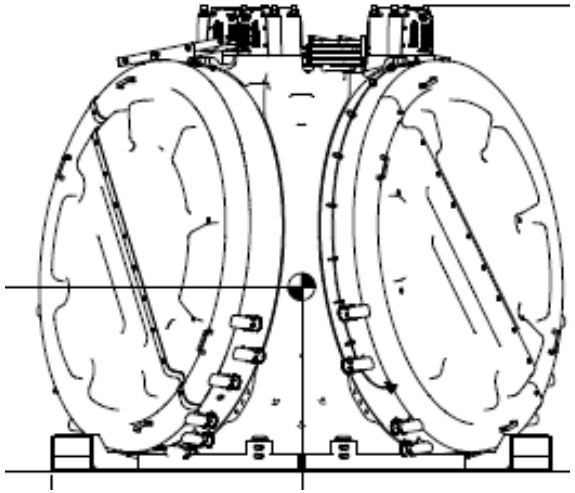
2 crane lifting: Vestas specific sling set for lifting and spreader

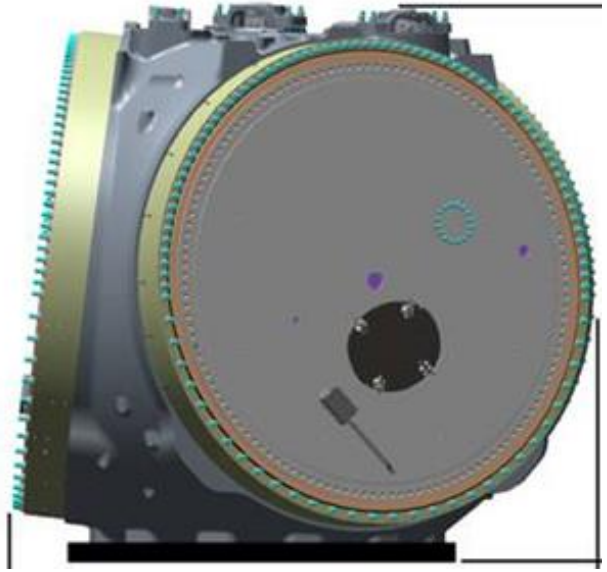
1 crane lifting: Vestas specific sling set

Low profile transport frame due to transport limits onshore

Lashing points for sliding securing on transport frame

Twist lock pockets in transport frame





Component	Variant	Length [m]	Width [m]	Height [m]	Weight [T]
Hub	Big	4,8	4,3	4,1	~60
	Small	3,8	3,6	3,5	~40

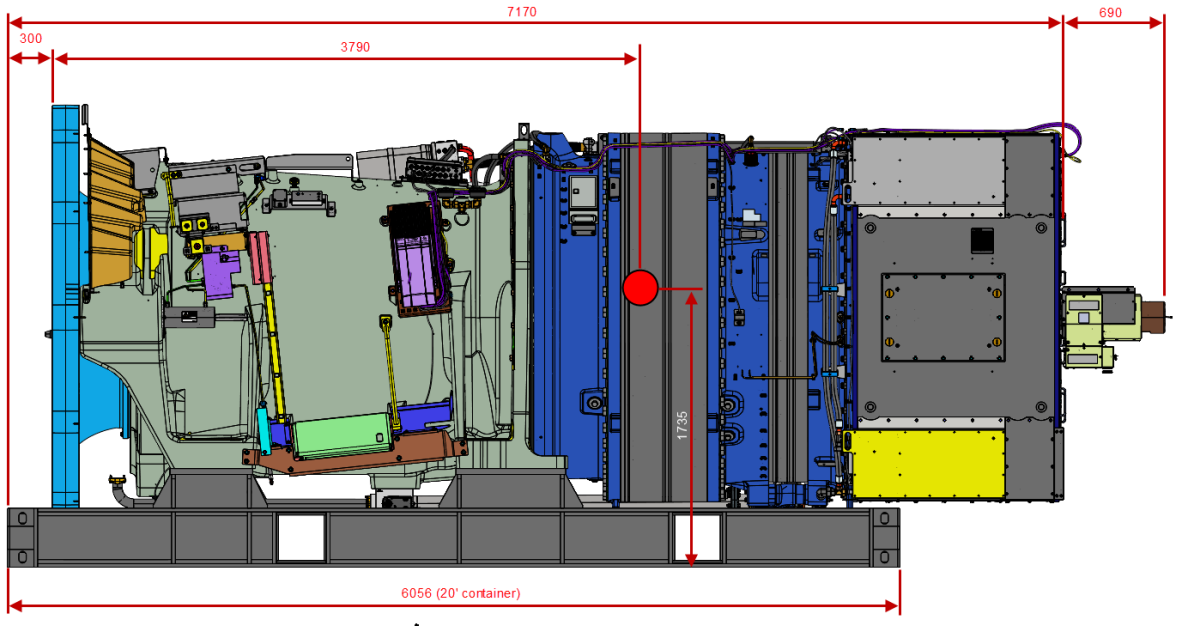
Classification: Restricted

Powertrain

1 crane lift: with slings and short spreader

2 crane lift: with slings and long spreader

20 ft base to fit container interfaces for securing



Component	Variant	Length [m]	Width [m]	Height [m]	Weight [T]
Powertrain	Big	8	2,5	3	~90
	Small	7	2,1	2,5	~70

Classification: Restricted

Blades

V150 ABF system root diameter 2,5 m

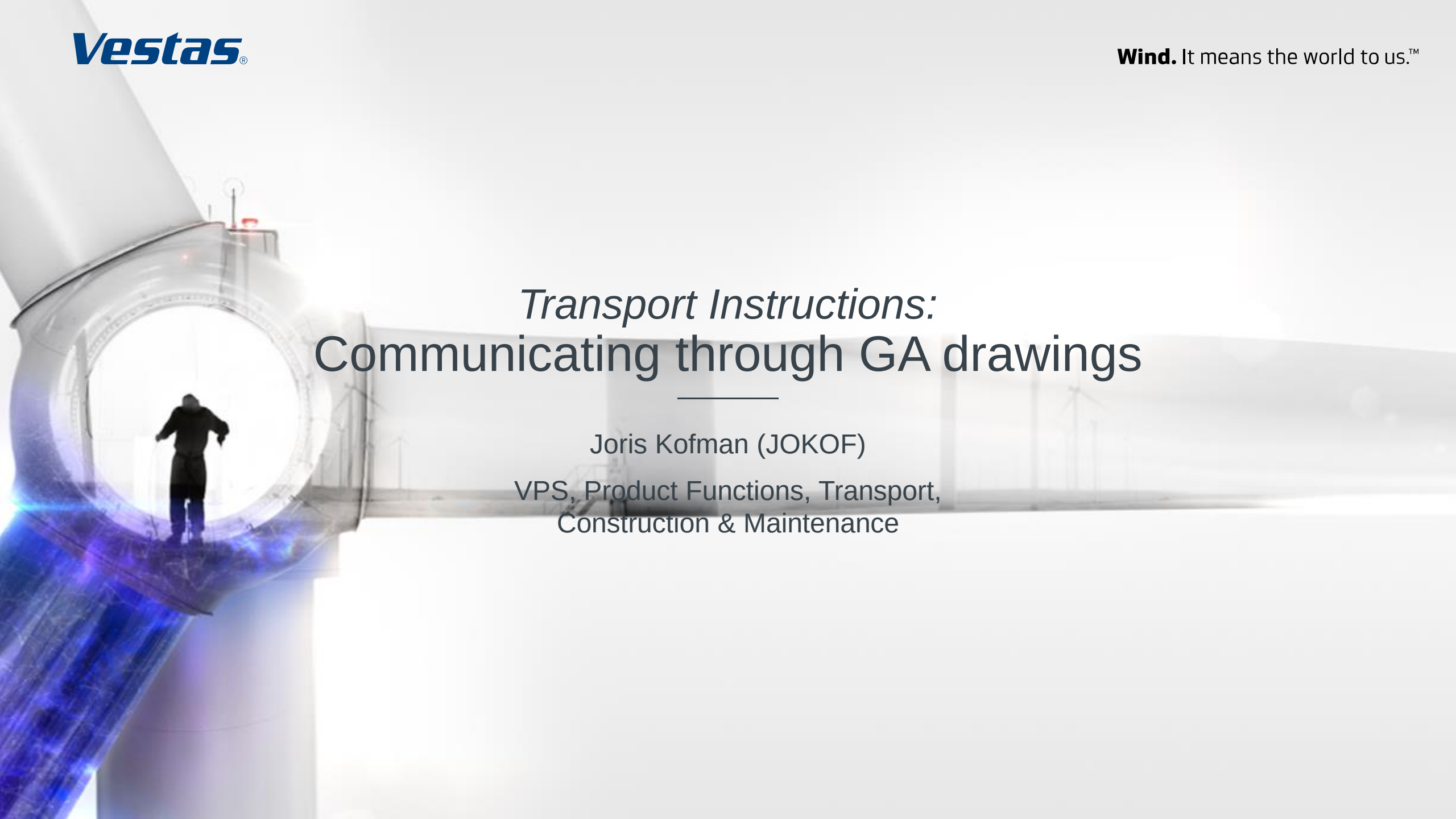
V162 BBF system root diameter 3,2 m



Classification: Restricted

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Transport Instructions:

Communicating through GA drawings

Joris Kofman (JOKOF)

VPS, Product Functions, Transport,
Construction & Maintenance



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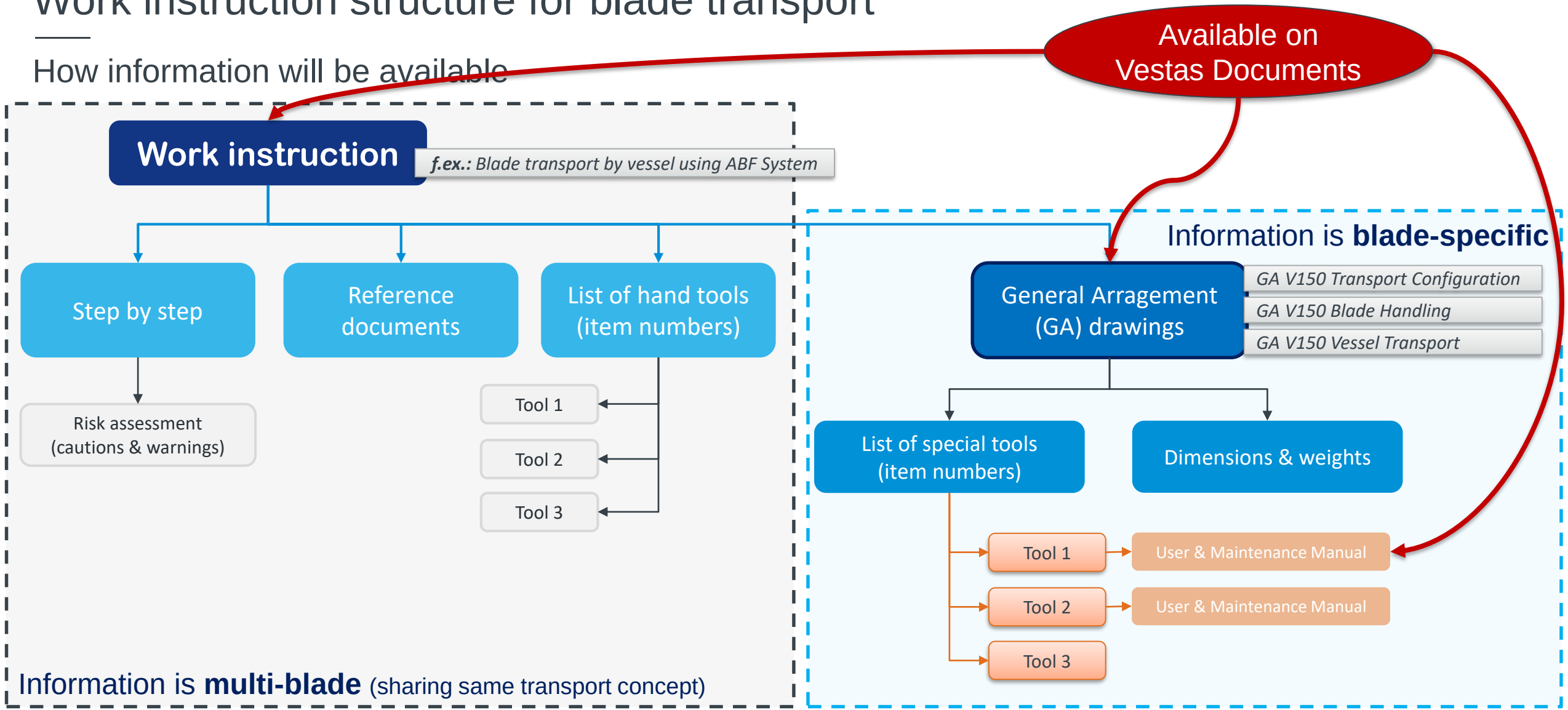
Structure of transport work instruction for blades 3

How to use documents 4

General Arrangement (GA) drawings 5

Work instruction structure for blade transport

How information will be available



Classification: Restricted

Documentation for vessel transport

How do Vestas expect suppliers to use information

Objective: *enable vessel suppliers to be self-sufficient to perform their planning, engineering and operation.*

Intake Stow plan

- Work instruction
- GA V150 Vessel transport

Stability Lashing

- GA V150 Vessel transport
- GA V150 Transport configuration

Operation

- Work instruction
- GA V150 Vessel transport
- GA V150 Blade handling



Classification: Restricted

General Arrangement Drawings

1) Transport configuration
2) Blade handling – 2 pages
3) Vessel transport

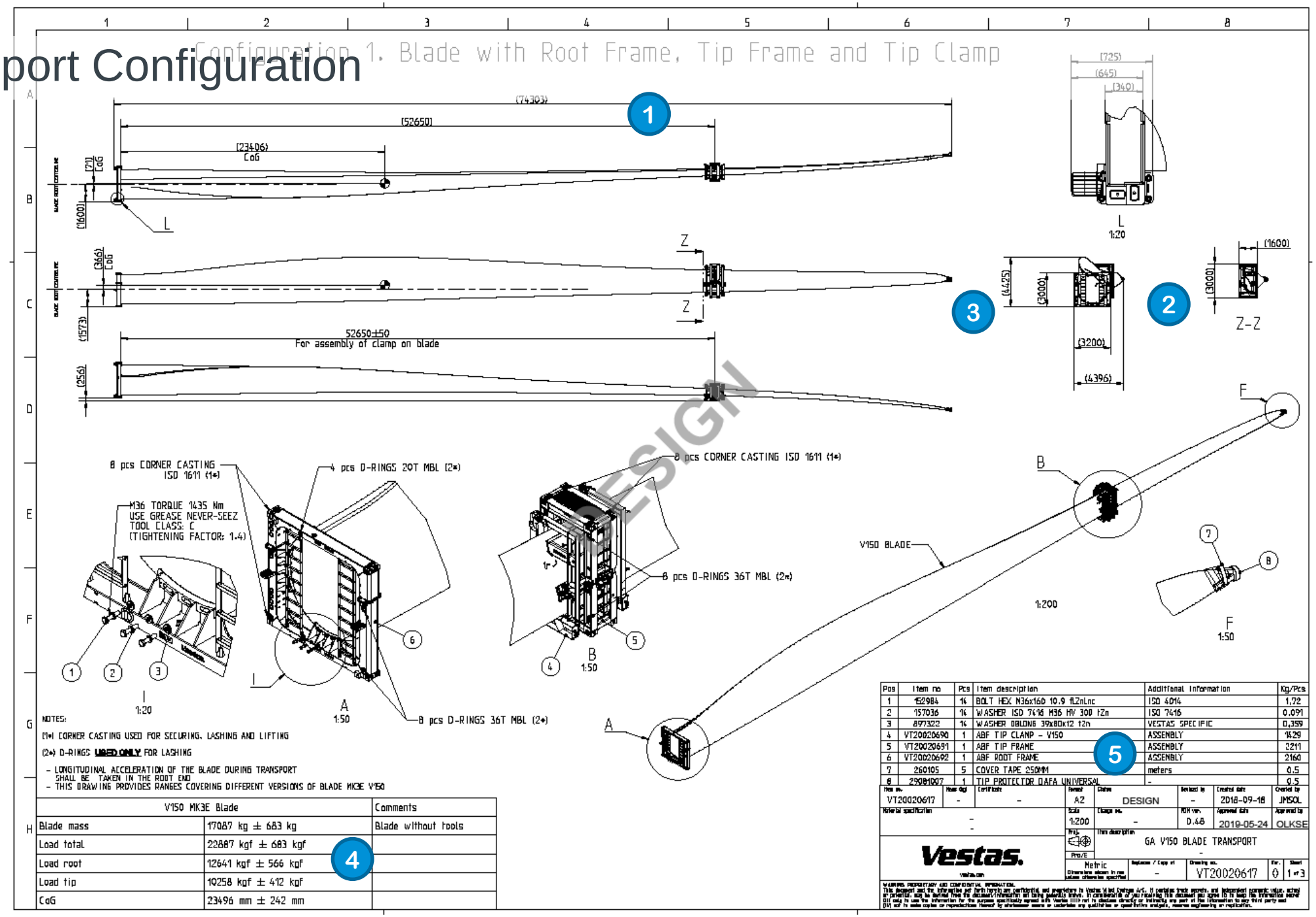


GA V150 Transport Configuration

1. Longitudinal dimensions
2. Width dimensions
3. Height dimensions
4. Loads and CoG
5. Bill of Materials (BOM)

Suggestions?

Click here
or



V150 MK3E Blade		Comments
Blade mass	17087 kg ± 683 kg	Blade without tools
Load total	22887 kgf ± 683 kgf	
Load root	12641 kgf ± 566 kgf	
Load tip	10258 kgf ± 412 kgf	
CoG	23496 mm ± 242 mm	

Pos	Item no	Pcs	Item description	Additional Information	Kg/Pcs
1	152984	16	BOLT HEX M36x160 10.9 flZnLnc	ISO 4014	1,72
2	157036	16	WASHER ISO 7416 M36 HV 300 fZn	ISO 7416	0,091
3	897322	16	WASHER DBLDNB 39x80x12 fZn	VESTAS SPECIFIC	0,359
4	VT20020690	1	ABF TIP CLAMP - V150	ASSEMBLY	1429
5	VT20020691	1	ABF TIP FRAME	ASSEMBLY	2211
6	VT20020692	1	ABF ROOT FRAME	ASSEMBLY	2160
7	260105	5	COVER TAPE 250MM	meters	0,5
8	29081007	1	TIP PROTECTOR DAFA UNIVERSAL	-	0,5

Item no. VT20020617	Num. dig. -	Certificate -	Format A2	Status DESIGN	Revised by -
Created date 2018-09-18	Created by JMSOL	Material specification - -	Scale 1:200	Change no. -	MDM ver. D.48
Approved date 2019-05-24	Approved by OLKSE	Proj.	Item description GA V150 BLADE TRANSPORT -		
Pro/E	Metric	Replaces / Copy of -	Drawing no. VT20020617	Rev. 0	Sheet 1 of 3

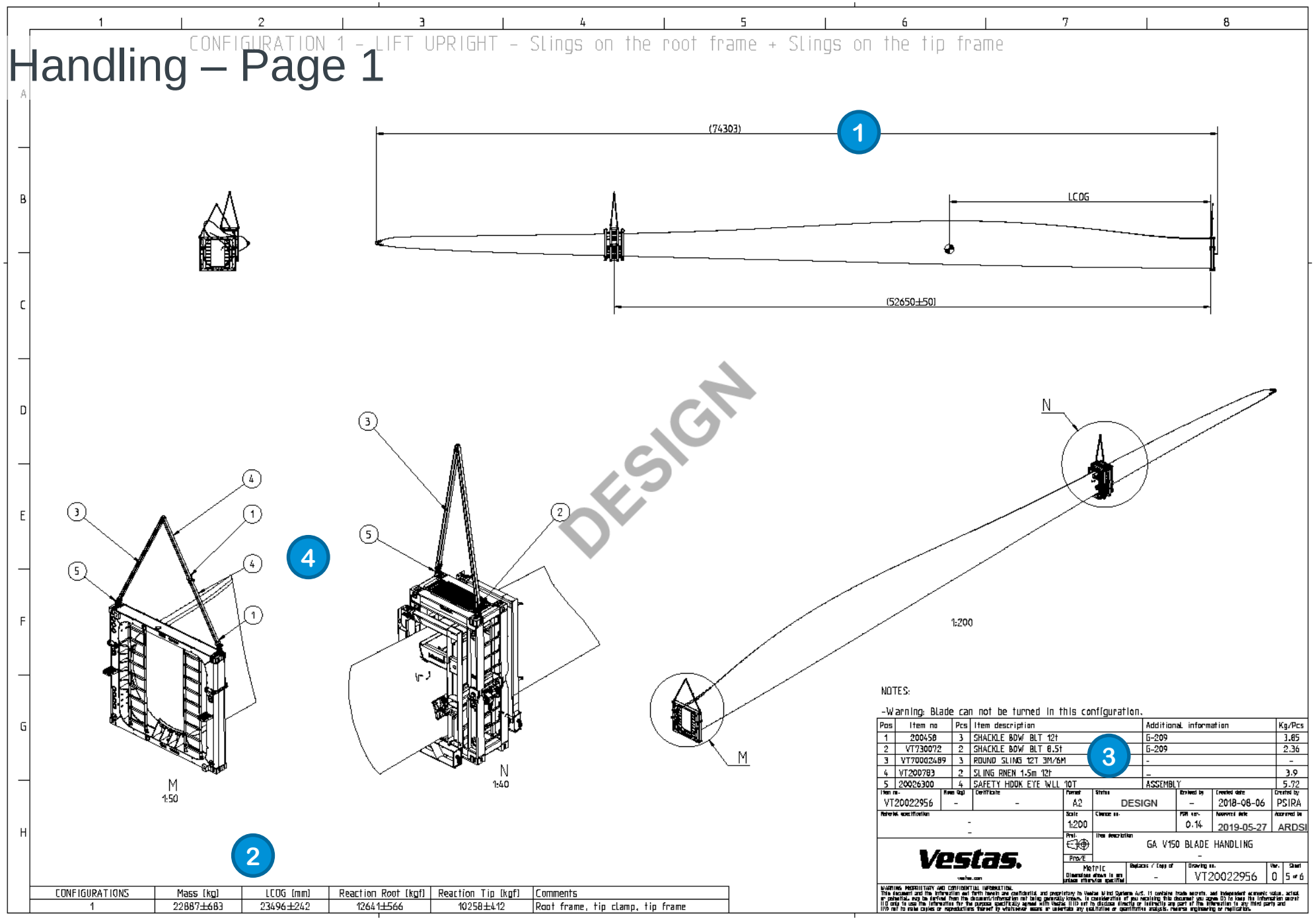
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GA V150 Blade Handling – Page 1

1. Longitudinal dimensions
2. Loads and CoG
3. Bill of Materials (BOM)
4. Rigging arrangement

Suggestions?

Click here
or



CONFIGURATIONS	Mass [kg]	LCOG [mm]	Reaction Root [kgf]	Reaction Tip [kgf]	Comments
1	22887±683	23496±242	12641±566	10258±412	Root frame, tip clamp, tip frame

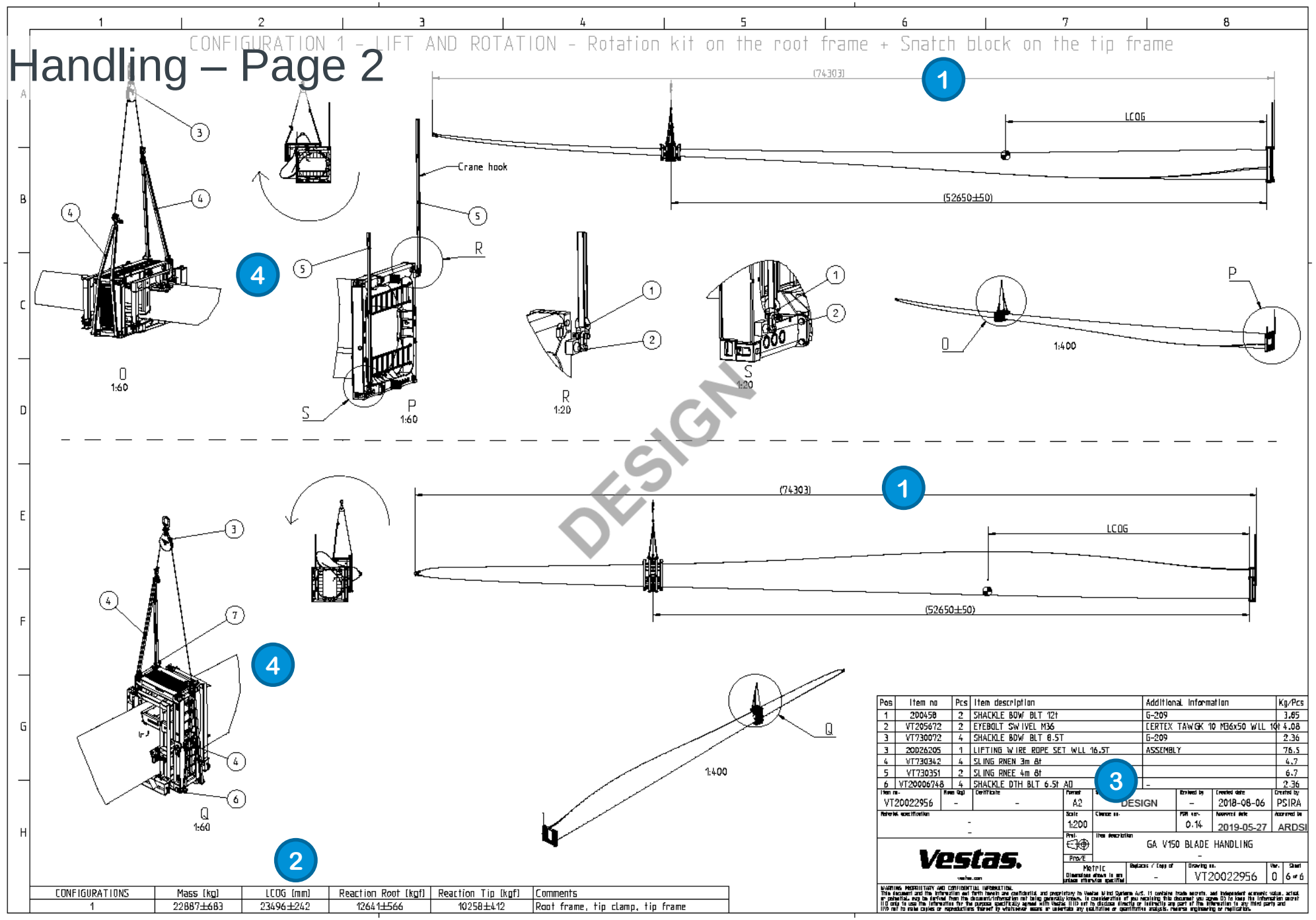
Pos	Item no	Pcs	Item description	Additional information	Kg/Pcs
1	200458	3	SHACKLE BOW BLT 12t	G-209	3.85
2	VT7300072	2	SHACKLE BOW BLT 8.5t	G-209	2.36
3	VT70002489	3	ROUND SLING 12T 3M/6M	-	-
4	VT200783	2	SLING RNEN 1.5m 12t	-	3.9
5	20026300	4	SAFETY HOOK EYE WLL 10T	ASSEMBLY	5.72

GA V150 Blade Handling – Page 2

1. Longitudinal dimensions
2. Loads and CoG
3. Bill of Materials (BOM)
4. Rigging arrangement

Suggestions?

Click here
or



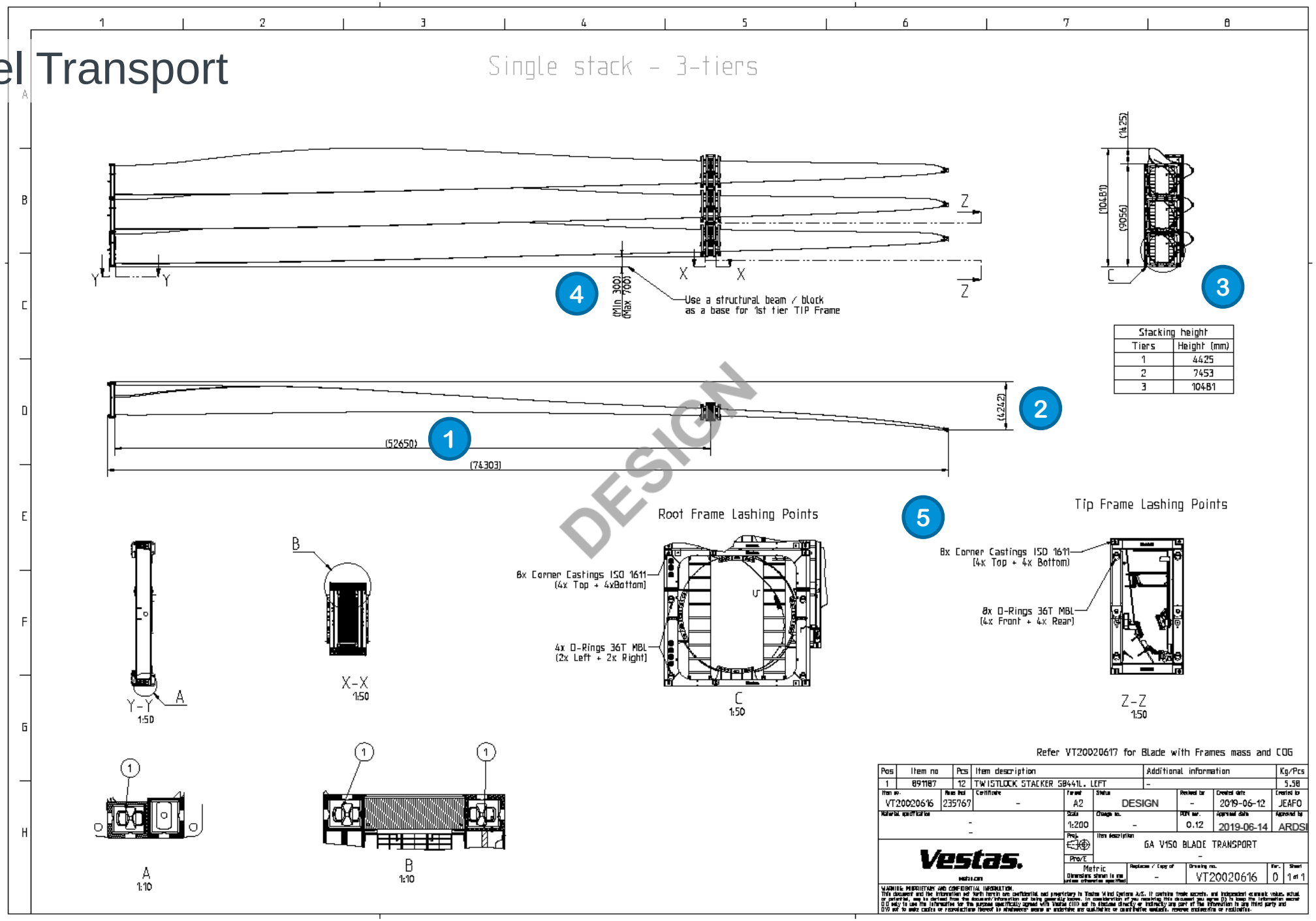
GA V150 Vessel Transport

1. Longitudinal dimensions
2. Width dimensions
3. Height dimensions
4. Tip elevation
5. Lashing points

Suggestions?

[Click here](#) or





Q&A

Thank you



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Thank you

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