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Exectutive summary

The objective in WP 7.5.2 was to implement quality inspection methods for the identification of possible structural flaws/defects and derive input for the probabilistic structural analysis of the wind turbine blades. The findings are supposed to assist the work performed in WP7.1.2 and WP7.1.3 and WP7.4.

In that context three 34m blades were cut down to segments and were distributed between the project partners (DTU, WMC, IWES). These were scanned with three different non-destructive methods. Ultrasonics (UT) and Thermography were selected as tools because they are able in scanning large areas in relative short time and reveal localized flaws. Both systems were tested in laboratory scale by inspecting coupons with known flaws/damage sizes. Moreover, the geometry of the blades sections was measured, including airfoil circumference and thickness of the structure in order to investigate potential manufacturing variations from the given design.

The Ultrasonics scans of the blade segments revealed sub-parts of the blade cross section (e.g. sandwich area, spar caps). The UT thickness measurement was successfully performed in sectional parts with limited amount of air inclusions. The presence of porosity either in bond lines or laminates was damping the ultrasonic pulse, therefore eliminating any back wall signal, thus distorting the measuring quality.

Thermography scans of a blade segment highlighted porosity in the trailing edge bond line under relative thin composite substrate laminate (less than 10-12mm).

The geometry measurements of the blade segments were performed with a robotic arm round about their circumference, in at least five cross sections along their length. The experimental set–up and the technical characteristics of the robotic arm which was used for dimensioning eight subcomponents is described. The test results are provided using printouts from the measured shapes for all the sub parts while a study on the thickness distribution of the spar cap is listed. Conclusions and suggestions on how those measurements are drawn. The results can be used in WP7.4 and WP7.1 regarding probabilistic analysis and improvement of simulations respectively. The vast amount of raw measurement data are listed in the appendix, as coordinates from the measured cross sections of the eight sub parts. The thickness measurement revealed variations in particular for the spar caps which are the loading carrying parts of the blade. This variations was present both along the spars of the segments as also in the radius direction.

Table of Contents

1. Introduction 1
2. Blade Segments 1
3. Ultrasonics 4
3.1 Brief description of the work 4
3.2 Experimental set up 4
3.2.1 Force Ultrasonics System 4
3.2.2 Manufacturing of a glass/epoxy composite plate 5
3.2.3 Preparation of the UT scans 6
3.3 Test results 7
3.3.1 Composite plate UT scans 7
3.3.2 Rotor Blade Segment UT scans 12
4. Active thermography 15
4.1 Brief description of the work 15
4.2 Delamination growth in composites under dynamic loading using infrared thermography 15
4.3 Thermography applied on sub-component tests 19
5. Three Dimensional Geometry Measurements of Blades Sub- Parts Using a Robotic Arm . 21
5.1 Brief description of the work 21
5.2 Experimental set up 22
5.2.1 Sub parts and measured areas of interest 22
5.2.2 Faro robotic arm 23
5.3 Test results 24
5.3.1 Spar cap thickness measurements 24
5.3.2 Printouts from the measured sub parts 41
6. Conclusions and recommendation for future work 45
7. References 46
8. Appendix: Coordinates of the spar cap from the measured sub parts 47

1. Introduction

Deviations of the wind turbine rotor blade structure from the given design, often introduced through faults or errors in the manufacturing process, might affect its structural performance. From fiber undulations and waviness to dry spots and adhesive 'kissing' bonds, there is a big list of flaws which might be very structure specific. These have to be identified and dimensioned in order to be quantified in terms of their effect on the structural integrity. To do so, many techniques such as visual/image process methods, ultrasound scans, thermography, etc. are available for Non Destructive Inspections and Testing (NDI, NDT).

In the actual report it was attempted to implement an Ultrasonics and a Thermography system in order to scan full scale blade segments of three 34m blades. Their capabilities were investigated towards the identification and geometrical quantification of defects and damages in composite structures. Reference measurements were performed for both methods on laboratory scale coupons with artificial or visually detectable flaws/damages. Subsequently they were both applied in full blade scale inspections. The experimental set-ups and the measuring systems are explicitly described.

The geometry of the aforementioned wind turbine rotor blade segments and the thickness distribution around the airfoil circumference were measured in order to quantify the manufacturing deviations in comparison to the given design. The measurement campaign included the dimensioning of the aerodynamic shell, thickness measurements of the spar caps and the section in both edges and measurements on the trailing edge.

2. Blade Segments

The experimental campaign performed in WP7.5.2 was based on real blade structures cut out of wind turbine rotor blades. DTU had four SSP 34m blades available from previous national funded projects, see Figure 1. All four blades had earlier been tested and were more or less damaged from the previous tests [6]-[9]. It was decided to cut the blades into segments and distribute them between the research partners. Below are shown some of the subparts in the lab of DTU after the cut out.

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Figure 1: Blade subcomponent specimens cut from SSP 34m blades.

A plan was made how to cut specimens from the non-damaged part of the blades (see Table 1). The blade segments were subsequently distributed among the partners (DTU, WMC, IWES). Before shipping, CRES performed geometry measurements on eight sub parts covering a wide range of chord length of the 34 meters long blade, see Figure 2. In the same figure the segments which were used are indicated with the letter 'M'.

Table 1 Cut positions for the subcomponent, laboratory where it was sent and number of parts that were measured from CRES.

Cut positions		Mass	# of subcomponents		
Inner [m]	Outer [m]	[kg]	DTU	IWES	WMC
13,00	16,13	427	1		
16,13	19,15	398		2	
17,80	21,00	399			
19,15	22,38	377			
22,38	25,40	284		2	1
25,40	28,42	195			2

Cutting plan for SSP 34m blades

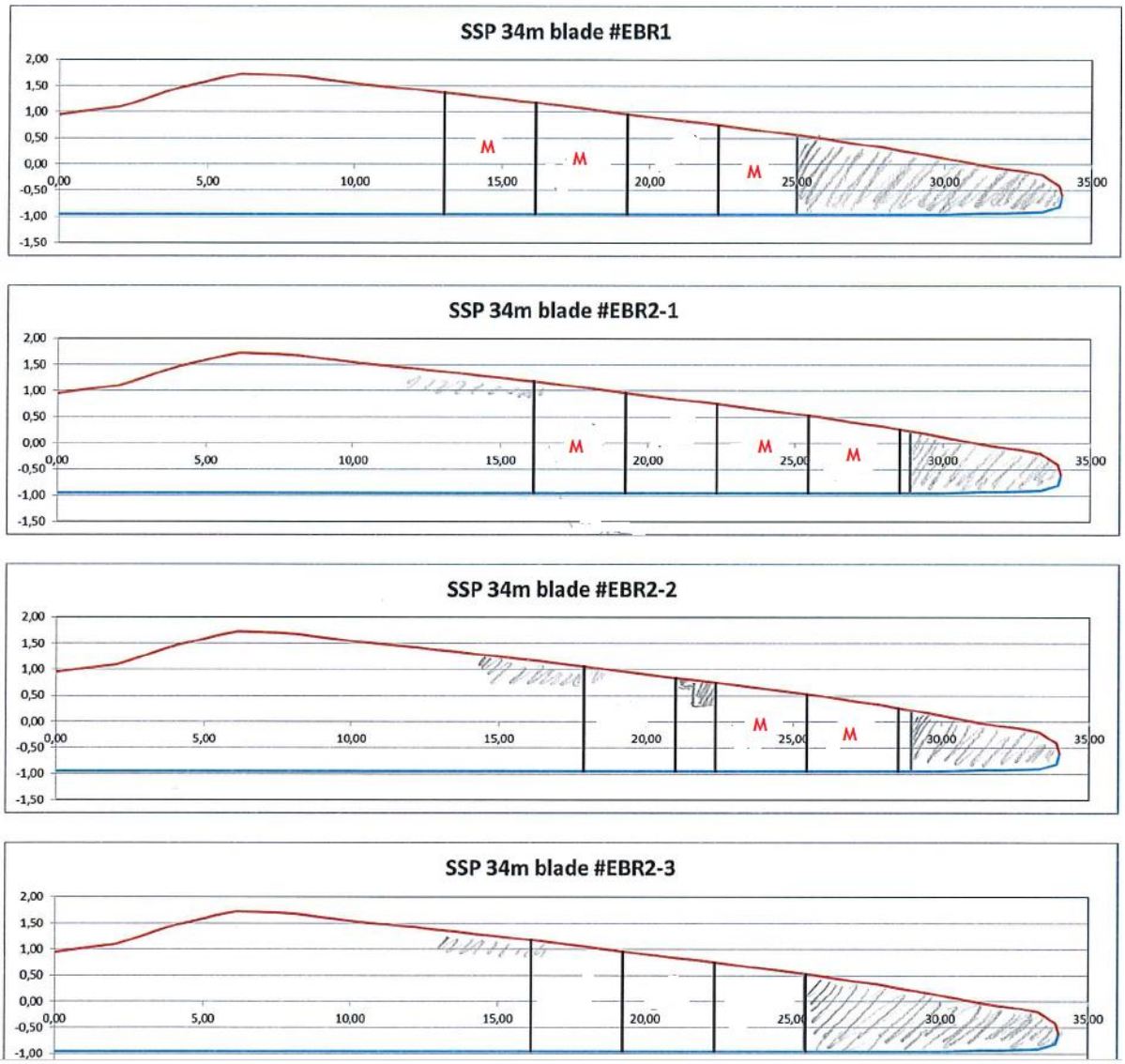

Figure 2: Cutting plan and measured segments indicated witm 'M'.

3. Ultrasonics

3.1 Brief description of the work

Ultrasonic scans were performed first on laboratory scale thick laminates in order to investigate the system accuracy in flaws detection and size identification. Therefore, a UD glass/epoxy plate was manufactured, see Figure 3, with embedded artificial flaws (concave resin lenses) in different positions and depths. These were supposed to emulate different sizes of laminate waviness in wind turbine blade spar caps.

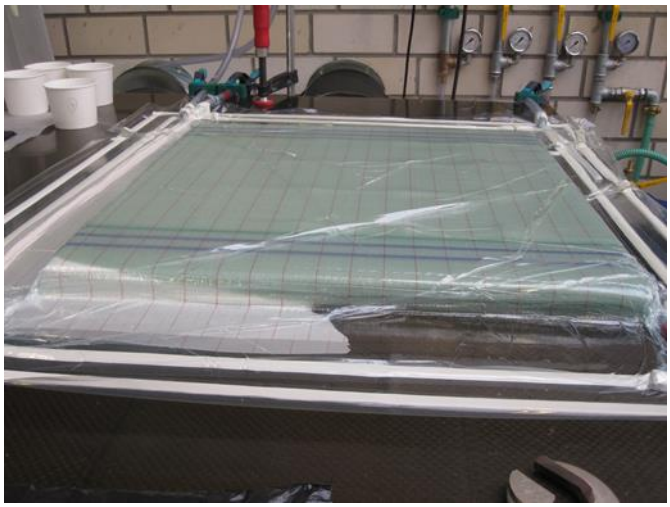

Figure 3: Composite laminate with artificial flaws.

Subsequently, two blade segments were inspected with UT. The scans were performed along the spar caps in the segment length direction while also in the radius direction too.

3.2 Experimental set up

3.2.1 Force Ultrasonics System

A Force ultrasonics measuring system was implemented, consisting of the following elements:

- P-scan System 4 Lite Version 2 Release 12 (Data Acquisition and software)
- MWS-6, Hand scanner
- Panametrics 500kHz Broadband sensor, 38mm diameter

The P-scan 4 Lite module is a data acquisition and processing software which enables the analysis in a PC. With the P-scan Software A, B, C and D scan measurements can be stored and analyzed in a Windows-based environment. The MWS-6 hand scanner which is shown in Figure 4 is consisted of a small wagon, the linear tracker sensor and the UT sensor

(Panametrics 0,5MHz). The coupling of the UT sensor with the scanned surface was taking place through continuously flowing water.

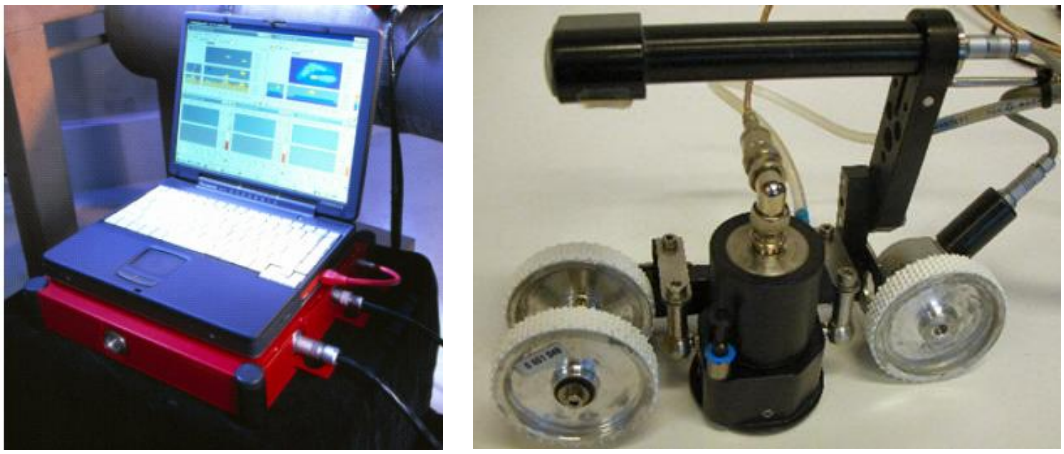

Figure 4 (a) P-scan System 4 (b) MWS-6 Hand scanner.

3.2.2 Manufacturing of a glass/epoxy composite plate

A composite plate was manufactured using the following listed materials, see Table 2.

Table 2. Materials description

Material	Description	Batch
Resin	RIM 135	DG5G40303B
Hardener	RIM H 137	EG4KS0305
UD0° textile	Saertex/UD 1010g	1003165213

The plate had in total 50 UD0° layers with a nominal thickness of 0,65mm each and a total plate resultant thickness of 32,5mm. In advance, small circular lenses were manufactured out of pure infusion resin and hardener (mass ratio 100:30). They were flat from one side and concave from the other with the following geometrical details:

Table 3. Resin lenses geometrical details

Lens geometry	Diameter	Thickness
-	mm	mm
1	12	4
2	20	4
3	30	4
4	50	

All four lens geometries were embedded between the dry textiles of the composite plate before the infusion, see *Figure 5 Embedding artificial flaws.*Figure 5, every tenth ply i.e. between 10^{th} -11^{th}, 20^{th} -21^{st}, 30^{th} -31^{st}, 40^{th} -41^{st} ply.

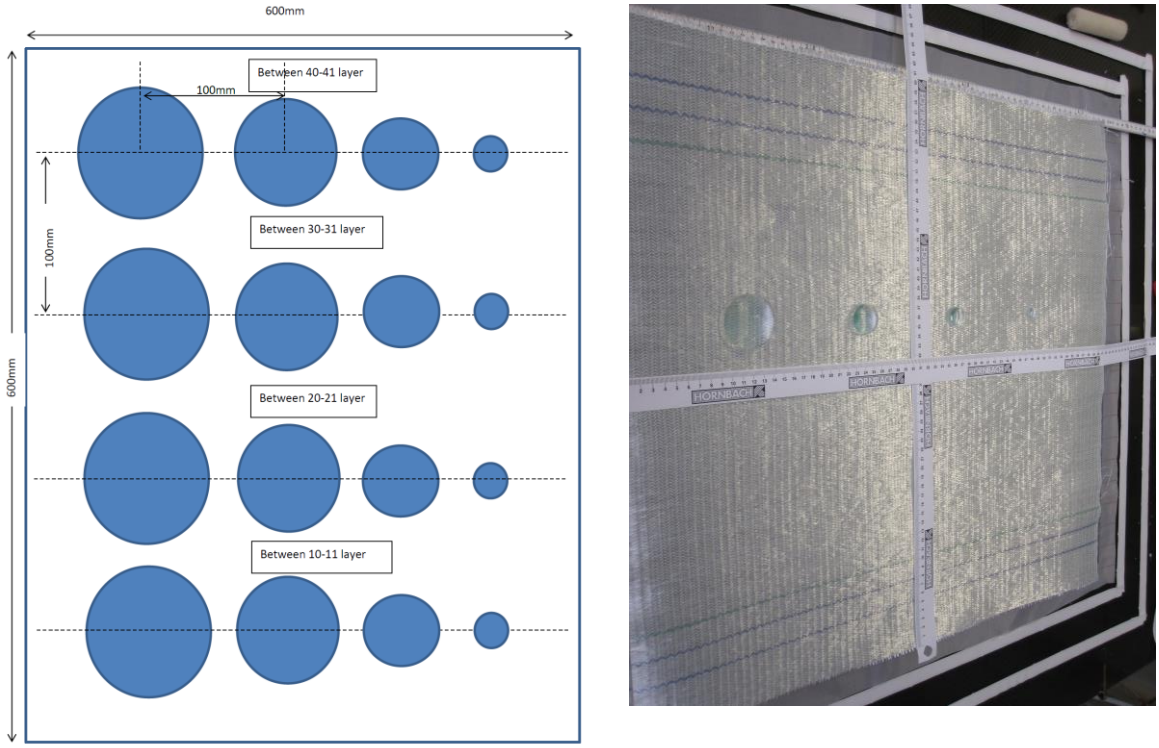

Figure 5 Embedding artificial flaws.

3.2.3 Preparation of the UT scans

Straight lines were marked on the composite plate with a marker in order to define scan tracks and enhance the UT manual scanning, see Figure 6. X and Y axes are also illustrated. Axis Z is considered to be transverse to the plate surface with positive direction directing towards the bottom of the plate.

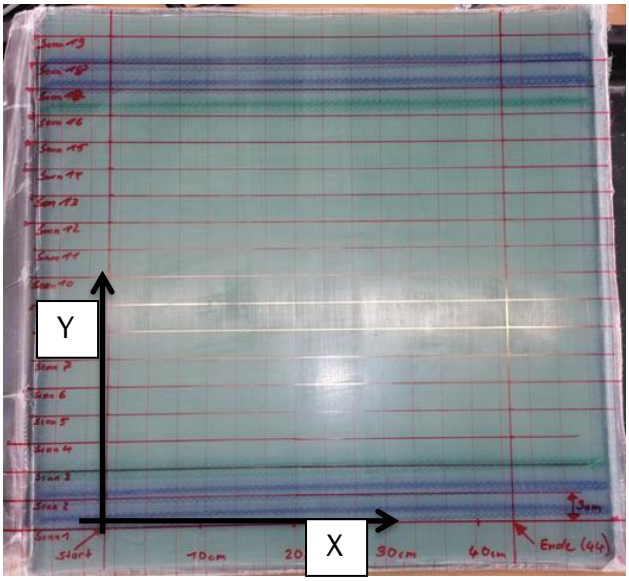

Figure 6 Marking the UT scan tracks on the composite plate.

For the segment UT scans a temporary bath had to be built around the structure in order to brohibit water flawing in the test hall, see Figure 7.

Figure 7 Ultrasonic scan set up for scanning blade segments.

3.3 Test results

3.3.1 Composite plate UT scans

The UT scans where performed on straight lines as described in the previous section. The P-scan software is reconstructing the recorded signals, enabling a quasi 3-D visualization of the

scanned subject. The UT scan results that will follow are elaborated in Figure 8 in terms of the side of the plate which they are mapping.

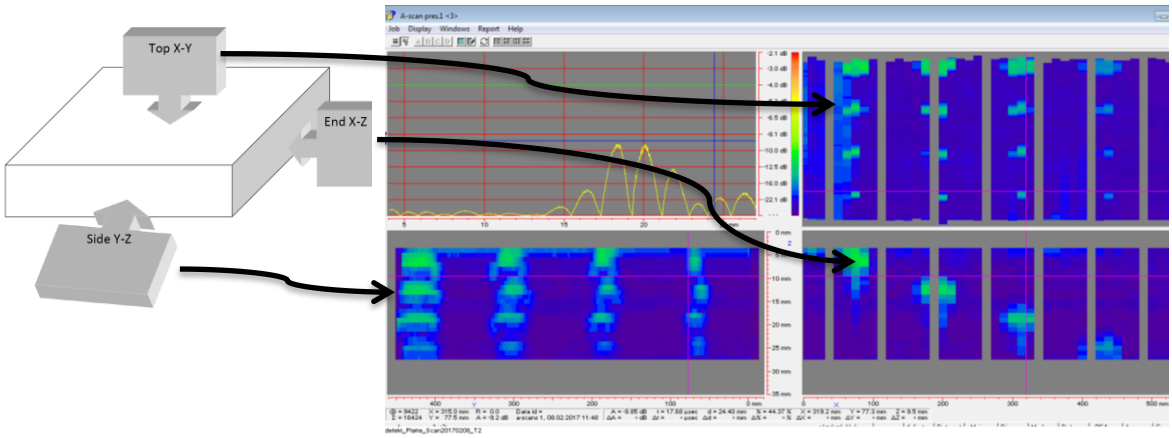

Figure 8 Elaboration on Ultrasonic A, B, C and D-scans.

As A-scan is described the plane signal visualization recorded from the pulse echo ultrasonic measurement, see upper left graph of the UT results in Figure 8. As B-Scan is described the scan which is mapping the plate from the Y-Z side (through the thickness), see lower left graph of the UT results in Figure 8. As C-Scan is described the scan which is mapping the plate from the X-Y side (from the top), see upper right graph of the UT results in Figure 8. Last, as D-Scan is described the scan which is mapping the plate from the X-Z side (through the thickness), see lower right graph of the UT results in Figure 8.

The plate inclusions were highlighted through the UT inspection and they could be identified in all depths, see Figure 9.

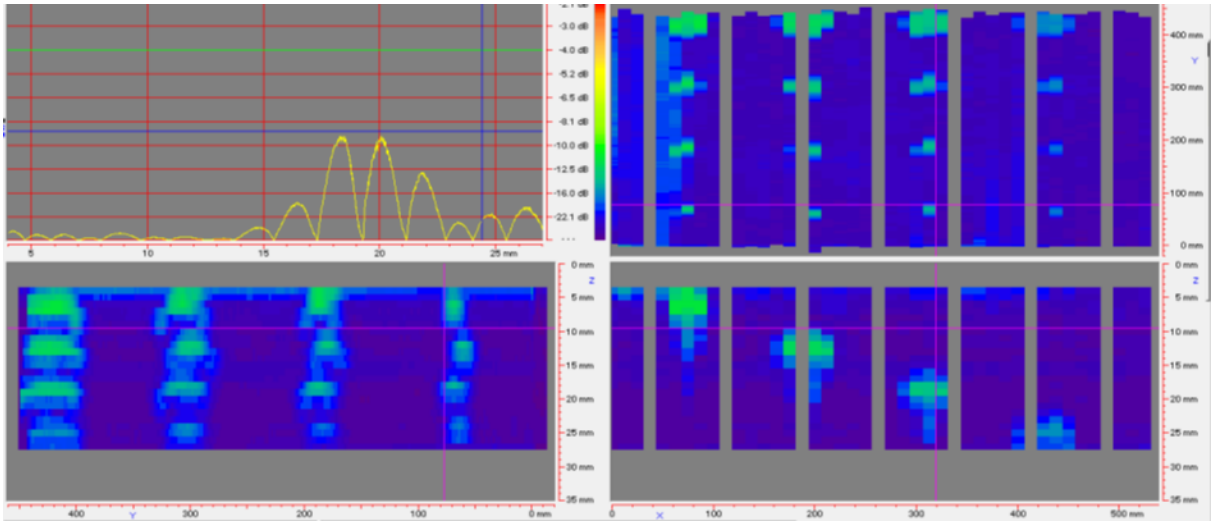

Figure 9 Ultrasonic A, B, C and D-scans of the composite plate.

A threshold of -22,1db decay was set on the A-scan UT signals for the analyses with the P-scan software. A decay over that limit meant that a local deviation was taking place. The analysis took place in various steps by setting filters (gates) in the length and thickness directions, in order to highlight the local embedded flaws. An example is presented in Figure 10, where a section in X direction between 130-230mm was selected highlighting the inclusions between the 20th – 21st layers in the B-Scan graph.

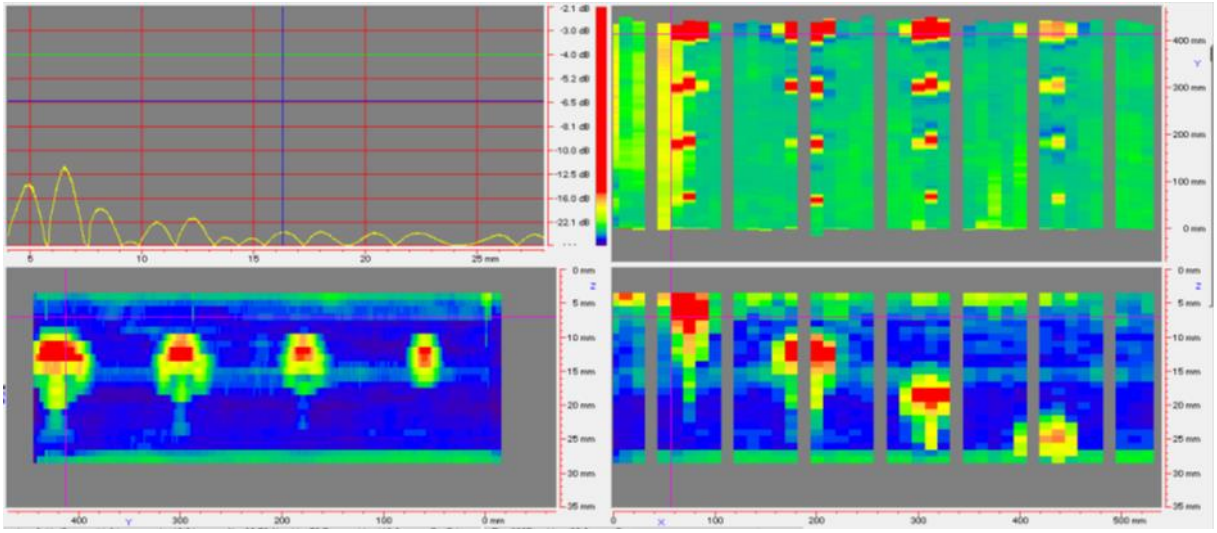

Figure 10 Ultrasonic A, B, C and D-scans of the composite plate with a selection filter in X direction between 130-230mm.

With the aforementioned signal decay assumption it was found that the thickness disturbances around the embedded lenses were relative constant through the plate thickness, see Figure 11. The thickness of the lowermost raw of lenses could not be determined due to interaction of the back wall signal with their signal reflections. Although all lenses had initially the same thickness, the lenses with the larger diameters created constantly a larger total thickness deviation. The results were found to be repeatable for the different depths.

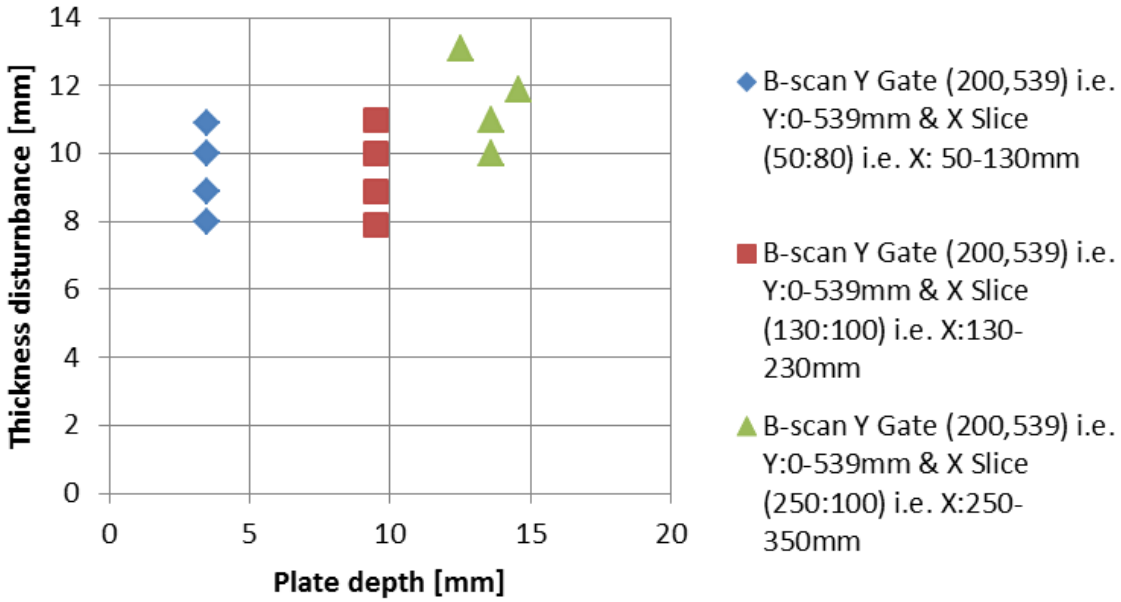

Figure 11 Thickness disturbances around embedded resin lenses.

The UT measurement was able to identify the depth position of the embedded flaws for all the four depths, see Figure 12 by implementing the A-scan signal threshold assumption. It should be noted however that the signal reflections of the uppermost raw of inclusions with the UT beam near field were quite strong, see Figure 13. Therefore, the initiation position of the flaw was assumed rather than derived from the measurement.

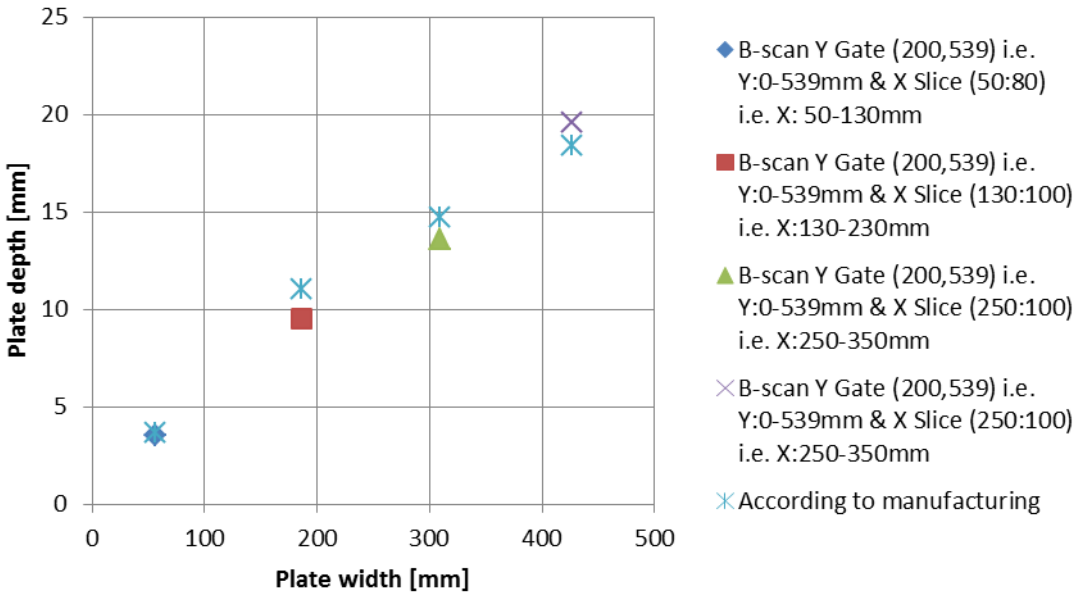

Figure 12 Comparison of the depth position of the flaws between manufacturing plan and UT recordings.

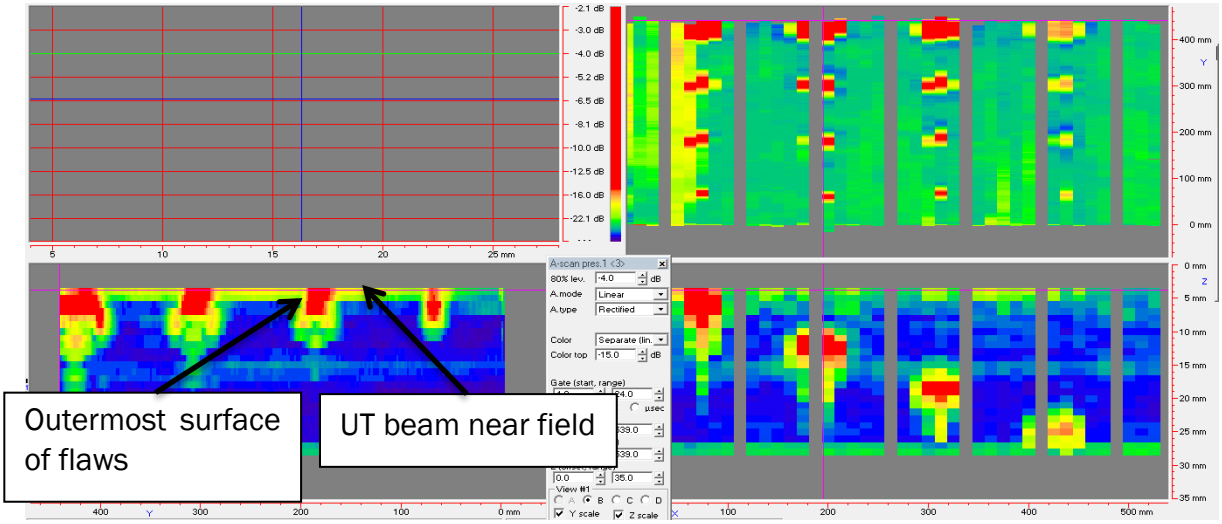

Figure 13 Ultrasonic A, B, C and D-scans of the composite plate with a selection filter in X direction between 10-90mm (B-Scan: Outermost raw of flaws).

The discs diameters (described as length and width in the graphs) were always determined larger in respect to the embedded ones, see Figure 14. The lenses are expected to form resin pockets and fiber orientation disturbances around their circumference. Therefore, the aforementioned geometrical difference could be plausible. In some cases however, the

recorded area was double in respect to the manufacturing plan and this something to be investigated in the future.

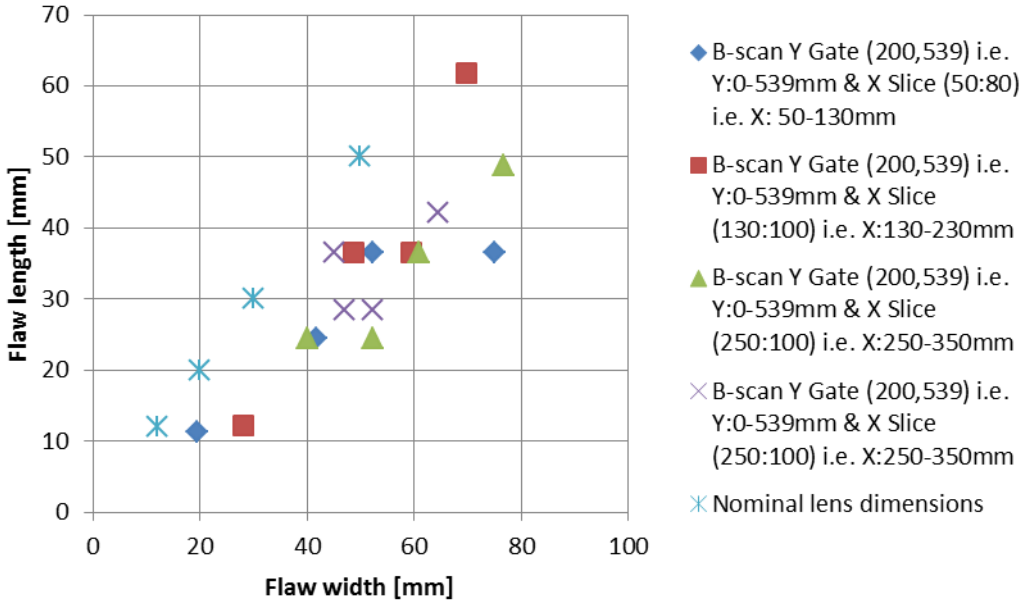

Figure 14 Comparison of the lenses dimensions between manufacturing plan and UT recordings.

To be noted as a general statement for the evaluation of the UT results is that the signal resolution in X direction is a lot higher than in Y.

3.3.2 Rotor Blade Segment UT scans

In the blade sections the B, C and D-scans were not successful due to the fact of extended air inclusions around the cross section e.g. between spar caps and outermost shells, or due to high attenuation in the trailing edge. A-Scan measurements were performed in specific locations where the signals were not attenuated.

The scanning of the trailing edge along the blade length did not reveal any material-structural distortion. Moreover, since the composite laminate thickness could be measured with a scale, it was possible to derive the equivalent ultrasonic wave speed, 2160m/sec, for calibrating the UT system for thickness measurements, see Figure 15.

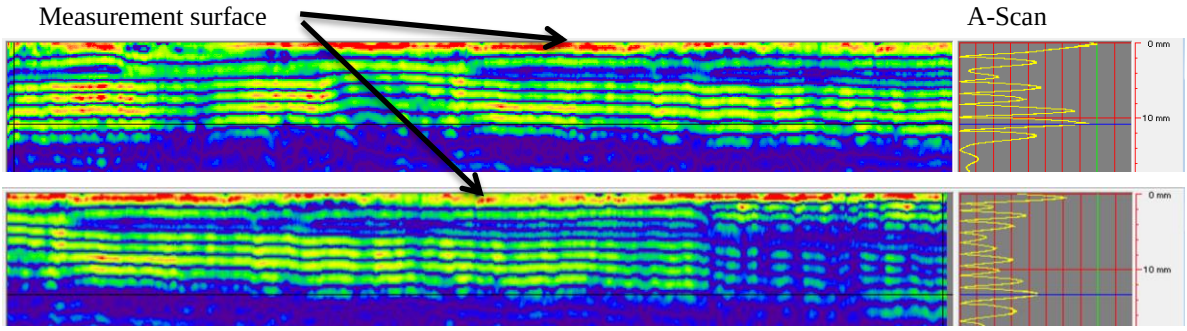

Figure 15 (a) Thickness of trailing edge at the tip of the blade segment (b) Thickness of trailing edge at the root of the blade segment

The thickness at the tip of the segment was measured 10,5mm and 10,8mm at the root.

The start and the ending point of the spar caps was also identified. However, due to the air inclusions in the adhesive bond line the signal was strongly distorted. Therefore, only the radius positions could be identified but no thickness measurement was possible, see Figure 16.

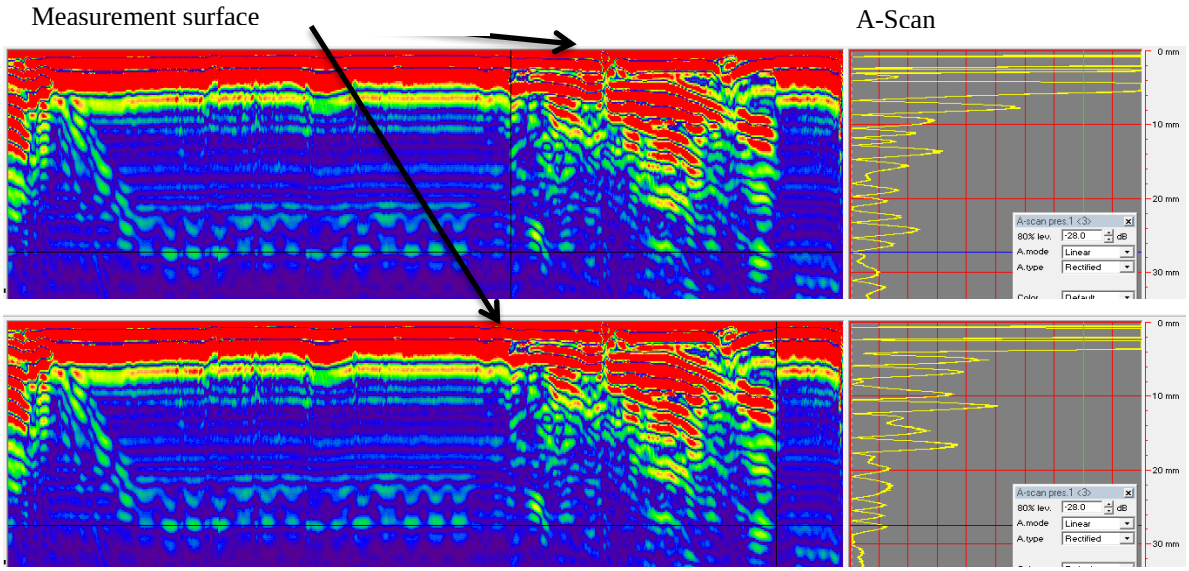

Figure 16 (a) Thickness of trailing edge at the tip of the blade segment (b) Thickness of trailing edge at the root of the blade segment

The thickness of the sandwich materials over the aerodynamic shell areas was measured with moderate success. Although the foam material is not a good mean for the propagation of ultrasonic waves, the resin channels through the thickness which are present due to the foam kitting, were enhancing the UT measurement, see Figure 17.

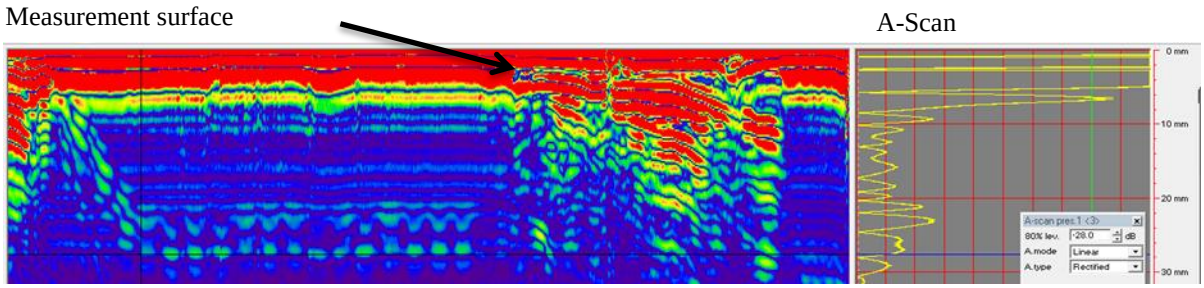

Figure 17 (a) Identification of the sandwich section of the aerodynamic shell

The thickness measurement can be optimized by scaling the UT wave velocity with respect to the known sandwich thickness.

4. Active thermography

4.1 Brief description of the work

A technique to evaluate delamination growth in double shear coupons was developed using thermography techniques ([1] to [4]). The main aims were

- Development of a novel testing technique to evaluate the delamination growth in composites and to overcome the limitation of conventional testing techniques.
- Extending the scope of thermography techniques from qualitative measurement of delamination area to quantitative measurement of delamination.

Moreover, the active thermography method was implemented for the Non-Destructive testing of a blade segment in order to identify flaws in the composite structure. The test set-up and the experimental results are described.

4.2 Delamination growth in composites under dynamic loading using infrared thermography

A test setup was designed for a tension coupon with a Teflon insert mimicking a double lap configuration. The dimensions of the test sample were chosen according to ISO 527 standard for tensile testing. ISO 527 gives the standard test procedure, dimensions of the sample and testing methods for evaluating the tensile properties of unidirectional fibre reinforced composite. The gauge length of the sample should be 150mm, the width 15 mm, the nominal thickness 3 mm (for four layers of fibre) and overall length with tabs is 250 mm.

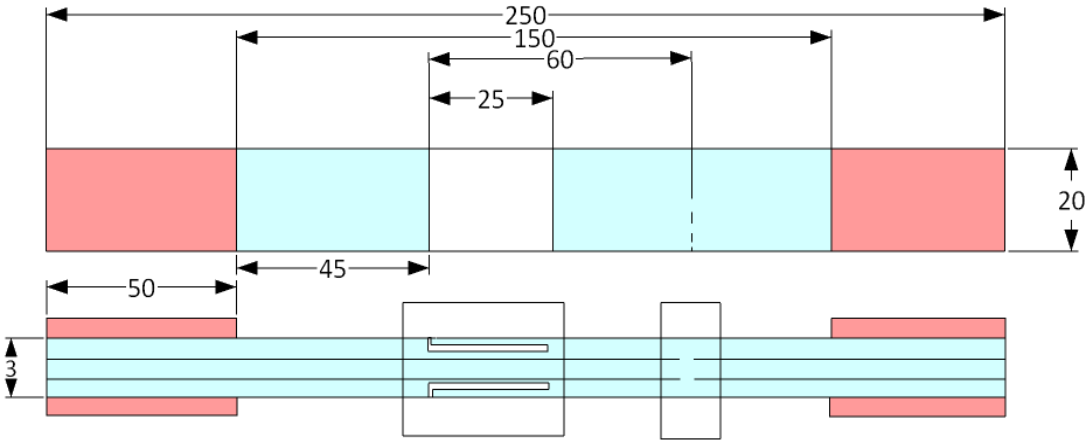

Figure 18: Schematic representation of the test sample, all units are in mm

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The test samples were clamped into the grips of the 100 kN test machine. The test machine is a hydraulic machine that was controlled by the 'WMCs', an in-house controller software on a dedicated computer.

An IR camera FLIR 315 was used to monitor the on-going test. The FLIR camera uses a bolometer as a detector. A bolometer measures heat from the source by sensing the temperature induced variations in the electrical resistance of an IR-absorbing material. A Wheatstone bridge circuit measures the heat absorption by comparing the resistance of a piece of the material that absorbed IR light to the resistance of an equivalent piece of an identical material that was kept in the dark.

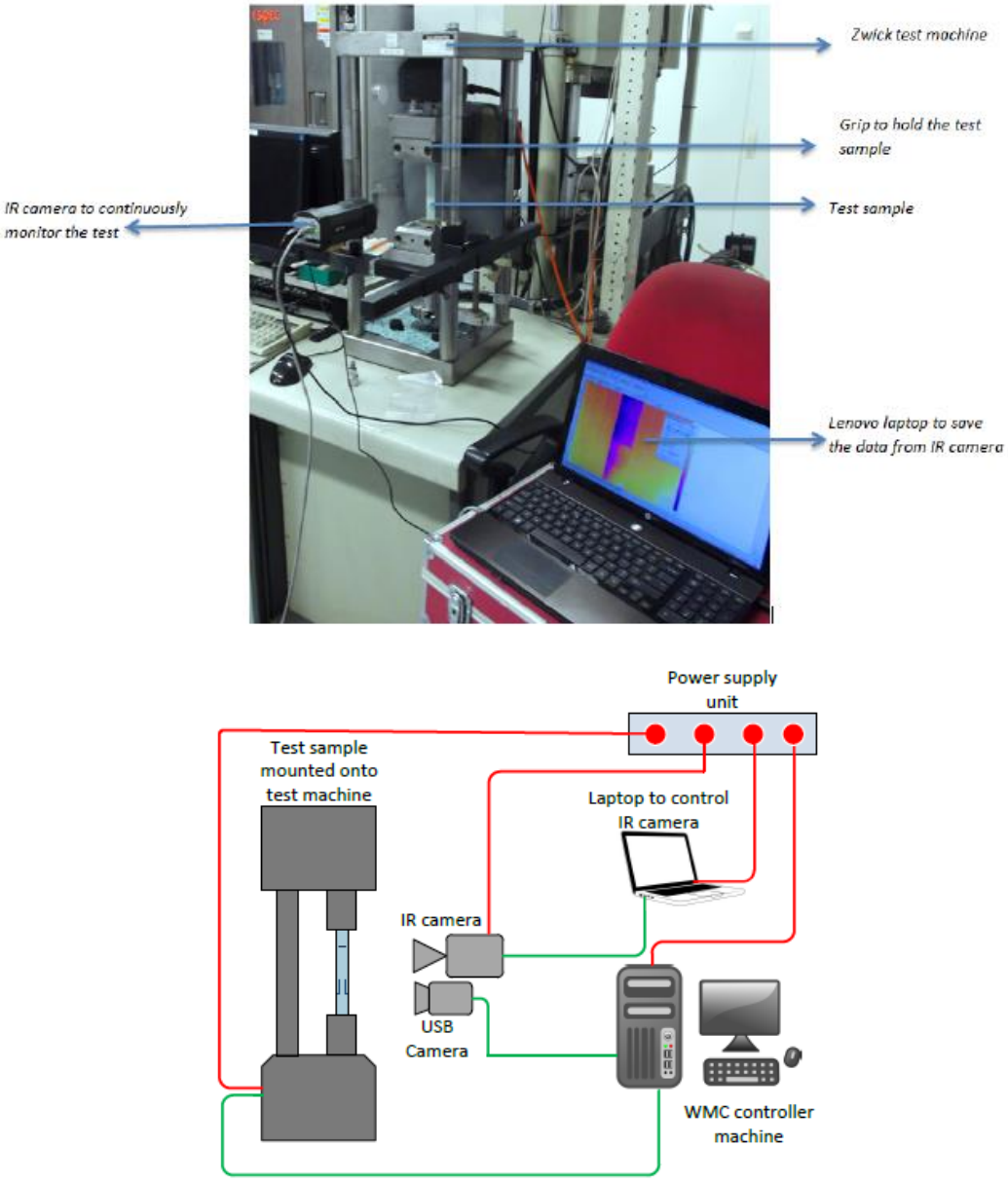

Figure 19: Image of the test setup used

The IR camera was positioned right in front of the test sample with the help of a fixture. The IR camera was powered by the power supply unit and it was controlled by an FLIR software interface from a laptop. The tests were not recorded for the complete length. To record the tests discretely, a small code snippet was used to switch the camera on and off according to the needs. A visible light USB camera was also mounted next to the IR camera to compare the delamination measured by it later. As it can be seen from Figure 19, the IR camera was controlled by a separate computer, not by the same controller that controls the test machine.

Pulsed phase thermography (PPT) was used to transform the thermograms from time domain to frequency domain using the one-dimensional discrete Fourier transform. The thermal waves generated from the heated surface image can be detected remotely with

IRT. Mathematically, a heating pulse can be decomposed into individual sinusoidal components of various amplitudes and frequencies. The tools like Fourier transforms can transform data from time domain to frequency domain and vice versa, see below Figure 20.

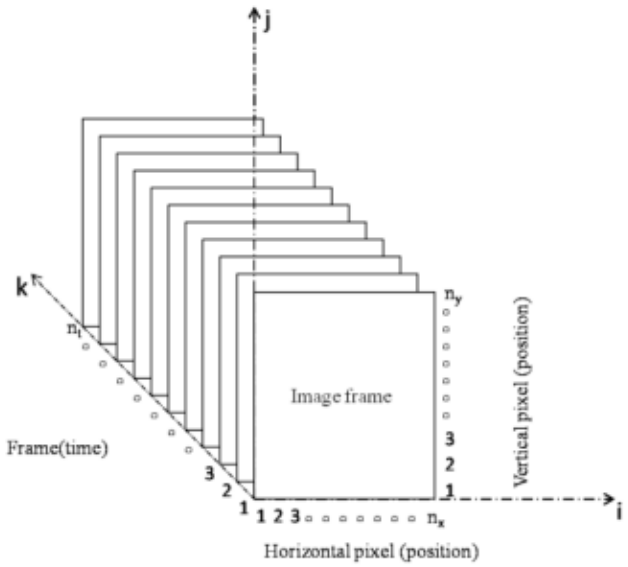

Figure 20: Representation of several frames over time in 3D

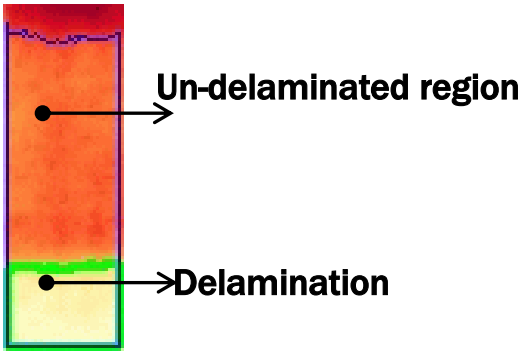

Figure 21: Image segmentation

After thermo images were filtered for the test frequency, and afterward, images were processed. The images are segmented to segregate the delaminated region from the rest of the image so that the delamination growth rate can be studied (see Figure 21). The measurements of the delaminated areas during fatigue were studied and plotted versus fatigue cycles to failure. Three main regions of fatigue damage evolution were identified, see Figure 22.

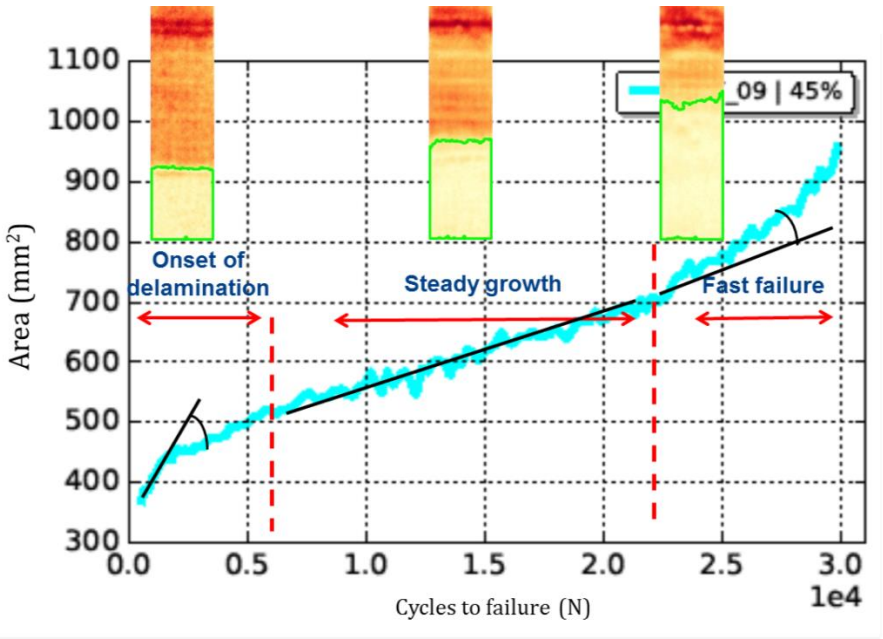

Figure 22: Delamination area versus cycles

A methodology was developed and can be effectively used to study the delamination growth in composites under fatigue loading. Moreover, this method is also well defined and meaningfully validated with the help of a visual light camera.

4.3 Thermography applied on sub-component tests

Sections of blades provided by DTU and later used I work package 7.1.1 were studied using thermographs images. For this purpose, a pulsating light of 3 kW was developed. This light allowed to be switch on and off with a sinusoidal control signal creating a heat wave and recorded by the thermo camera. Images where the process in order to see differences between areas with changes in the thermal conductivities, where it was possible to identify the different parts of the blades structure. As well as the adhesive bond line and defects in it (see Figure 23 and Figure 24).

Further work is on-going in image processing for thermographs using pulse phase thermography or other algorithms. In addition, further research is on-going on how to use those thermography techniques at coupon and sub-component testing level.

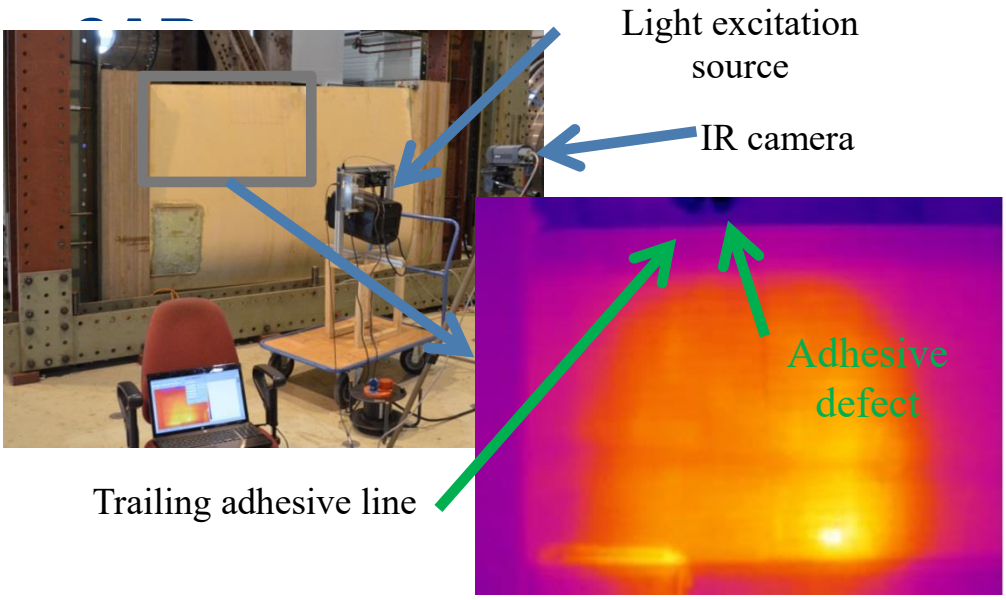

Figure 23: Inspection of sub-component. Section of blade for buckling trailing edge.

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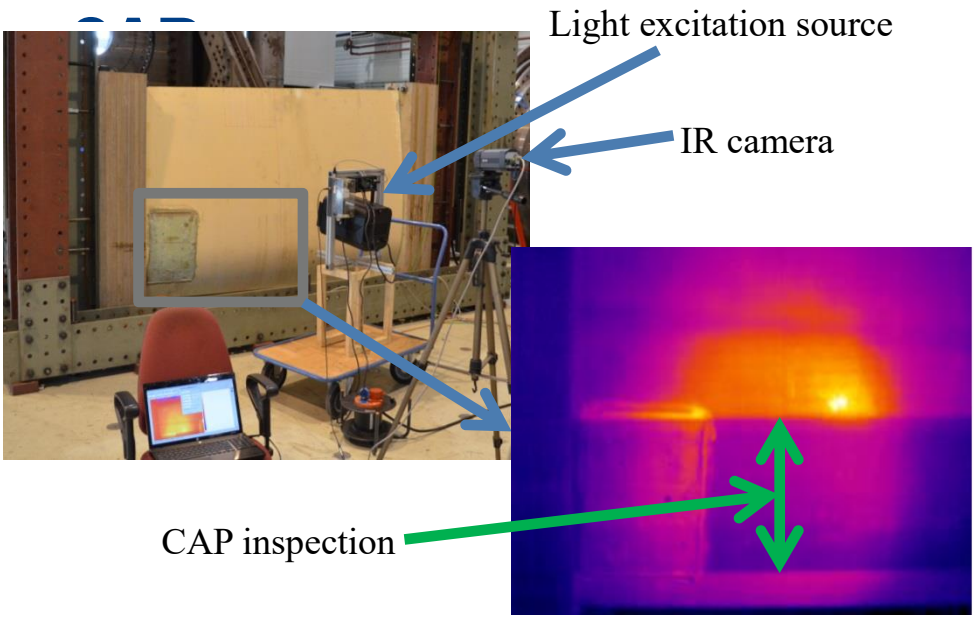

Figure 24: Inspection of sub-component cap. Section of blade for buckling trailing edge.

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5. Three Dimensional Geometry Measurements of Blades Sub- Parts Using a Robotic Arm (CRES)

5.1 Brief description of the work

CRES performed 3D geometry measurements on eight 3m subcomponents cut out from three 34m long blades provided by DTU, using a robotic arm, see Figure 25, to Figure 26. The measurements took place in DTU in month 22 of the project prior to the distribution and mechanical testing of the parts from IWES and WMC. The measure campaign included the dimensioning of the aerodynamic shell, thickness measurements of the spar caps and the section in both edges and measurements on the trailing edge. This study focuses on the thickness variation of the spar cap in discrete positions of the blade, since the spar cap is the main load carrying component. The full raw data set is available for future investigations [5].

Figure 25: (a) 3D geometry measurements using the robotic arm in DTU by CRES

5.2 Experimental set up

5.2.1 Sub parts and measured areas of interest

Figure 26: 3D geometry measurements on a 3m sub part in DTU lab.

The measuring campaign for the eight parts included:

- Thickness measurements of the spar cap (up to 20cm inner from the edge).
- Thickness measurements of the section in both edges.
- Airfoil dimensioning (three sections), see Figure 26.
- Trailing edge geometry measurements (30x30cm in both suction and pressure side).

In the figure below are illustrated the areas of interest together with measurements in the inner side of the spar cap.

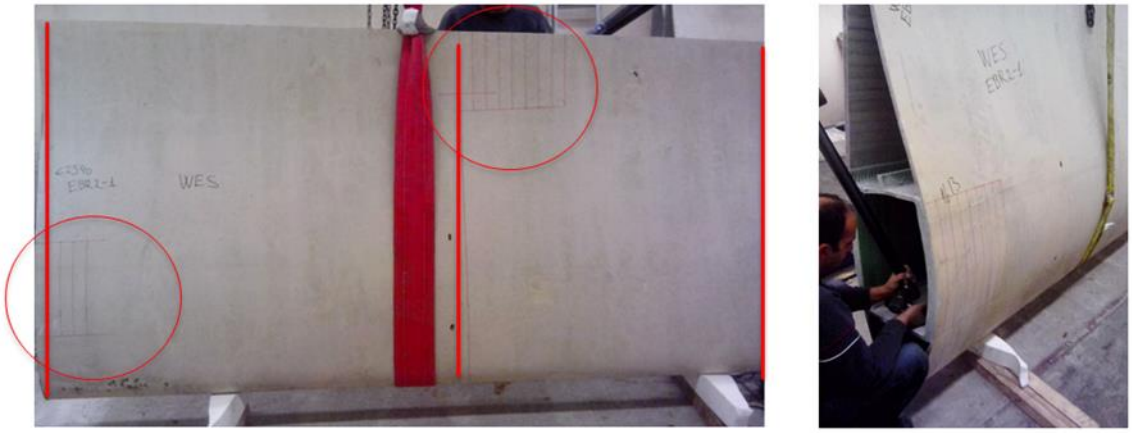


Figure 27: The areas of interest and measurements of the spar cap (inner side).

5.2.2 Faro robotic arm

The FaroArm is a portable coordinate measuring machine (CMM) that allows manufacturers easy verification of product quality, by performing 3D inspections, tool certifications, CAD comparison, dimensional analysis, reverse engineering, and more. The robotic arm that was used in this work for the digitization of the sub components geometry, has the following technical specifications, see Figure 6:

Figure 28: Technical characteristics of FARO ARM and 1m height base.

Real time sampling software: Rhinoceros 2.0 accompanying the system is used for the on-line sampling and processing of measurements. The accompanying software: METRIS NV (Metris Base, Metris Surface, Metris Solid and CadCompare) is used for the post processing of the 3D scanned geometry measurements and graphic overview.

To enable the geometry recording of the whole sub part, a special base was designed and constructed to fix the robotic arm at 1m height from the ground, see Figure 28. Moreover, a script was programmed in matlab for rotating and translating the measured coordinates from the different positions and in order to have a common coordinate system when plotting the whole measured shape.

5.3 Test results

5.3.1 Spar cap thickness measurements

In this section are presented the results from the thickness measurements for the eight sub parts. Three sets of data are available for 16m from the blade's root, three sets of data for 22.38m from the blade's root and two sets of data for 25.4m from the blade's root. The thickness is calculated along X axis (around 30 points) for four discrete Y positions (0mm, 50mm, 100mm and 150mm), see Figure 7. A sum of 120 thickness values is available for each of the measured spar caps, see tables 2-9.

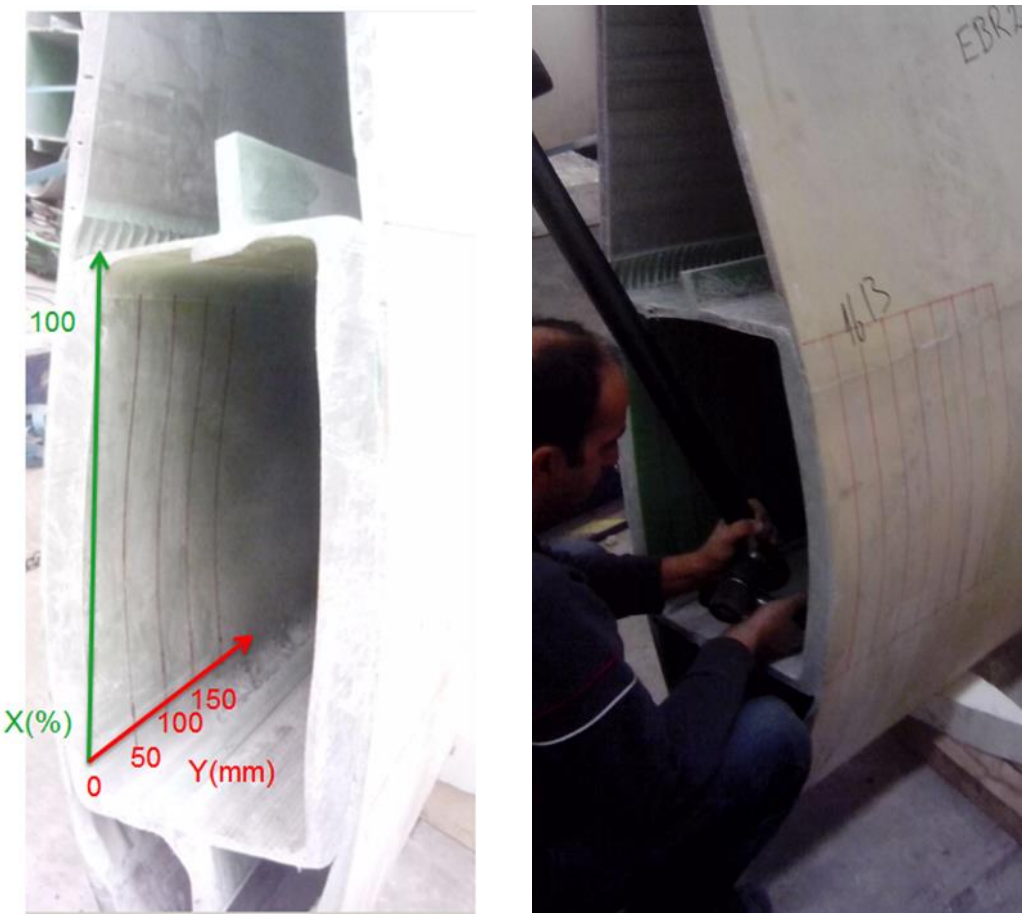


Figure 29: Measuring positions in Y and X direction.

In the following Tables the thickness values are provided as calculated using the recorded data points for the eight sub parts. In the corresponding Graphs (Figure 30-Figure 37) is illustrated the variation of the thickness along 'X' axis for four 'Y' positions and the variation of thickness along 'Y' axis for seven 'X' positions.

1) EBR1_16m

Table 4 Thickness values and variation for spar cap at 16m from root.

	Y position (mm)	Y position (mm)	Y position (mm)	Y position (mm)			
X position (%)	**0**	**50**	**100**	**150**	→		
3	50.22	51.20	52.19	53.14	MEAN (mm)	STDEV (mm)	COV (%)
7	53.76	54.33	54.21	54.39	54.17	0.28	0.53
10	54.90	54.99	55.54	55.52	55.24	0.34	0.62
14	55.00	54.47	54.04	53.04	54.14	0.83	1.54
17	52.86	53.16	53.86	54.54	53.61	0.75	1.40
21	54.71	54.90	55.11	55.35	55.02	0.28	0.50
24	55.17	55.12	55.01	54.89	55.05	0.12	0.22
28	54.20	50.38	51.48	52.77	52.21	1.65	3.16
31	53.94	54.33	54.51	54.49	54.32	0.27	0.49
34	54.89	55.42	55.49	55.58	55.34	0.31	0.56
38	55.23	55.11	54.97	54.57	54.97	0.28	0.52
41	54.05	54.42	54.61	54.58	54.42	0.26	0.47
45	54.68	55.03	55.33	55.28	55.08	0.30	0.54
48	55.37	55.46	55.33	55.19	55.34	0.12	0.21
52	55.04	54.65	48.89	49.82	52.10	3.20	6.13
55	50.74	51.67	52.60	53.50	52.13	1.19	2.28
59	53.58	53.82	54.18	54.07	53.91	0.27	0.49
62	54.34	54.87	54.79	54.56	54.64	0.24	0.43
66	54.50	54.18	54.01	53.59	54.07	0.38	0.70
69	53.52	53.66	53.59	53.79	53.64	0.12	0.21
72	54.12	54.00	53.94	53.73	53.95	0.16	0.31
76	54.25	53.51	53.12	52.57	53.36	0.71	1.32
79	49.37	51.13	52.29	53.22	51.50	1.66	3.22
83	53.78	53.91	53.93	53.84	53.86	0.07	0.12
86	53.80	53.91	53.67	53.62	53.75	0.13	0.24
90	53.21	52.95	52.37	51.99	52.63	0.55	1.05
93	51.92	52.52	52.51	52.91	52.46	0.41	0.78
97	52.75	52.65	52.63	52.55	52.65	0.08	0.15
100	52.76	53.10	53.29	53.02	53.04	0.22	0.41
MEAN	53.68	53.75	53.71	53.80	53.73	0.05	0.10
STDEV	1.48	1.33	1.43	1.22			
COV(%) ↓	2.75	2.47	2.66	2.27			

MEAN TOTAL SAMPLE (mm)	53.73
STDEV TOTAL SAMPLE (mm)	1.37
COV (%) TOTAL SAMPLE	2.56

The thickness measurements along X axis for the four Y positions have a COV between 2.27% and 2.75%, while along Y axis for the thirty X positions have a COV between 0.10% and 6.13%. The total mean value of the thickness measures for the spar cap for EBR1 blade at 16m is 53.73mm with a standard deviation of 1.37mm and a COV 2.56%.

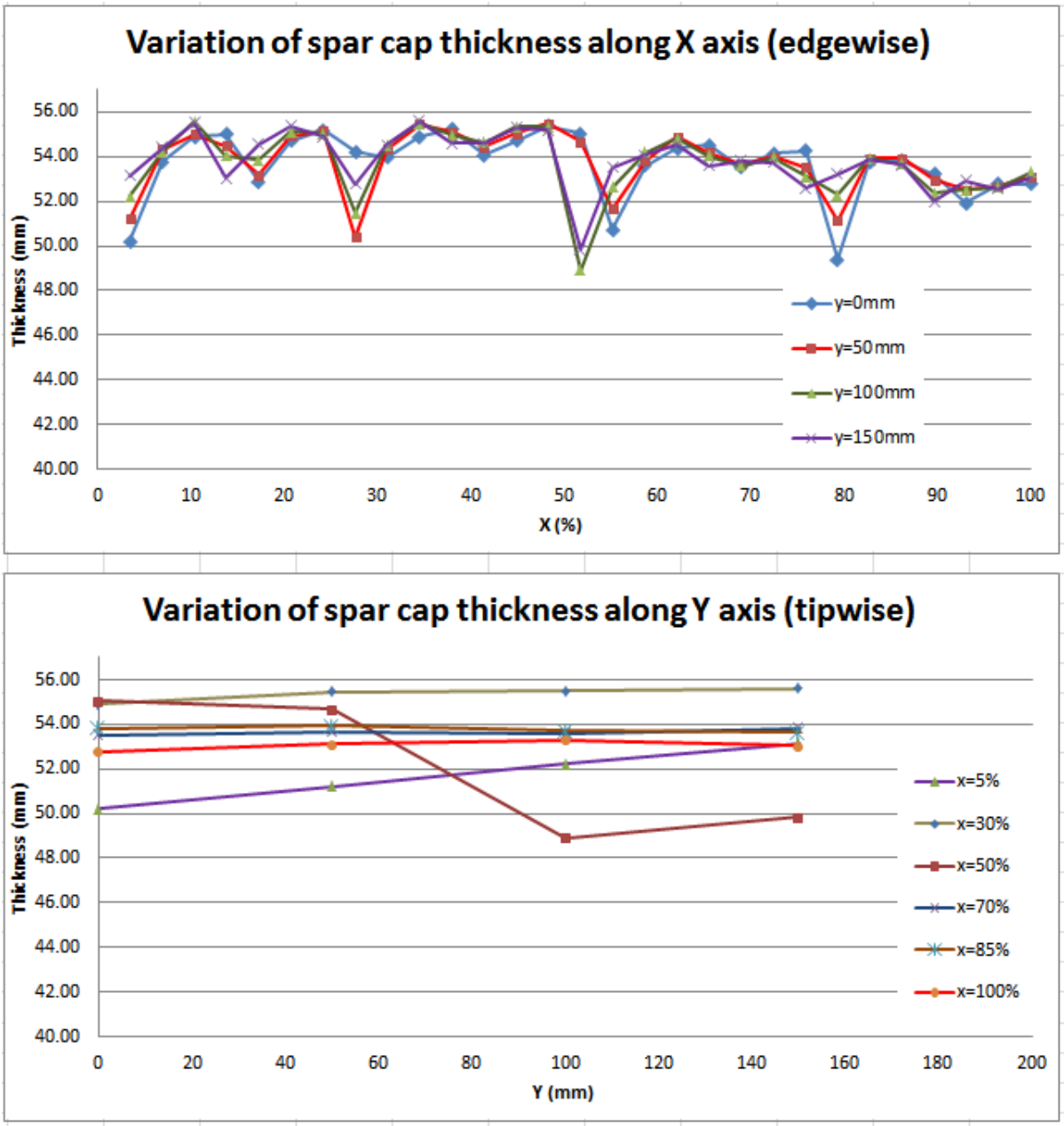


Figure 30: Variation of spar cap thickness along X axis (when Y=0, 50, 100 and 150mm) and Y axis (when X=5,30,50,70,85 and 100% of total spar cap length).

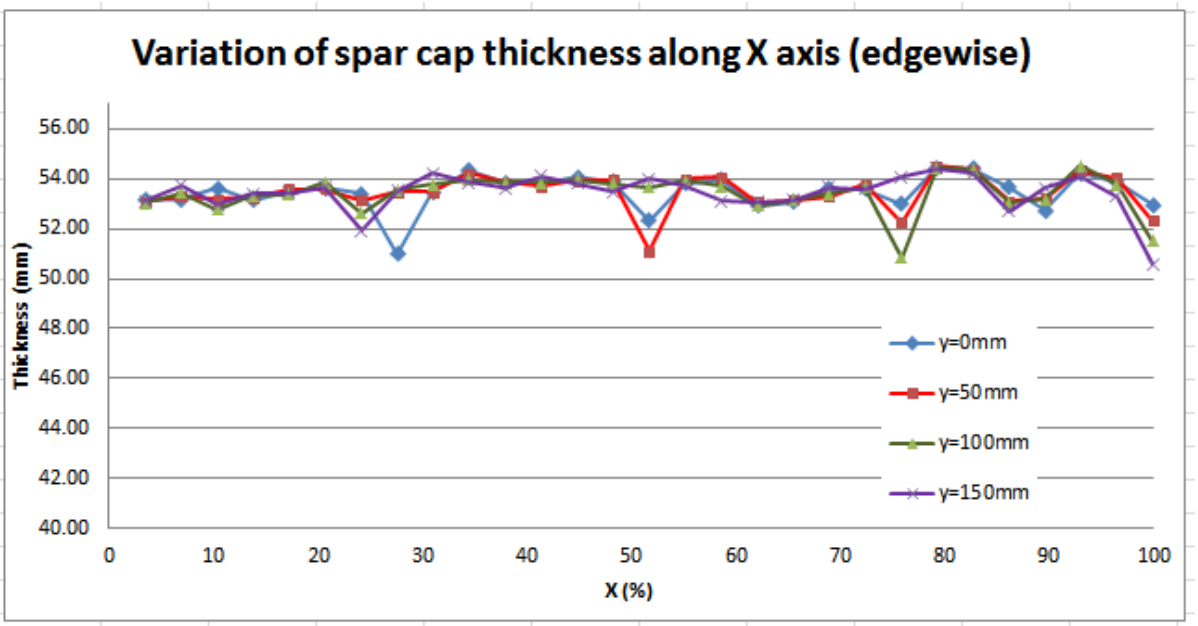
2) EBR1_16m (2)

Table 5 Thickness values and variation for spar cap at 16m from root.

	Y position (mm)	Y position (mm)	Y position (mm)	Y position (mm)			
X position (%)	**0**	**50**	**100**	**150**	→		
3	**53.12**	**53.11**	**53.01**	**53.09**	MEAN (mm)	STDEV (mm)	COV (%)
7	53.19	53.30	53.43	53.74	53.41	0.24	0.45
10	53.61	53.17	52.76	52.95	53.12	0.37	0.69
14	53.13	53.23	53.34	53.41	53.28	0.12	0.23
17	53.46	53.59	53.35	53.42	53.46	0.10	0.19
21	53.61	53.59	53.82	53.66	53.67	0.11	0.20
24	53.40	53.13	52.61	51.91	52.76	0.66	1.24
28	51.00	53.47	53.55	53.50	52.88	1.25	2.37
31	53.47	53.47	53.78	54.22	53.74	0.35	0.65
34	**54.31**	**54.21**	**53.96**	**53.85**	54.08	0.21	0.40
38	53.84	53.83	53.84	53.61	53.78	0.11	0.21
41	53.82	53.70	53.86	54.09	53.87	0.16	0.30
45	54.06	53.90	53.94	53.82	53.93	0.10	0.18
48	53.88	53.97	53.81	53.48	53.78	0.21	0.39
52	**52.32**	**51.09**	**53.64**	**54.00**	52.76	1.33	2.52
55	53.79	53.99	53.90	53.74	53.85	0.11	0.20
59	53.95	54.06	53.71	53.09	53.70	0.43	0.81
62	52.89	53.07	52.90	53.08	52.98	0.10	0.19
66	53.08	53.14	53.15	53.15	53.13	0.03	0.07
69	**53.58**	**53.29**	**53.39**	**53.65**	53.48	0.16	0.30
72	53.59	53.75	53.64	53.60	53.64	0.08	0.14
76	53.00	52.26	50.84	54.05	52.54	1.35	2.56
79	54.44	54.50	54.44	54.39	54.44	0.05	0.08
83	54.39	54.34	54.35	54.20	54.32	0.08	0.15
86	**53.65**	**53.11**	**53.02**	**52.69**	53.12	0.40	0.75
90	52.74	53.21	53.17	53.60	53.18	0.35	0.66
93	54.21	54.32	54.50	54.10	54.28	0.17	0.32
97	53.88	54.04	53.78	53.28	53.74	0.33	0.61
100	**52.94**	**52.31**	**51.51**	**50.58**	51.84	1.02	1.97
MEAN	53.46	53.45	53.41	53.45	53.44	0.02	0.04
STDEV	0.69	0.70	0.77	0.74			
COV(%) ↓	1.28	1.31	1.44	1.39			

MEAN TOTAL SAMPLE (mm)	53.44
STDEV TOTAL SAMPLE (mm)	0.73
COV (%) TOTAL SAMPLE	1.36

A second measurement was performed at the same blade but this time at the sub part from 16m to 19m. The thickness measurements along X axis for the four Y positions have a COV between 1.28% and 1.44%, while along Y axis for the thirty X positions have a COV between 0.07% and 2.56%. The total mean value of the thickness measures for the spar cap for EBR1 blade at 16m is 53.44mm with a standard deviation of 0.73mm and a COV 1.36%.



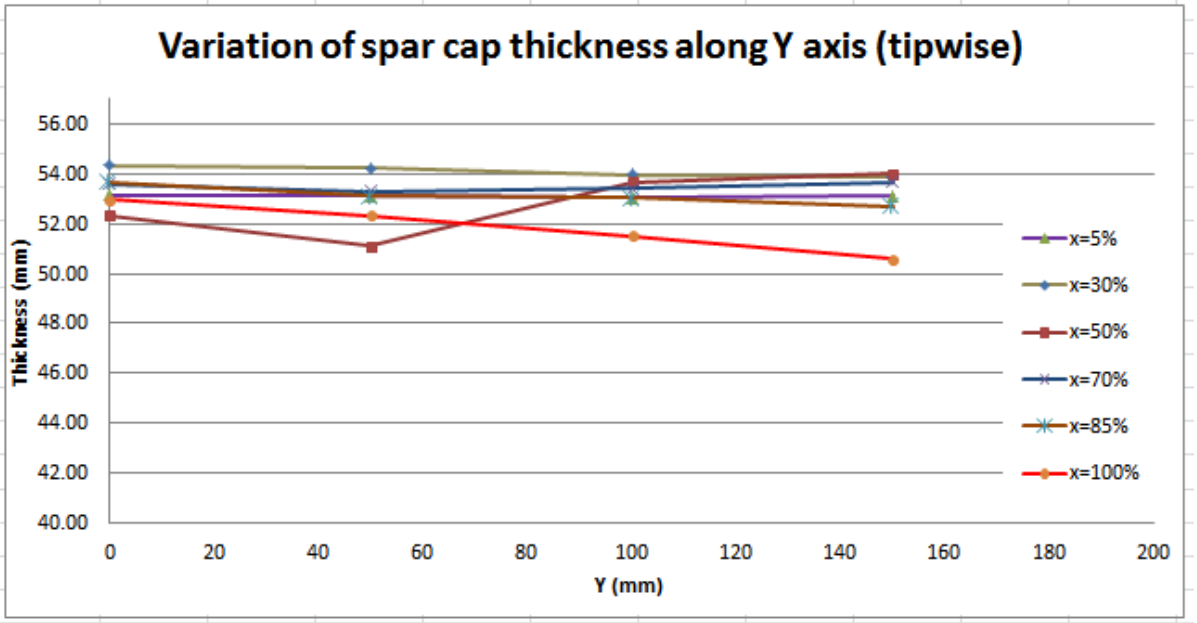


Figure 31: Variation of spar cap thickness along X axis (when Y=0, 50, 100 and 150mm) and Y axis (when X=5,30,50,70,85 and 100% of total spar cap length).

3) EBR21_16m

Table 6 Thickness values and variation for spar cap at 16m from root.

	Y position (mm)	Y position (mm)	Y position (mm)	Y position (mm)			
X position (%)	**0**	**50**	**100**	**150**	→		
3	**51.68**	**52.78**	**53.48**	**54.16**	MEAN (mm)	STDEV (mm)	COV (%)
7	54.86	55.55	55.56	55.83	55.45	0.41	0.75
10	55.90	55.75	55.59	55.44	55.67	0.20	0.35
14	55.29	55.14	54.50	54.35	54.82	0.46	0.85
17	53.97	53.83	53.84	53.98	53.91	0.08	0.15
21	54.25	54.59	55.01	55.41	54.82	0.50	0.91
24	55.77	55.96	55.97	55.82	55.88	0.10	0.18
28	56.04	51.68	52.78	53.88	53.59	1.86	3.48
31	54.40	54.77	55.24	55.70	55.03	0.56	1.02
34	**55.74**	**55.75**	**55.49**	**55.23**	55.56	0.25	0.44
38	55.12	55.13	54.87	54.73	54.96	0.20	0.36
41	54.59	54.58	54.82	55.35	54.84	0.36	0.66
45	55.55	55.67	55.72	55.66	55.65	0.07	0.13
48	55.61	55.92	55.97	56.01	55.88	0.18	0.32
52	**56.04**	**55.82**	**51.73**	**52.90**	54.12	2.14	3.96
55	53.87	54.58	55.20	55.57	54.80	0.75	1.36
59	55.87	55.88	55.87	55.72	55.83	0.07	0.13
62	55.59	55.37	55.15	54.93	55.26	0.28	0.51
66	55.05	55.45	55.09	55.11	55.17	0.19	0.34
69	**55.08**	**55.05**	55.15	**55.19**	55.12	0.06	0.12
72	55.02	54.86	54.85	55.13	54.96	0.13	0.25
76	55.26	55.33	55.40	51.19	54.29	2.07	3.82
79	52.28	51.67	51.04	50.27	51.32	0.86	1.68
83	49.44	48.60	47.83	47.10	48.24	1.01	2.08
86	**46.51**	**46.10**	45.81	**45.52**	45.99	0.42	0.92
90	45.48	45.67	46.19	46.95	46.07	0.66	1.43
93	47.71	48.47	49.24	50.17	48.90	1.05	2.16
97	51.14	52.30	53.30	54.16	52.72	1.30	2.47
100	**54.79**	**55.30**	55.44	**55.40**	55.23	0.30	0.54
MEAN	53.72	53.71	53.66	53.68	53.69	0.03	0.05
STDEV	2.89	2.90	2.86	2.88			
COV(%) ↓	5.38	5.39	5.33	5.36			

MEAN TOTAL SAMPLE (mm)	53.69
STDEV TOTAL SAMPLE (mm)	2.89
COV (%) TOTAL SAMPLE	5.39

The thickness measurements along X axis for the four Y positions have a COV between 5.33% and 5.39%, while along Y axis for the thirty X positions have a COV between 0.05% and 3.96%. The total mean value of the thickness measures for the spar cap for EBR21 blade at 16m is 53.69mm with a standard deviation of 2.89mm and a COV 5.39%.

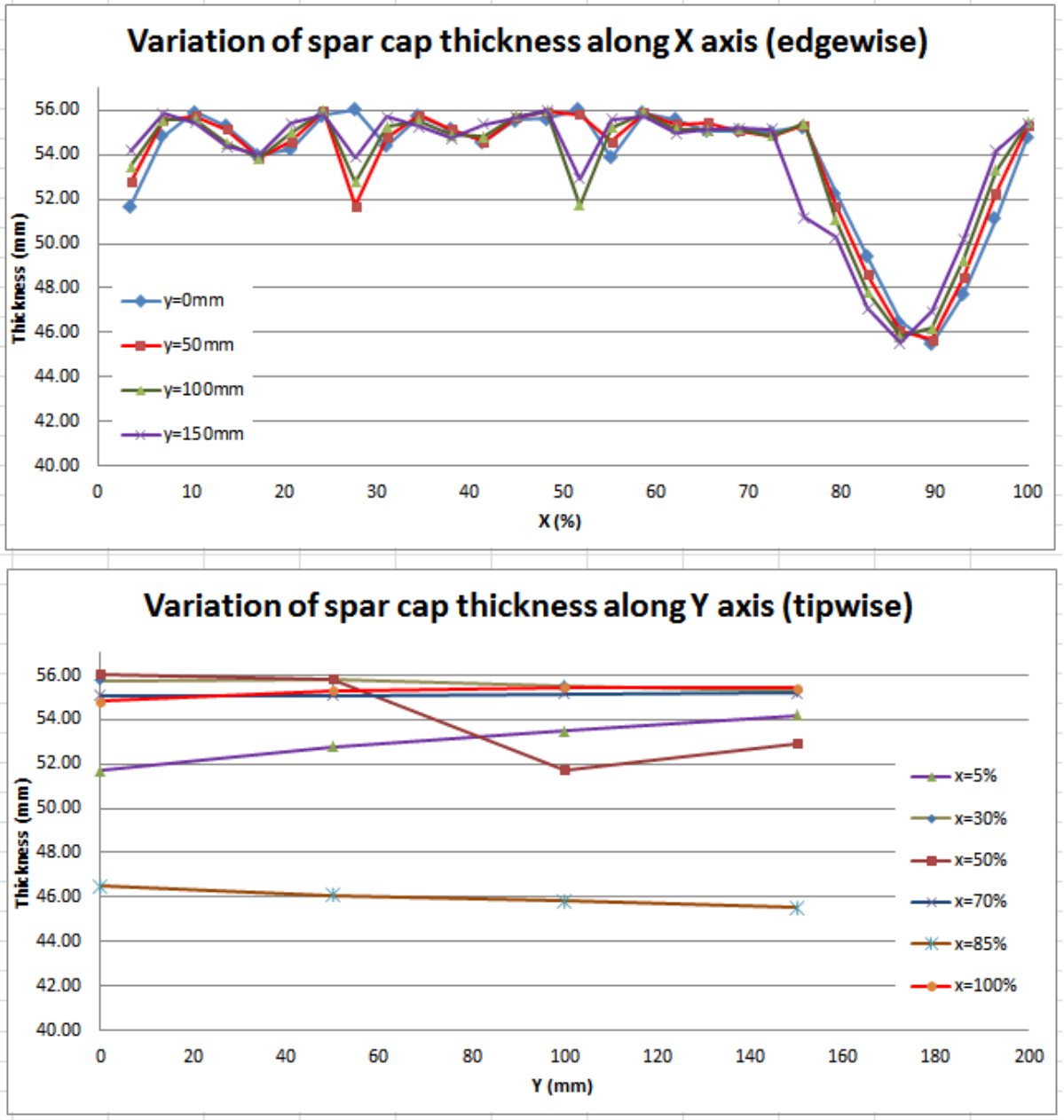


Figure 32: Variation of spar cap thickness along X axis (when Y=0, 50, 100 and 150mm) and Y axis (when X=5,30,50,70,85 and 100% of total spar cap length).

4) EBR22_22.38m

Table 7 Thickness values and variation for spar cap at 22.38m from root.

	Y position (mm)	Y position (mm)	Y position (mm)	Y position (mm)			
X position (mm)	**0**	**50**	**100**	**150**	MEAN (mm)	STDEV (mm)	COV (%)
3	53.36	54.59	55.36	55.93	54.81	1.11	2.03
7	56.14	56.15	56.14	56.02	56.11	0.06	0.11
10	55.66	54.91	54.21	53.80	54.65	0.81	1.49
14	53.59	53.54	53.70	53.97	53.70	0.19	0.36
17	54.29	54.41	54.73	54.80	54.56	0.25	0.45
21	54.54	54.26	53.83	53.40	54.01	0.50	0.92
24	52.31	51.06	49.69	48.32	50.34	1.72	3.42
28	48.10	51.03	52.59	53.61	51.33	2.40	4.68
31	54.61	55.18	55.57	55.46	55.20	0.43	0.78
34	55.37	54.74	54.13	53.79	54.51	0.70	1.28
38	53.70	53.74	53.91	54.39	53.94	0.32	0.59
41	54.39	54.40	54.42	54.44	54.41	0.02	0.04
45	54.41	54.41	54.17	53.96	54.24	0.22	0.41
48	53.53	52.99	52.25	50.87	52.41	1.15	2.20
52	49.49	48.10	52.84	54.07	51.12	2.79	5.47
55	55.16	55.97	56.35	56.59	56.02	0.62	1.12
59	56.51	56.05	55.39	54.83	55.70	0.74	1.33
62	55.16	54.70	54.39	53.99	54.56	0.49	0.91
66	54.06	54.20	54.19	54.14	54.15	0.06	0.11
69	54.02	53.87	53.65	53.39	53.73	0.28	0.51
72	53.10	52.72	52.35	51.84	52.50	0.54	1.02
76	51.11	50.01	48.72	53.46	50.82	2.01	3.95
79	54.61	55.37	55.83	56.11	55.48	0.66	1.18
83	56.15	56.14	55.78	55.36	55.86	0.37	0.67
86	55.02	54.95	54.85	54.58	54.85	0.19	0.35
90	54.38	54.20	54.02	53.95	54.14	0.19	0.35
93	53.90	53.90	53.87	53.82	53.87	0.04	0.07
97	53.58	53.14	52.53	51.92	52.79	0.72	1.37
100	51.27	50.36	49.05	48.72	49.85	1.18	2.37
MEAN (mm)	53.85	53.76	53.74	53.78			
STDEV (mm)	1.86	1.93	1.90	1.89			
COV(%)	3.46	3.59	3.54	3.52			

MEAN TOTAL SAMPLE (mm)	53.78
STDEV TOTAL SAMPLE (mm)	1.91
COV (%) TOTAL SAMPLE	3.54

The thickness measurements along X axis for the four Y positions have a COV between 3.46% and 3.59%, while along Y axis for the thirty X positions have a COV between 0.07% and 5.47%. The total mean value of the thickness measures for the spar cap for EBR22 blade at 22.38m is 53.78mm with a standard deviation of 1.91mm and a COV 3.54%.

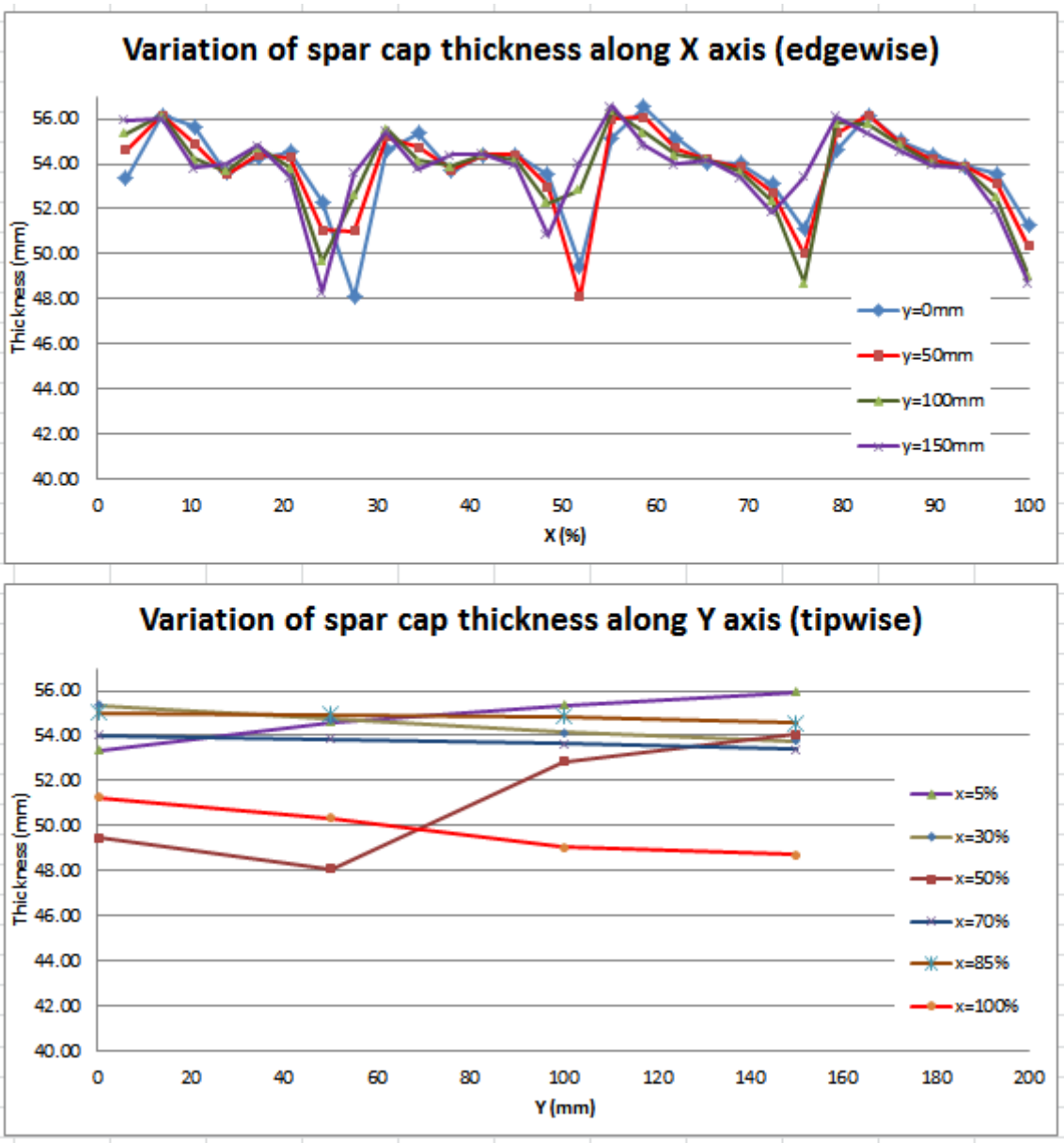


Figure 33: Variation of spar cap thickness along X axis (when Y=0, 50, 100 and 150mm) and Y axis (when X=5,30,50,70,85 and 100% of total spar cap length).

5) EBR1_22.38m

Table 8 Thickness values and variation for spar cap at 22.38m from root.

	Y position (mm)	Y position (mm)	Y position (mm)	Y position (mm)			
X position (mm)	**0**	**50**	**100**	**150**			
3	**50.86**	**52.78**	**53.50**	**53.96**	MEAN (mm)	STDEV (mm)	COV (%)
7	54.51	53.93	53.93	53.98	54.09	0.28	0.52
10	54.38	54.25	54.69	54.59	54.48	0.20	0.36
14	53.32	54.47	54.54	54.48	54.20	0.59	1.08
17	53.86	54.52	54.62	54.65	54.41	0.37	0.68
21	54.65	54.34	54.21	54.25	54.36	0.20	0.36
24	53.54	53.96	53.86	53.97	53.83	0.20	0.37
28	52.33	53.88	53.67	53.66	53.38	0.71	1.34
31	54.65	53.63	53.61	53.74	53.91	0.50	0.92
34	**54.02**	**54.86**	**54.63**	**54.72**	54.56	0.37	0.68
38	53.20	55.20	54.70	54.91	54.50	0.89	1.64
41	54.10	54.90	54.89	54.90	54.70	0.40	0.73
45	54.57	54.43	54.14	54.02	54.29	0.26	0.47
48	52.93	53.80	51.68	53.59	53.00	0.95	1.80
52	**53.13**	**52.51**	**51.63**	**50.33**	51.90	1.22	2.34
55	54.67	51.46	52.69	53.24	53.01	1.33	2.51
59	53.81	54.11	55.42	54.49	54.46	0.70	1.29
62	53.40	54.43	55.28	54.03	54.29	0.79	1.45
66	54.23	53.92	54.93	53.94	54.25	0.47	0.87
69	**54.38**	**54.11**	55.11	**53.90**	54.38	0.53	0.97
72	51.82	53.75	54.72	53.69	53.50	1.21	2.27
76	53.97	53.73	55.64	53.84	54.29	0.90	1.66
79	54.65	54.03	55.11	54.86	54.66	0.46	0.84
83	53.59	54.63	55.91	55.69	54.95	1.07	1.95
86	**53.60**	**55.21**	56.23	**55.05**	55.02	1.08	1.97
90	54.48	54.90	55.92	54.87	55.04	0.61	1.12
93	54.11	53.84	55.04	54.08	54.27	0.53	0.97
97	50.72	53.56	54.63	53.48	53.10	1.67	3.14
100	**50.58**	**53.43**	54.63	**53.42**	53.01	1.72	3.24
MEAN	53.52	54.02	54.47	54.08	54.02	0.39	0.72
STDEV	1.17	0.78	1.09	0.91			
COV(%)	2.19	1.45	1.99	1.68			

MEAN TOTAL SAMPLE (mm)	54.02
STDEV TOTAL SAMPLE (mm)	1.06
COV (%) TOTAL SAMPLE	1.96

The thickness measurements along X axis for the four Y positions have a COV between 1.45% and 2.19%, while along Y axis for the thirty X positions have a COV between 0.36% and 3.24%. The total mean value of the thickness measures for the spar cap for EBR1 blade at 22.38m is 54.02mm with a standard deviation of 1.06mm and a COV 1.96%.

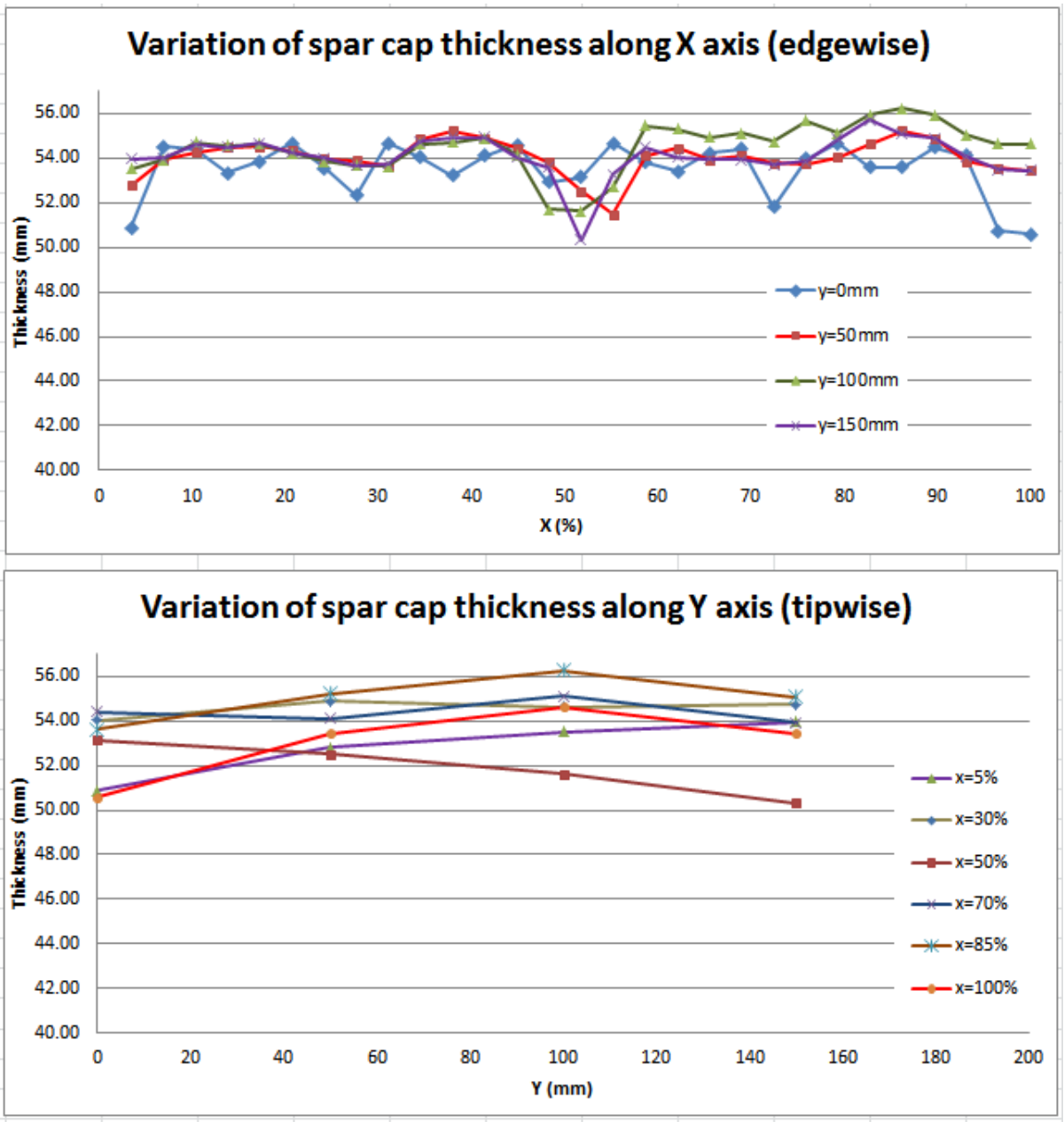


Figure 34: Variation of spar cap thickness along X axis (when Y=0,50,100 and 150mm) and Y axis (when X=5,30,50,70,85 and 100% of total spar cap length).

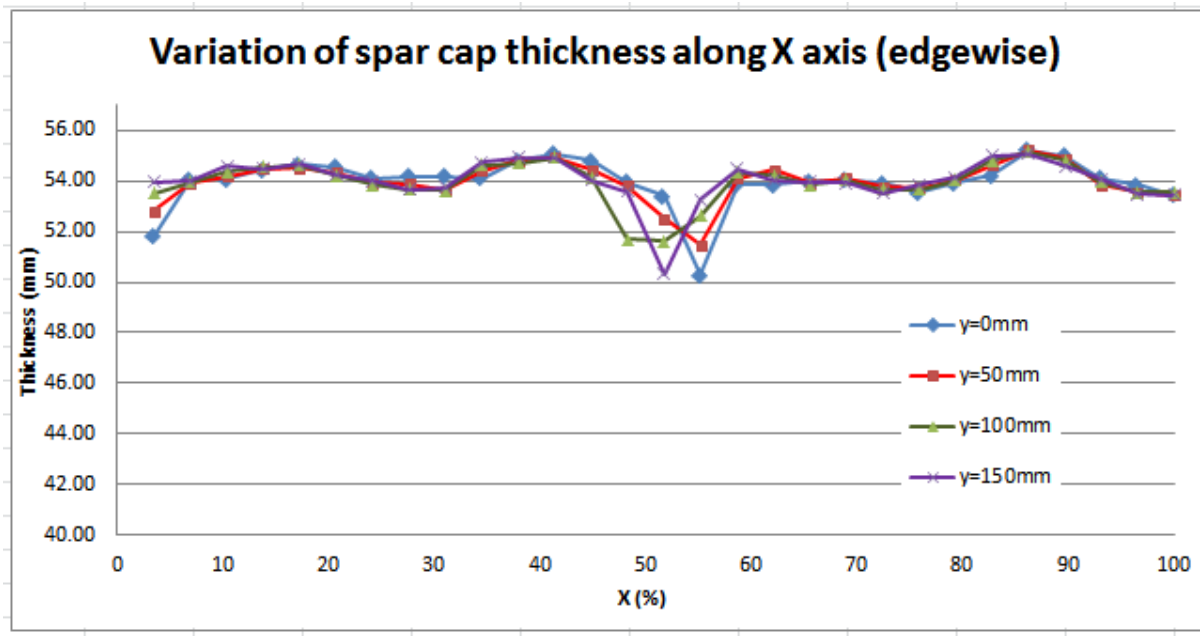
6) EBR21_22.38m

Table 9 Thickness values and variation for spar cap at 22.38m from root.

	Y position (mm)	Y position (mm)	Y position (mm)	Y position (mm)			
X position (mm)	**0**	**50**	**100**	**150**	→		
3	**51.79**	**52.78**	**53.50**	**53.96**	MEAN (mm)	STDEV (mm)	COV (%)
7	54.07	53.93	53.93	53.98	53.98	0.06	0.12
10	54.06	54.19	54.37	54.59	54.30	0.23	0.42
14	54.45	54.47	54.54	54.48	54.49	0.04	0.08
17	54.65	54.52	54.62	54.65	54.61	0.06	0.11
21	54.56	54.34	54.21	54.25	54.34	0.15	0.28
24	54.11	53.91	53.86	53.97	53.96	0.11	0.20
28	54.16	53.88	53.67	53.66	53.84	0.23	0.44
31	54.16	53.63	53.61	53.74	53.78	0.26	0.48
34	**54.10**	**54.38**	**54.63**	**54.72**	54.46	0.28	0.51
38	54.81	54.81	54.70	54.91	54.81	0.09	0.16
41	55.05	54.90	54.92	54.90	54.94	0.07	0.13
45	54.81	54.43	54.14	54.02	54.35	0.35	0.65
48	53.93	53.80	51.68	53.59	53.25	1.06	1.98
52	**53.39**	**52.51**	**51.63**	**50.33**	51.97	1.31	2.52
55	50.27	51.46	52.61	53.24	51.90	1.31	2.52
59	53.82	54.11	54.33	54.49	54.19	0.29	0.53
62	53.82	54.43	54.20	54.03	54.12	0.26	0.47
66	53.98	53.92	53.85	53.94	53.92	0.05	0.10
69	**54.04**	**54.11**	**54.03**	**53.90**	54.02	0.09	0.16
72	53.91	53.75	53.65	53.52	53.71	0.17	0.31
76	53.55	53.73	53.65	53.84	53.69	0.12	0.23
79	53.91	54.03	54.03	54.13	54.02	0.09	0.17
83	54.23	54.63	54.81	55.00	54.67	0.33	0.61
86	**55.21**	**55.21**	**55.13**	**55.05**	55.15	0.07	0.13
90	54.97	54.90	54.82	54.58	54.82	0.17	0.31
93	54.11	53.84	53.96	54.08	54.00	0.12	0.23
97	53.82	53.56	53.56	53.48	53.60	0.15	0.28
100	**53.44**	**53.43**	**53.56**	**53.42**	53.46	0.06	0.12
MEAN	53.97	53.99	53.94	54.02	53.98	0.03	0.06
STDEV	0.94	0.75	0.82	0.86			
COV(%) ↓	1.74	1.39	1.52	1.58			

MEAN TOTAL SAMPLE (mm)	53.98
STDEV TOTAL SAMPLE (mm)	0.85
COV (%) TOTAL SAMPLE	1.57

The thickness measurements along X axis for the four Y positions have a COV between 1.39% and 1.74%, while along Y axis for the thirty X positions have a COV between 0.12% and 2.52%. The total mean value of the thickness measures for the spar cap for EBR21 blade at 22.38m is 53.98mm with a standard deviation of 0.85mm and a COV 1.57%.



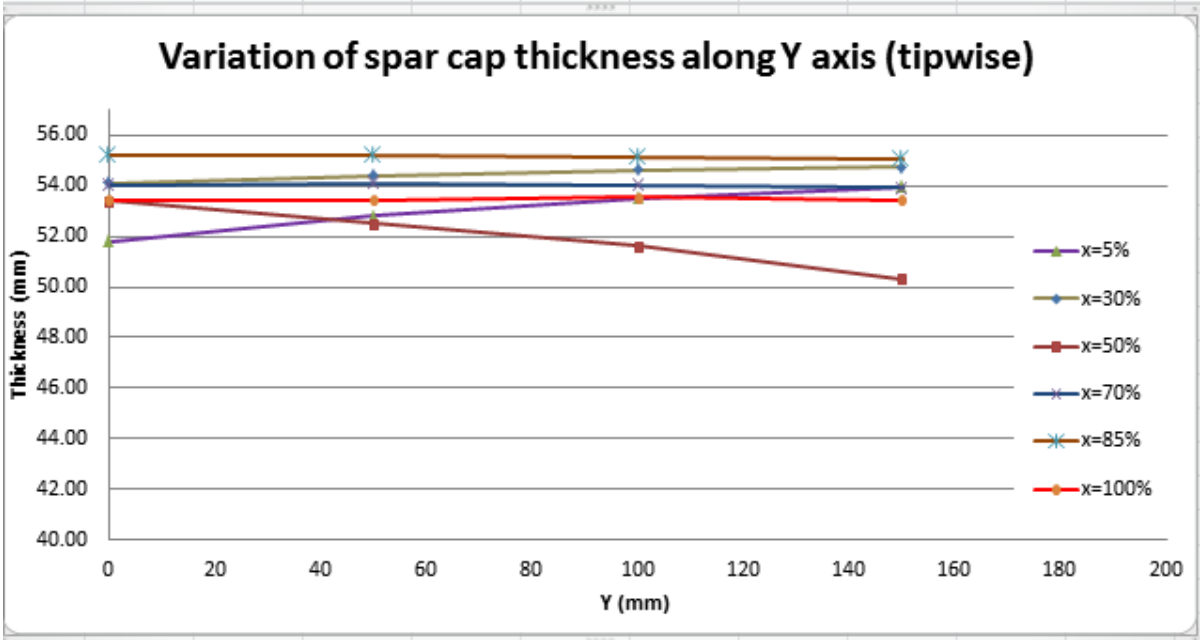


Figure 35: Variation of spar cap thickness along X axis (when Y=0,50,100 and 150mm) and Y axis (when X=5,30,50,70,85 and 100% of total spar cap length).

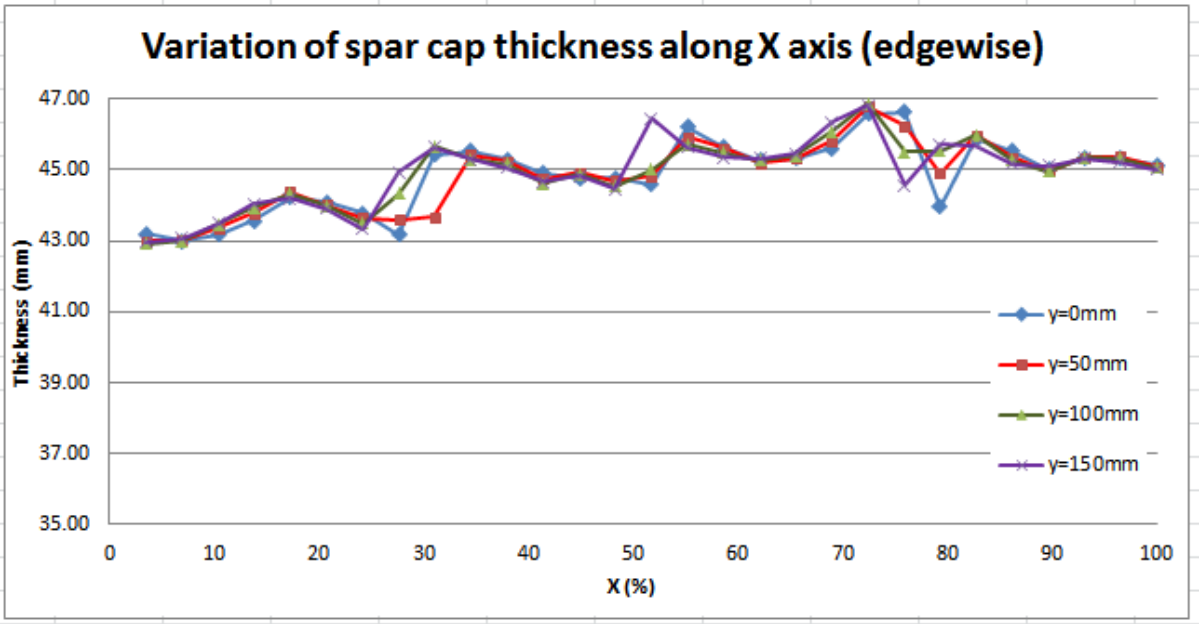
7) EBR21_25.4m

Table 10 Thickness values and variation for spar cap at 25.4m from root.

	Y position (mm)	Y position (mm)	Y position (mm)	Y position (mm)			
X position (mm)	**0**	**50**	**100**	**150**	→		
3	**43.20**	**42.99**	**42.92**	**42.95**	MEAN (mm)	STDEV (mm)	COV (%)
7	42.98	43.01	42.98	43.08	43.01	0.05	0.11
10	43.18	43.36	43.45	43.48	43.37	0.14	0.32
14	43.58	43.78	43.94	44.03	43.83	0.20	0.45
17	44.22	44.38	44.33	44.18	44.28	0.09	0.21
21	44.10	44.02	43.99	43.90	44.00	0.08	0.19
24	43.79	43.64	43.48	43.33	43.56	0.20	0.46
28	43.17	43.58	44.31	44.93	44.00	0.78	1.78
31	45.42	43.68	45.65	45.64	45.10	0.95	2.11
34	**45.54**	**45.41**	**45.29**	**45.29**	45.38	0.12	0.26
38	45.29	45.23	45.17	45.05	45.19	0.10	0.22
41	44.89	44.73	44.61	44.67	44.73	0.12	0.27
45	44.77	44.92	44.86	44.81	44.84	0.06	0.14
48	44.76	44.69	44.53	44.46	44.61	0.14	0.32
52	**44.58**	**44.83**	**45.00**	**46.46**	45.22	0.84	1.87
55	46.20	45.92	45.70	45.64	45.87	0.25	0.55
59	45.64	45.62	45.48	45.35	45.52	0.14	0.30
62	45.27	45.20	45.27	45.31	45.26	0.05	0.10
66	45.32	45.33	45.39	45.45	45.37	0.06	0.13
69	**45.62**	**45.83**	**46.09**	**46.35**	45.97	0.32	0.69
72	46.57	46.77	46.86	46.82	46.75	0.13	0.28
76	46.64	46.24	45.51	44.57	45.74	0.91	1.99
79	43.95	44.90	45.53	45.71	45.02	0.80	1.77
83	45.86	45.98	45.97	45.69	45.88	0.13	0.29
86	**45.54**	**45.35**	**45.26**	**45.17**	45.33	0.15	0.34
90	45.01	44.96	44.96	45.12	45.01	0.08	0.17
93	45.32	45.35	45.36	45.33	45.34	0.02	0.04
97	45.32	45.37	45.31	45.21	45.30	0.07	0.15
100	**45.14**	**45.08**	**45.05**	**45.01**	45.07	0.06	0.13
MEAN	44.86	44.83	44.91	44.93	44.88	0.04	0.10
STDEV	1.00	0.96	0.91	0.95			
COV(%) ↓	2.23	2.15	2.04	2.11			

MEAN TOTAL SAMPLE (mm)	44.88
STDEV TOTAL SAMPLE (mm)	0.96
COV (%) TOTAL SAMPLE	2.14

The thickness measurements along X axis for the four Y positions have a COV between 2.04% and 2.23%, while along Y axis for the thirty X positions have a COV between 0.04% and 2.11%. The total mean value of the thickness measures for the spar cap for EBR21 blade at 25.4m is 44.88mm with a standard deviation of 0.96mm and a COV 2.14%.



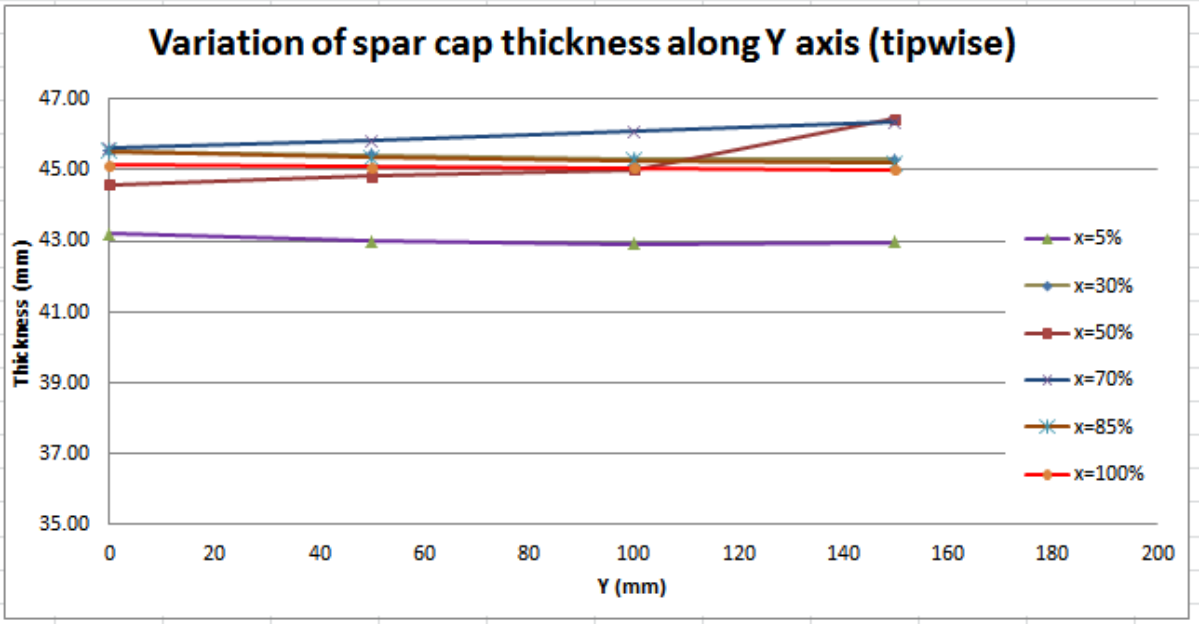


Figure 36: Variation of spar cap thickness along X axis (when Y=0,50,100 and 150mm) and Y axis (when X=5,30,50,70,85 and 100% of total spar cap length).

8) EBR22_25.4m

Table 11 Thickness values and variation for spar cap at 25.4m from root.

	Y position (mm)	Y position (mm)	Y position (mm)	Y position (mm)			
X position (mm)	**0**	**50**	**100**	**150**	→		
3	**44.84**	**44.79**	**44.69**	**44.56**	MEAN (mm)	STDEV (mm)	COV (%)
7	44.31	44.14	44.17	44.30	44.23	0.09	0.20
10	44.32	44.52	44.71	44.92	44.62	0.26	0.57
14	45.05	45.12	45.14	45.11	45.11	0.04	0.08
17	45.07	44.91	44.68	44.54	44.80	0.24	0.53
21	44.45	44.51	44.49	44.40	44.46	0.05	0.11
24	44.30	44.10	43.90	43.37	43.92	0.40	0.91
28	42.70	43.05	43.51	43.78	43.26	0.48	1.11
31	43.99	44.07	44.14	44.18	44.10	0.08	0.19
34	**44.09**	**43.99**	**43.89**	**43.84**	43.95	0.11	0.25
38	43.90	43.94	43.75	43.37	43.74	0.26	0.59
41	43.17	43.07	43.06	43.05	43.08	0.06	0.13
45	43.04	43.04	43.04	43.07	43.05	0.02	0.04
48	43.18	43.80	44.51	44.97	44.12	0.79	1.78
52	**45.35**	**45.35**	**46.05**	**46.27**	45.75	0.48	1.04
55	46.12	45.85	45.79	45.74	45.88	0.17	0.36
59	45.69	45.59	45.54	45.49	45.58	0.08	0.18
62	45.51	45.41	45.38	45.32	45.41	0.08	0.18
66	45.21	45.28	45.37	45.40	45.31	0.09	0.19
69	**45.33**	**45.16**	**45.12**	**45.31**	45.23	0.10	0.23
72	45.36	45.38	45.32	45.14	45.30	0.11	0.24
76	44.95	44.40	43.57	43.69	44.15	0.65	1.46
79	44.62	45.11	45.47	45.66	45.21	0.46	1.01
83	45.84	45.86	45.79	45.93	45.85	0.06	0.13
86	**46.00**	**46.01**	**46.02**	**45.99**	46.01	0.01	0.03
90	46.01	46.02	45.98	45.93	45.99	0.04	0.09
93	45.88	45.86	45.97	45.98	45.92	0.06	0.14
97	45.90	45.86	45.92	46.16	45.96	0.13	0.29
100	**46.29**	**46.29**	**46.23**	**46.15**	46.24	0.07	0.14
MEAN	44.84	44.84	44.87	44.88	44.86	0.02	0.04
STDEV	0.99	0.93	0.95	0.99			
COV(%) ↓	2.21	2.08	2.12	2.21			

MEAN TOTAL SAMPLE (mm)	44.86
STDEV TOTAL SAMPLE (mm)	0.97
COV (%) TOTAL SAMPLE	2.16

The thickness measurements along X axis for the four Y positions have a COV between 2.08% and 2.21%, while along Y axis for the thirty X positions have a COV between 0.03% and 1.78%. The total mean value of the thickness measures for the spar cap for EBR22 blade at 25.4m is 44.86mm with a standard deviation of 0.97mm and a COV 2.16%.

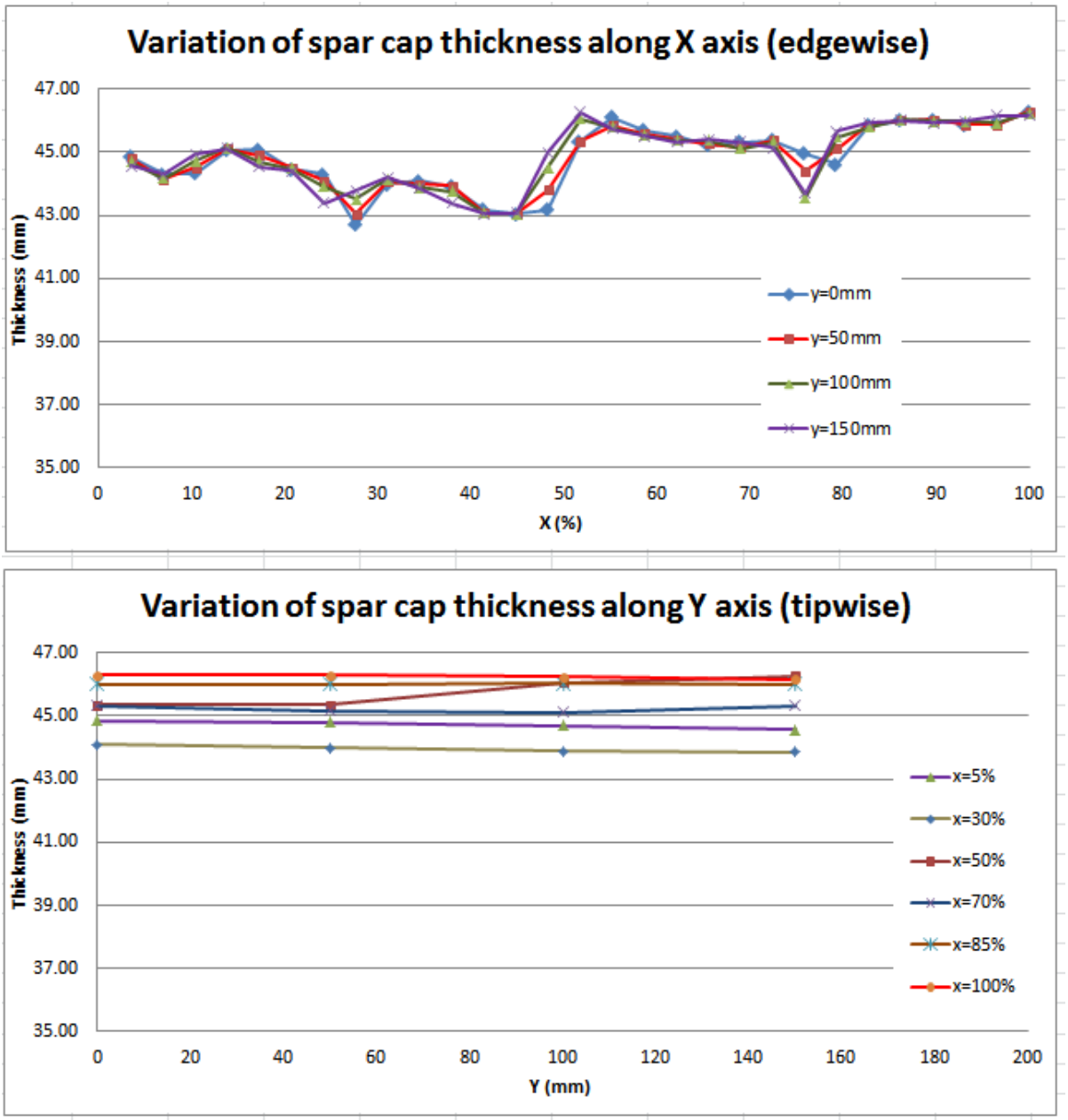


Figure 37: Variation of spar cap thickness along X axis (when Y=0, 50, 100 and 150mm) and Y axis (when X=5, 30, 50, 70, 85 and 100% of total spar cap length).

As it was mentioned before, eight segments from three different blades of the same length and design were measured. In Table 12 are compared results of the mean values for 16m, 22.38m and 25.4m from the root. Results showed that the COV is from 0.02% up to 0.30% when comparing the mean values of the total sample for the three different blades at 16m, 22.38m and 25.4m from the root. The very small COV is an indication of a reliable manufacturing process for the spar cap of the specific blade type.

Table 12 Variation of thickness for spar cap among the three different blades for 16m, 22.38m and 25.4m from the root.

	16m	22.38m	25.4m
EBR1	53.73, 53.44	54.02	
EBR21	53.69	53.98	44.88
EBR22		53.78	44.86
MEAN (mm)	53.62	53.93	44.87
STDEV (mm)	0.16	0.13	0.01
COV (%)	0.30	0.24	0.02

5.3.2 Printouts from the measured sub parts

Indicative reults are provided below from the performed computations. The full data set is available in the IRPwind share point [5].

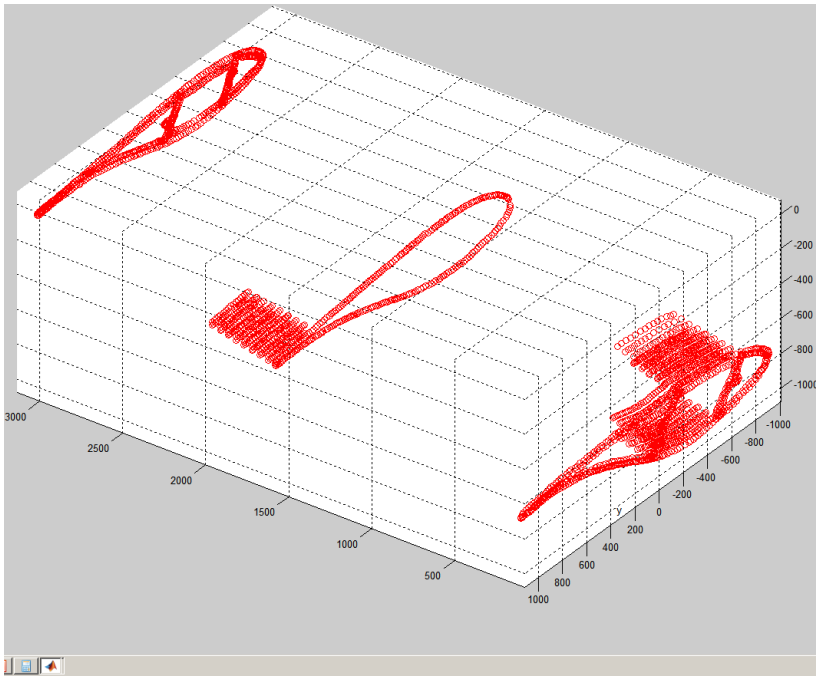


Figure 38: Printout from the measurements for the EBR21 blade and segment 16m - 19m from blade's root.

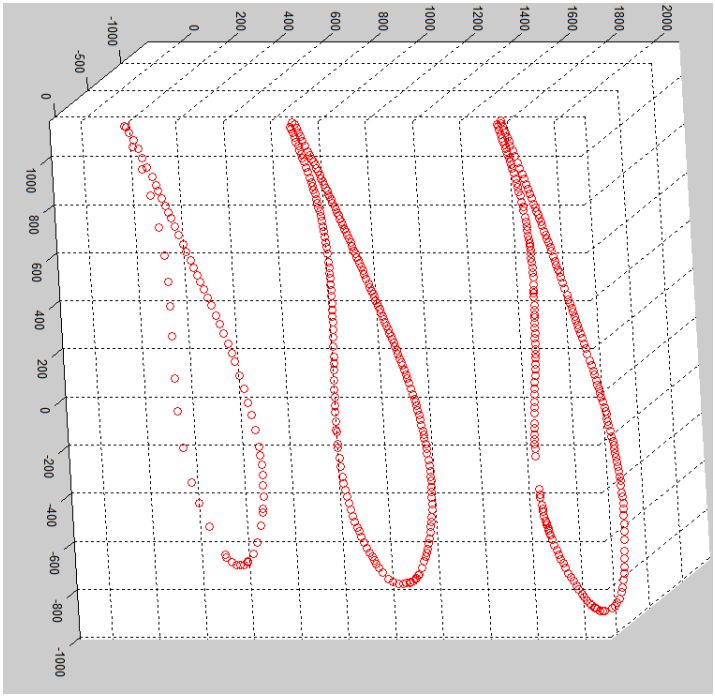


Figure 39: Airfoil shape (3 sections) from measurements for the EBR1 blade and segment 16m - 19m from blade's root.

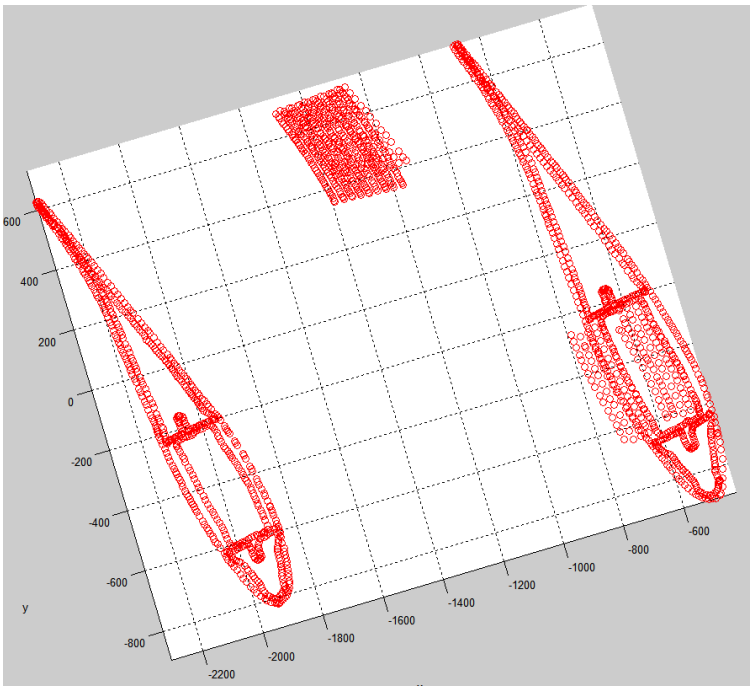


Figure 40: Printout from the measurements for the EBR1 blade and segment 22.38m – 25.4m from blade's root.

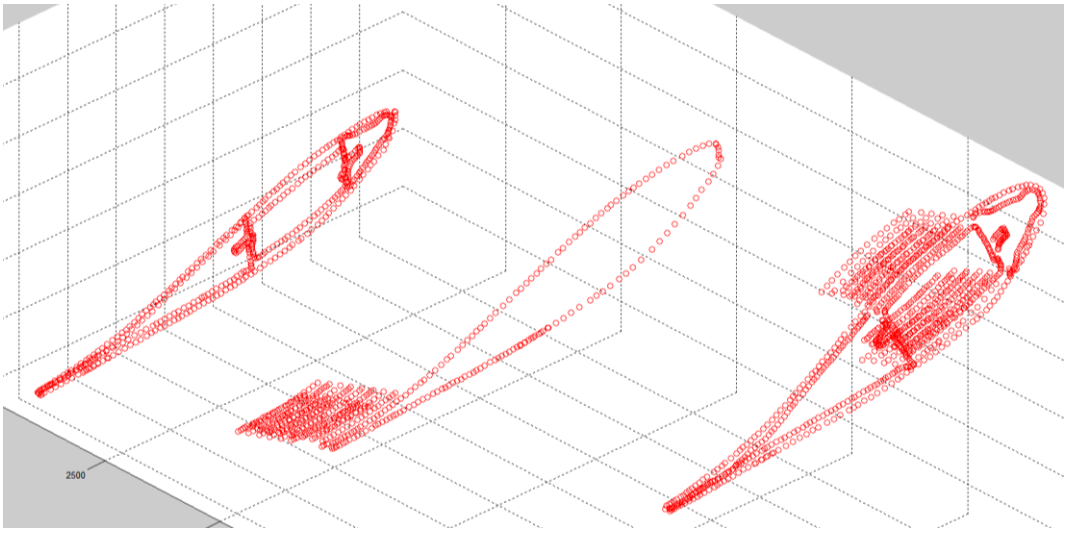


Figure 41: Printout from the measurements for the EBR21 blade and segment 22.38m – 25.4m from blade's root.

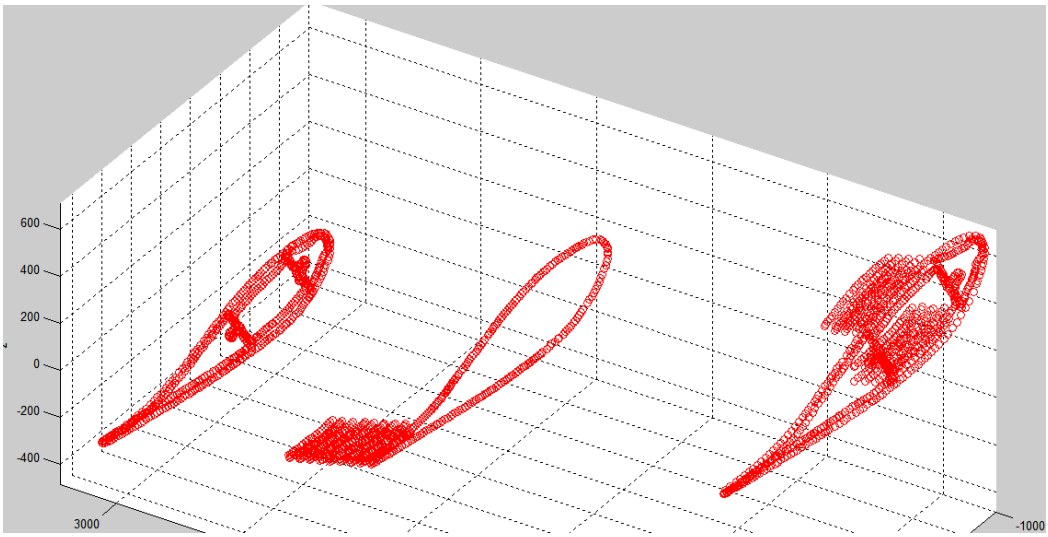


Figure 42: Printout from the measurements for the EBR22 blade and segment 22.38m – 25.4m from blade's root.

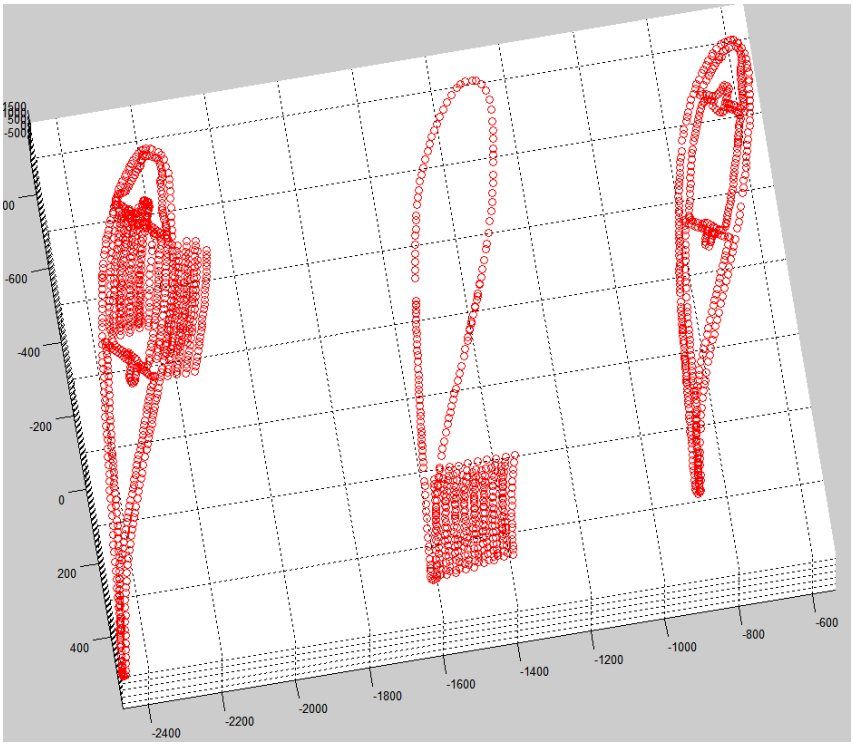


Figure 43: Printout from the measurements for the EBR21 blade and segment 25m – 28m from blade's root.

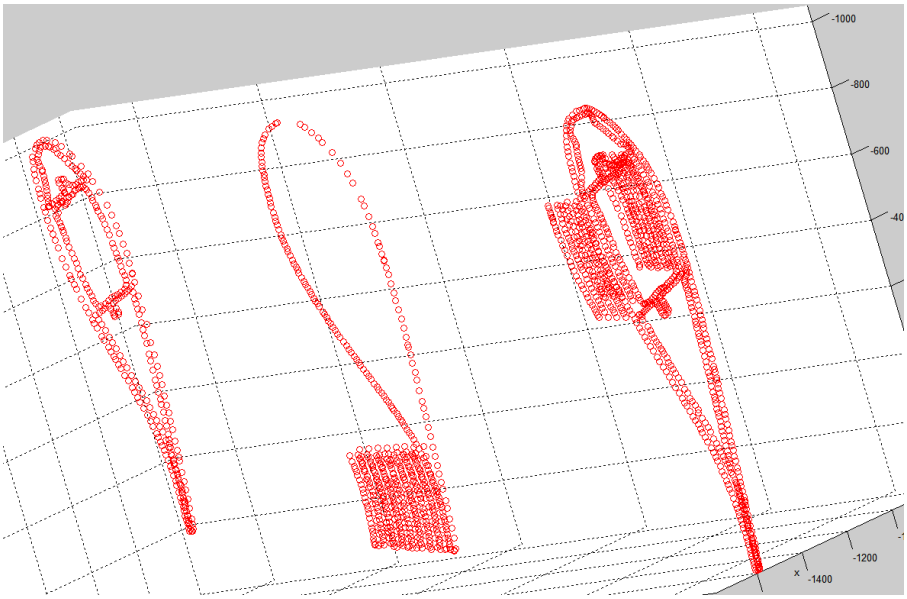


Figure 44: Printout from the measurements for the EBR22 blade and segment 25m – 28m from blade's root.

6. Conclusions and recommendation for future work

3D geometry measurements were performed on eight subcomponents using a robotic arm. The measurement campaign included the dimensioning of the aerodynamic shell, thickness measurements of the spar caps and sections and measurements of the trailing edge. The focus in this report was on the spar cap thickness variation, however the full data set is available for future investigations. The results on the spar cap thickness showed that the COV is from 0.02% up to 0.30% when comparing the mean values of the total sample for the three available blades at 16m, 22.38m and 25.4m from the root. The small COV is an indication of a reliable manufacturing process for the spar cap of the specific blade type. When observing the individual measurements of the eight sub components concerning the spar cap thickness along X axis for the four Y positions the COV is between 1.28% and 5.39%, while along Y axis for the thirty X positions the COV is between 0.03% and 6.13%.

The ultrasonics and thermography tests can reveal flaws in a composite the structure but always under their operational restrictions. For ultrasonics the presence of porosity or air inclusions can reduce resolution or even completely distort the performed measurement. It is also essential to have a calibration block for calibrating the wave velocities for the ‘to be’ scanned areas. In well manufactured structures the tested Force system highlighted inclusions with 12mm radius and 4mm thickness.

The thermography can be used either as a non destructive testing technique or as a monitoring tool for damage propagation. The active thermography measurement which was tested in the framework of WP7.5.2 revealed air inclusions in the adhesive bond line of the trailing edge of a blade segment.

The data that are derived from this measuring campaign can be used for further research within WP7 of IRPWIND project. More specifically, the statistical results on the thickness distribution of the spar cap in three different positions along the blade length can be used as an extra parameter in the probabilistic failure analysis of the blade and in the estimation of the reliability level (Task 7.4.1). Furthermore, the results will be used in Task 7.1.3 in the simulation of the subcomponent test. In the same task will be assessed whether the experimentally verified variation of the thickness affects the structural behavior of the subcomponent when compared with a model using nominal spar cap thickness values according to the blade design.

7. References

[1] Narayana Swamy J. Characterising delamination growth in composites under dynamic loading using infrared thermography. Delft University of Technology, 2017.

[2] Narayana-Swamya JK, Lahuerta F, Anisimov A, Nijssen R, Groves R. Evaluating delamination growth in composites under dynamic loading using infrared thermography. ECCM17 17TH Eur. Conf. Compos. Mater., Munich, Germany: 2016, p. 1–9.

[3] Lahuerta F. Inspection methods and condition monitoring for blade lifetime extension. In: windpowermonthly.com, editor. Bl. Insp. Damage Repair Forum, Amsterdam: 2016.

[4] Lahuerta F, Nijssen RPL, van der Meer FP, Sluys LJ. Infrared inspection of thick laminates during fatigue tests. In: Gonzalez C, Lopez C, LLorca J, editors. 7th Int. Conf. Compos. Test. Model Identif., IMDEA; 2015, p. 7–8.

[5] https://share.dtu.dk/sites/IRPWIND_28300/Work%20package%207/Forms/AllItems.aspx Malo Rosemeier, Peter Berring and Kim Branner. Non-linear ultimate strength and stability limit state analysis of a wind turbine blade. Wind Energy 2015. DOI: 10.1002/we.1868.

[6] Jensen FM, Falzon BG, Ankersen J, Stang H. Structural testing and numerical simulation of a 34m composite wind turbine blade. Composite Structures 2006; 76: 52–61.

[7] Jørgensen ER, Borum KK, McGugan M, Thomsen CL, Jensen FM, Debel CP, Sørensen BF. Full scale testing of wind turbine blade to failure - flapwise loading. Forskningscenter Risø. Risø-R; No. 1392(EN), Denmark, 2004.

[8] Overgaard LCT, Lund E, Thomsen OT. Structural collapse of a wind turbine blade. Part A: static test and equivalent single layered models. Composites Part A: Applied Science and Manufacturing 2010; 41: 257–270.

[9] Overgaard LCT, Lund E. Structural collapse of a wind turbine blade. Part B: progressive interlaminar failure models. Composites Part A: Applied Science and Manufacturing 2010; 41: 271–283.

8. Appendix: Coordinates of the spar cap from the measured sub parts

Below are given the coordinates from the spar cap measurements for the eight sub parts. Only the spar cap raw data are given and not the whole set of data since the spar cap is considered the most critical component for future investigations and because the size of the full data set is very large. However the whole data set is available at the share point of the IRPWIND project [5].

1) Part: EBR2_2_22.38-25.4m

X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)
1 ,+00341.121, -00403.626, +00429.173	116,+00446.050, -00645.249, +00625.347	231,+00514.162, -00478.080, +00636.585
2 ,+00339.442, -00419.688, +00432.252	117,+00446.117, -00622.993, +00623.000	232,+00512.557, -00501.483, +00641.582
3 ,+00339.121, -00439.432, +00435.176	118,+00447.307, -00606.184, +00620.869	233,+00512.839, -00527.090, +00645.912
4 ,+00338.721, -00458.866, +00437.675	119,+00445.968, -00582.273, +00618.614	234,+00512.003, -00547.374, +00649.158
5 ,+00336.039, -00474.738, +00440.146	120,+00447.516, -00565.906, +00616.091	235,+00511.988, -00559.715, +00650.896
6 ,+00336.045, -00489.980, +00441.576	121,+00446.578, -00544.098, +00613.471	236,+00511.649, -00578.284, +00653.360
7 ,+00335.941, -00509.433, +00443.168	122,+00448.737, -00522.524, +00609.449	237,+00511.876, -00591.366, +00654.725
8 ,+00333.462, -00532.024, +00446.312	123,+00448.223, -00504.693, +00606.447	238,+00510.361, -00611.824, +00657.307
9 ,+00333.834, -00547.753, +00448.217	124,+00448.641, -00482.979, +00602.015	239,+00510.453, -00628.185, +00658.729
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11 ,+00332.329, -00589.926, +00454.808	126,+00446.537, -00448.153, +00595.259	241,+00508.867, -00660.946, +00661.437
12 ,+00332.831, -00610.896, +00458.174	127,+00450.247, -00435.474, +00591.000	242,+00509.848, -00674.750, +00661.847
13 ,+00330.514, -00634.143, +00463.247	128,+00446.788, -00420.107, +00588.540	243,+00507.384, -00692.379, +00663.331
14 ,+00330.837, -00652.788, +00467.263	129,+00445.818, -00401.559, +00584.260	244,+00506.371, -00713.589, +00664.191
15 ,+00330.005, -00668.789, +00471.231	130,+00448.234, -00388.177, +00579.841	245,+00554.052, -00715.098, +00648.674
16 ,+00331.706, -00692.868, +00476.455	131,+00447.296, -00371.677, +00575.783	246,+00555.157, -00692.285, +00647.713
17 ,+00330.443, -00709.221, +00480.852	132,+00447.097, -00359.359, +00572.894	247,+00557.049, -00673.487, +00646.295
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2) Part: EBR1_13-16m

X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)
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5 ,-00357.092 -00427.011 -01163.040	245,-00227.260 -00060.149 -01186.866	485,+00144.914 -00482.094 -01218.752
6 ,-00357.778 -00417.369 -01163.463	246,-00231.957 -00073.267 -01183.227	486,+00136.871 -00510.926 -01213.357
7 ,-00358.474 -00401.968 -01163.360	247,-00239.581 -00094.533 -01179.119	487,+00131.419 -00527.790 -01211.073
8 ,-00358.923 -00378.260 -01162.716	248,-00244.000 -00108.083 -01176.005	488,+00124.353 -00550.507 -01206.310
9 ,-00359.077 -00362.296 -01162.618	249,-00252.336 -00132.501 -01172.425	489,+00113.609 -00580.102 -01201.619
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190,-00140.254 +00029.227 -00950.535	430,+00162.547 -00132.075 -01344.788	670,+00128.031 -00312.092 -01221.155
191,-00121.155 +00029.275 -00907.579	431,+00160.647 -00155.806 -01343.582	671,+00131.652 -00289.983 -01222.448
192,-00126.308 +00017.724 -00905.803	432,+00157.812 -00183.225 -01341.973	672,+00134.402 -00272.151 -01223.311
193,-00134.312 -00001.489 -00902.290	433,+00155.124 -00216.720 -01339.854	673,+00136.134 -00255.365 -01225.637
194,-00139.981 -00017.140 -00898.109	434,+00152.913 -00236.642 -01338.569	674,+00137.828 -00239.543 -01226.718
195,-00146.388 -00032.864 -00895.993	435,+00150.275 -00259.941 -01336.408	675,+00140.789 -00213.242 -01227.776
196,-00152.223 -00048.242 -00893.261	436,+00146.119 -00292.069 -01333.186	676,+00142.177 -00197.285 -01229.252
197,-00157.711 -00062.419 -00891.308	437,+00142.192 -00318.807 -01330.485	677,+00144.433 -00177.657 -01229.178
198,-00162.618 -00075.937 -00889.017	438,+00136.768 -00348.719 -01328.598	678,+00146.054 -00161.014 -01230.732
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201,-00177.710 -00121.285 -00881.590	441,+00106.558 -00488.208 -01309.798	681,+00155.974 -00099.189 -01235.771
202,-00181.616 -00134.511 -00879.143	442,+00096.508 -00520.580 -01305.781	682,+00136.493 -00105.316 -01282.796
203,-00187.858 -00156.015 -00875.861	443,+00085.723 -00553.106 -01300.343	683,+00133.129 -00124.758 -01281.522
204,-00192.528 -00172.701 -00873.828	444,+00075.975 -00580.525 -01295.325	684,+00130.910 -00141.354 -01278.881
205,-00197.124 -00190.059 -00871.774	445,+00094.830 -00580.402 -01248.211	685,+00127.470 -00161.097 -01279.078
206,-00203.448 -00214.865 -00869.754	446,+00104.757 -00552.306 -01253.382	686,+00124.738 -00185.462 -01276.759
207,-00209.225 -00238.866 -00867.960	447,+00116.935 -00516.280 -01258.364	687,+00122.190 -00206.535 -01277.383
208,-00211.116 -00255.375 -00865.012	448,+00124.915 -00489.813 -01262.282	688,+00120.133 -00229.848 -01275.684
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210,-00216.638 -00296.723 -00862.519	450,+00140.918 -00424.554 -01272.469	690,+00116.611 -00266.942 -01270.569
211,-00218.650 -00318.482 -00862.579	451,+00146.188 -00400.228 -01274.953	691,+00114.478 -00283.103 -01269.620
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214,-00219.741 -00407.347 -00863.414	454,+00163.752 -00298.599 -01285.350	694,+00105.058 -00341.381 -01265.209
215,-00218.234 -00434.724 -00862.818	455,+00168.117 -00264.937 -01289.014	695,+00101.578 -00361.580 -01262.828
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217,-00215.434 -00483.936 -00864.003	457,+00174.564 -00213.644 -01291.448	697,+00090.181 -00414.324 -01257.665

218,-00214.748 -00494.718 -00864.607	458,+00176.453 -00185.579 -01295.179	698,+00084.977 -00439.723 -01252.572
219,-00309.479 -00480.084 -01177.603	459,+00179.837 -00155.054 -01295.086	699,+00074.565 -00482.280 -01247.918
220,-00309.195 -00464.843 -01179.030	460,+00180.983 -00130.599 -01298.363	700,+00069.566 -00508.589 -01244.121
221,-00308.524 -00446.825 -01181.153	461,+00183.649 -00101.948 -01298.459	701,+00065.204 -00528.139 -01244.362
222,-00307.394 -00433.237 -01180.461	462,+00185.372 -00066.409 -01301.377	702,+00059.961 -00560.432 -01239.014
223,-00308.425 -00415.104 -01182.644	463,+00185.980 -00061.654 -01301.237	703,+00041.805 -00561.055 -01284.828
224,-00308.661 -00401.358 -01182.053	464,+00203.356 -00063.969 -01256.724	704,+00045.419 -00535.492 -01289.654
225,-00309.805 -00387.608 -01183.348	465,+00202.398 -00077.313 -01256.562	705,+00050.050 -00508.685 -01292.490
226,-00309.866 -00357.598 -01182.379	466,+00201.504 -00090.606 -01255.760	706,+00056.631 -00479.891 -01294.268
227,-00310.701 -00340.293 -01184.556	467,+00200.377 -00107.716 -01254.575	707,+00062.209 -00459.568 -01294.796
228,-00309.232 -00317.757 -01184.265	468,+00199.407 -00119.687 -01254.450	708,+00067.436 -00434.148 -01299.116
229,-00306.183 -00292.925 -01184.176	469,+00198.181 -00134.276 -01253.845	709,+00078.677 -00382.921 -01304.842
230,-00300.426 -00256.812 -01187.927	470,+00197.658 -00148.813 -01251.582	710,+00084.148 -00357.945 -01306.584
231,-00296.102 -00235.046 -01191.836	471,+00195.925 -00168.385 -01250.647	711,+00087.897 -00335.947 -01309.863
232,-00289.254 -00207.200 -01195.612	472,+00194.425 -00185.792 -01249.634	712,+00093.367 -00305.366 -01312.514
233,-00281.668 -00180.396 -01198.789	473,+00192.723 -00208.109 -01247.194	713,+00099.120 -00274.254 -01312.554
234,-00273.354 -00155.634 -01201.150	474,+00189.833 -00233.349 -01246.088	714,+00102.256 -00251.956 -01313.309
235,-00264.683 -00129.028 -01204.825	475,+00187.834 -00251.311 -01244.542	715,+00105.279 -00209.827 -01320.229
236,-00254.609 -00099.752 -01208.095	476,+00185.589 -00268.421 -01243.459	716,+00108.812 -00184.440 -01319.354
237,-00248.998 -00080.361 -01213.596	477,+00182.431 -00290.406 -01241.921	717,+00111.620 -00153.597 -01322.746
238,-00238.724 -00057.402 -01214.074	478,+00180.393 -00307.235 -01239.449	718,+00115.692 -00129.680 -01324.243
239,-00231.611 -00038.713 -01217.958	479,+00177.304 -00328.207 -01237.051	719,+00119.111 -00105.898 -01327.872
240,-00224.212 -00018.963 -01219.292	480,+00172.640 -00354.929 -01234.791	720,+00107.215 -00108.776 -01356.276
		721,+00102.614 -00130.324 -01356.487
		722,+00098.955 -00153.600 -01354.762

3) Part: EBR1_16-19m

X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)
1 ,-00562.261 -00481.724 +00650.260	181,-00936.523 -00397.150 +00550.820	361,-00652.310 +00021.344 +00840.302
2 ,-00563.475 -00461.567 +00650.687	182,-00930.709 -00415.076 +00551.167	362,-00647.082 -00003.189 +00842.839
3 ,-00565.979 -00442.251 +00651.032	183,-00924.347 -00437.174 +00554.470	363,-00642.395 -00022.230 +00842.758
4 ,-00568.321 -00422.364 +00651.283	184,-00915.792 -00465.454 +00555.791	364,-00638.437 -00042.778 +00845.138
5 ,-00570.077 -00401.053 +00650.768	185,-00910.538 -00483.123 +00554.969	365,-00634.319 -00060.147 +00845.007
6 ,-00571.185 -00381.732 +00650.720	186,-00905.619 -00501.481 +00556.481	366,-00629.817 -00085.549 +00848.096
7 ,-00572.515 -00359.816 +00651.132	187,-00901.098 -00513.606 +00558.205	367,-00625.359 -00106.181 +00848.048
8 ,-00573.815 -00338.122 +00651.245	188,-00919.204 -00510.742 +00605.989	368,-00620.284 -00136.077 +00850.356
9 ,-00574.576 -00317.659 +00649.775	189,-00926.008 -00488.422 +00603.481	369,-00616.429 -00157.031 +00850.490
10 ,-00577.231 -00290.762 +00650.880	190,-00934.417 -00454.411 +00599.988	370,-00612.301 -00182.404 +00851.161
11 ,-00578.428 -00272.477 +00649.801	191,-00942.865 -00428.700 +00599.383	371,-00608.267 -00208.611 +00851.559
12 ,-00580.020 -00254.543 +00649.081	192,-00952.160 -00398.353 +00596.690	372,-00606.054 -00232.418 +00854.372
13 ,-00583.524 -00226.690 +00648.953	193,-00961.271 -00364.515 +00595.764	373,-00602.089 -00259.249 +00853.287

14 ,-00587.082 -00200.154 +00647.991	194,-00967.695 -00333.916 +00594.805	374,-00597.236 -00310.332 +00855.319
15 ,-00590.035 -00183.554 +00648.399	195,-00972.988 -00299.359 +00593.624	375,-00594.711 -00343.227 +00855.078
16 ,-00592.818 -00164.644 +00646.186	196,-00975.222 -00275.255 +00592.867	376,-00593.155 -00380.531 +00855.293
17 ,-00596.525 -00143.079 +00644.775	197,-00977.585 -00241.527 +00594.162	377,-00592.337 -00419.516 +00853.436
18 ,-00599.059 -00127.709 +00643.395	198,-00977.940 -00207.598 +00593.128	378,-00593.731 -00450.296 +00854.544
19 ,-00601.309 -00116.860 +00643.235	199,-00977.685 -00181.095 +00594.120	379,-00594.140 -00471.183 +00852.763
20 ,-00603.792 -00101.648 +00641.382	200,-00978.134 -00155.040 +00597.556	380,-00595.875 -00502.272 +00851.152
21 ,-00606.638 -00090.139 +00643.001	201,-00977.118 -00131.068 +00597.964	381,-00615.385 -00504.891 +00900.365
22 ,-00608.415 -00076.238 +00641.494	202,-00975.988 -00102.093 +00601.146	382,-00613.150 -00478.596 +00899.789
23 ,-00611.729 -00050.771 +00639.787	203,-00975.282 -00078.178 +00603.754	383,-00612.792 -00453.391 +00902.583
24 ,-00614.496 -00035.522 +00641.587	204,-00973.292 -00054.523 +00601.796	384,-00611.729 -00421.906 +00902.202
25 ,-00616.352 -00017.729 +00640.591	205,-00972.034 -00034.889 +00603.879	385,-00612.405 -00389.902 +00903.905
26 ,-00620.007 -00002.267 +00641.498	206,-00989.540 -00041.068 +00651.539	386,-00612.949 -00360.585 +00903.055
27 ,-00626.841 +00012.601 +00636.741	207,-00990.673 -00060.817 +00650.411	387,-00614.960 -00327.726 +00902.852
28 ,-00637.625 -00000.991 +00681.295	208,-00991.280 -00080.165 +00649.183	388,-00617.191 -00298.935 +00901.905
29 ,-00633.338 -00021.121 +00683.170	209,-00992.741 -00104.045 +00648.656	389,-00620.768 -00263.454 +00900.877
30 ,-00629.369 -00051.352 +00683.250	210,-00993.659 -00124.077 +00646.942	390,-00625.615 -00225.836 +00900.448
31 ,-00625.534 -00083.710 +00685.626	211,-00994.091 -00145.888 +00645.068	391,-00629.940 -00191.666 +00898.263
32 ,-00622.216 -00102.218 +00686.278	212,-00994.259 -00165.785 +00642.970	392,-00635.958 -00154.237 +00896.978
33 ,-00617.084 -00130.071 +00688.348	213,-00995.433 -00192.142 +00644.036	393,-00641.157 -00122.404 +00894.692
34 ,-00612.013 -00158.322 +00689.981	214,-00995.261 -00220.963 +00642.792	394,-00647.378 -00091.247 +00893.935
35 ,-00606.934 -00185.140 +00689.652	215,-00994.647 -00234.985 +00641.916	395,-00653.938 -00056.396 +00890.738
36 ,-00602.545 -00219.196 +00692.311	216,-00993.249 -00261.334 +00641.065	396,-00659.943 -00029.931 +00889.972
37 ,-00599.034 -00251.409 +00694.147	217,-00990.317 -00291.874 +00640.657	397,-00665.307 -00006.156 +00888.897
38 ,-00595.196 -00285.951 +00694.090	218,-00988.306 -00310.129 +00642.220	398,-00670.900 +00020.159 +00886.148
39 ,-00592.900 -00318.719 +00695.005	219,-00984.424 -00331.144 +00640.620	399,-00689.794 +00016.192 +00933.887
40 ,-00590.857 -00352.523 +00695.336	220,-00978.477 -00360.012 +00641.260	400,-00683.911 -00010.267 +00936.133
41 ,-00588.638 -00389.448 +00694.985	221,-00975.106 -00376.907 +00644.595	401,-00679.763 -00027.968 +00936.676
42 ,-00586.550 -00420.682 +00696.193	222,-00967.328 -00402.819 +00644.535	402,-00676.355 -00044.383 +00938.024
43 ,-00582.162 -00457.363 +00695.975	223,-00960.099 -00425.337 +00645.365	403,-00672.520 -00061.316 +00938.320
44 ,-00580.474 -00480.727 +00696.292	224,-00953.642 -00445.512 +00646.363	404,-00668.342 -00082.212 +00939.553
45 ,-00598.734 -00482.166 +00741.712	225,-00947.006 -00470.733 +00649.193	405,-00664.448 -00105.614 +00942.551
46 ,-00601.045 -00457.295 +00742.939	226,-00941.623 -00491.400 +00650.412	406,-00661.469 -00118.059 +00941.652
47 ,-00603.973 -00430.921 +00741.849	227,-00936.755 -00507.266 +00651.107	407,-00657.527 -00141.285 +00943.506
48 ,-00606.901 -00395.441 +00740.933	228,-00931.851 -00517.993 +00651.967	408,-00654.944 -00155.425 +00943.879
49 ,-00608.937 -00357.385 +00741.370	229,-00950.233 -00515.344 +00698.612	409,-00650.653 -00183.560 +00945.677
50 ,-00610.820 -00318.472 +00739.240	230,-00959.337 -00488.244 +00698.191	410,-00647.405 -00203.569 +00945.519
51 ,-00614.070 -00285.108 +00740.426	231,-00966.955 -00456.937 +00694.421	411,-00644.665 -00226.940 +00947.598
52 ,-00617.557 -00254.590 +00739.999	232,-00975.696 -00428.605 +00692.662	412,-00641.000 -00248.409 +00945.925
53 ,-00621.916 -00218.284 +00738.721	233,-00984.120 -00402.246 +00692.673	413,-00638.792 -00272.632 +00948.108
54 ,-00625.868 -00191.391 +00737.937	234,-00988.406 -00385.528 +00690.734	414,-00635.741 -00301.674 +00948.546
55 ,-00630.405 -00160.725 +00735.697	235,-00995.254 -00358.798 +00690.511	415,-00633.824 -00328.190 +00949.566
56 ,-00635.139 -00133.090 +00733.753	236,-01000.833 -00329.293 +00688.839	416,-00631.143 -00361.226 +00948.250
57 ,-00638.700 -00112.997 +00731.890	237,-01004.904 -00301.415 +00687.683	417,-00630.127 -00393.346 +00948.225

58 ,-00643.018 -00091.060 +00731.823	238,-01007.461 -00279.267 +00688.227	418,-00629.342 -00423.510 +00946.494
59 ,-00645.843 -00070.129 +00729.743	239,-01009.136 -00255.920 +00687.928	419,-00630.607 -00451.010 +00948.020
60 ,-00648.991 -00046.366 +00730.091	240,-01010.655 -00234.788 +00689.829	420,-00630.990 -00481.631 +00944.856
61 ,-00651.828 -00020.125 +00728.187	241,-01011.613 -00201.598 +00691.366	421,-00632.654 -00500.865 +00945.258
62 ,-00654.613 -00007.116 +00727.260	242,-01012.388 -00176.754 +00695.039	422,-00633.110 -00508.917 +00944.401
63 ,-00674.794 -00008.900 +00776.486	243,-01010.663 -00147.076 +00692.743	423,-00986.159 -00006.981 +00496.146
64 ,-00668.892 -00040.052 +00777.155	244,-01009.792 -00117.822 +00695.429	424,-00989.924 -00043.091 +00493.308
65 ,-00664.831 -00070.703 +00776.797	245,-01008.692 -00094.532 +00697.255	425,-00993.000 -00076.795 +00491.569
66 ,-00660.929 -00101.821 +00779.886	246,-01008.286 -00076.874 +00699.164	426,-00995.294 -00111.242 +00489.210
67 ,-00654.042 -00133.945 +00779.937	247,-01007.150 -00049.697 +00699.977	427,-00997.328 -00150.125 +00488.323
68 ,-00648.009 -00171.007 +00783.753	248,-01023.725 -00055.940 +00745.914	428,-00997.612 -00189.584 +00485.547
69 ,-00645.208 -00186.187 +00783.642	249,-01024.424 -00087.170 +00743.359	429,-00996.970 -00239.283 +00484.958
70 ,-00642.061 -00207.108 +00784.938	250,-01027.018 -00131.431 +00741.955	430,-00994.124 -00282.404 +00484.184
71 ,-00639.217 -00228.229 +00785.923	251,-01027.124 -00157.873 +00738.276	431,-00988.939 -00323.985 +00484.257
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73 ,-00632.274 -00289.666 +00787.728	253,-01026.809 -00225.753 +00736.758	433,-00970.300 -00404.285 +00487.817
74 ,-00629.806 -00316.927 +00787.555	254,-01025.041 -00262.383 +00736.687	434,-00952.689 -00458.524 +00491.920
75 ,-00627.964 -00339.817 +00786.652	255,-01022.097 -00292.847 +00735.575	435,-00941.716 -00489.480 +00494.679
76 ,-00626.773 -00373.317 +00788.638	256,-01019.430 -00314.812 +00736.377	436,-00933.676 -00510.755 +00496.409
77 ,-00623.801 -00400.112 +00784.513	257,-01014.572 -00344.207 +00737.049	437,-00949.711 -00509.093 +00539.070
78 ,-00622.273 -00434.957 +00788.566	258,-01009.662 -00367.572 +00737.197	438,-00963.374 -00473.082 +00537.418
79 ,-00618.449 -00459.210 +00786.457	259,-01002.453 -00397.816 +00739.723	439,-00971.816 -00447.179 +00534.037
80 ,-00617.367 -00481.147 +00788.664	260,-00994.706 -00423.425 +00740.932	440,-00983.490 -00411.784 +00532.270
81 ,-00636.518 -00477.345 +00835.919	261,-00987.916 -00445.753 +00742.742	441,-00992.049 -00380.730 +00529.770
82 ,-00639.776 -00444.585 +00835.142	262,-00981.198 -00467.258 +00742.722	442,-01000.604 -00344.351 +00528.729
83 ,-00642.636 -00412.516 +00834.050	263,-00976.274 -00488.507 +00745.628	443,-01006.428 -00308.962 +00528.367
84 ,-00645.435 -00372.459 +00835.014	264,-00968.192 -00513.525 +00746.454	444,-01009.110 -00280.547 +00527.210
85 ,-00647.204 -00342.938 +00834.315	265,-00983.813 -00514.976 +00791.568	445,-01010.647 -00261.853 +00527.697
86 ,-00648.929 -00320.823 +00834.449	266,-00991.493 -00490.551 +00790.631	446,-01011.438 -00244.250 +00527.553
87 ,-00651.886 -00283.511 +00833.211	267,-00999.052 -00461.631 +00788.323	447,-01012.531 -00218.499 +00528.736
88 ,-00654.979 -00246.505 +00830.372	268,-01006.070 -00437.548 +00786.722	448,-01012.788 -00205.586 +00529.320
89 ,-00659.944 -00216.436 +00831.457	269,-01013.612 -00413.882 +00785.622	449,-01013.109 -00188.495 +00530.359
90 ,-00664.674 -00184.084 +00829.104	270,-01021.117 -00386.699 +00783.420	450,-01012.733 -00173.690 +00530.216
91 ,-00668.532 -00161.396 +00828.201	271,-01027.838 -00358.164 +00781.356	451,-01011.500 -00123.141 +00533.958
92 ,-00673.408 -00138.404 +00828.791	272,-01033.813 -00332.582 +00782.584	452,-01009.850 -00097.012 +00535.092
93 ,-00675.563 -00121.399 +00825.678	273,-01037.329 -00307.075 +00781.807	453,-01009.409 -00083.974 +00536.987
94 ,-00680.582 -00094.156 +00825.105	274,-01040.327 -00279.820 +00781.350	454,-01007.113 -00054.087 +00538.902
95 ,-00683.289 -00076.978 +00824.361	275,-01042.269 -00256.857 +00782.140	455,-01005.677 -00040.330 +00539.478
96 ,-00686.748 -00053.081 +00824.957	276,-01042.858 -00232.509 +00780.972	456,-01002.876 -00008.447 +00543.384
97 ,-00688.401 -00034.396 +00823.276	277,-01043.479 -00195.292 +00782.082	457,-01019.547 -00011.594 +00589.534
98 ,-00691.592 -00015.122 +00821.369	278,-01043.290 -00166.458 +00784.152	458,-01021.995 -00033.972 +00588.241
99 ,-00656.425 -00489.380 +00887.212	279,-01042.786 -00137.532 +00786.388	459,-01022.566 -00045.896 +00585.876
100,-00655.448 -00471.893 +00882.365	280,-01041.390 -00115.768 +00786.099	460,-01025.912 -00086.275 +00584.113
101,-00656.890 -00457.019 +00881.453	281,-01040.156 -00088.057 +00788.282	461,-01026.938 -00102.404 +00582.993

102,-00658.041 -00438.871 +00878.698	282,-01039.737 -00067.080 +00789.531	462,-01028.113 -00125.434 +00581.666
103,-00661.037 -00425.011 +00882.459	283,-01038.773 -00051.768 +00789.487	463,-01029.456 -00170.104 +00579.198
104,-00661.590 -00408.476 +00880.098	284,-00578.135 +00028.910 +00657.679	464,-01029.735 -00205.607 +00578.437
105,-00662.619 -00394.310 +00880.253	285,-00571.879 +00000.791 +00659.344	465,-01028.300 -00244.377 +00576.550
106,-00663.603 -00373.937 +00879.592	286,-00566.787 -00023.922 +00661.336	466,-01027.203 -00267.596 +00576.900
107,-00665.443 -00354.505 +00881.008	287,-00559.127 -00062.000 +00663.935	467,-01024.203 -00299.122 +00576.194
108,-00666.630 -00334.677 +00881.062	288,-00552.577 -00091.596 +00663.764	468,-01018.447 -00340.643 +00578.021
109,-00669.424 -00297.881 +00880.056	289,-00547.373 -00120.024 +00665.200	469,-01012.717 -00366.200 +00577.937
110,-00671.746 -00270.406 +00878.343	290,-00543.050 -00149.109 +00668.148	470,-01005.002 -00397.101 +00580.300
111,-00675.735 -00244.190 +00879.973	291,-00537.928 -00180.888 +00668.827	471,-00996.236 -00425.858 +00581.817
112,-00677.254 -00227.192 +00878.060	292,-00533.374 -00216.267 +00670.796	472,-00987.503 -00451.524 +00582.514
113,-00680.200 -00210.256 +00878.873	293,-00528.895 -00251.406 +00671.079	473,-00976.807 -00482.840 +00585.305
114,-00683.457 -00185.003 +00876.475	294,-00525.231 -00287.319 +00671.874	474,-00966.930 -00510.275 +00588.389
115,-00687.010 -00162.739 +00875.108	295,-00522.412 -00323.373 +00672.182	475,-00980.523 -00518.054 +00635.638
116,-00690.932 -00143.058 +00874.869	296,-00520.699 -00360.684 +00672.609	476,-00988.996 -00495.835 +00633.979
117,-00694.640 -00121.657 +00872.389	297,-00520.135 -00390.919 +00672.125	477,-00995.784 -00477.391 +00633.122
118,-00698.823 -00099.850 +00871.964	298,-00519.921 -00417.772 +00670.610	478,-01006.410 -00446.082 +00630.808
119,-00701.360 -00084.780 +00872.072	299,-00521.023 -00448.964 +00670.612	479,-01018.885 -00405.837 +00627.976
120,-00705.249 -00047.084 +00869.113	300,-00523.146 -00482.911 +00670.359	480,-01028.550 -00368.908 +00625.965
121,-00710.472 -00016.440 +00867.864	301,-00523.799 -00498.524 +00668.681	481,-01037.207 -00325.974 +00625.123
122,-00726.926 -00021.117 +00910.358	302,-00541.194 -00498.857 +00713.234	482,-01041.306 -00295.569 +00625.136
123,-00723.981 -00046.194 +00914.488	303,-00540.064 -00476.812 +00714.842	483,-01043.641 -00264.415 +00624.253
124,-00721.065 -00072.564 +00915.379	304,-00538.847 -00452.447 +00715.734	484,-01046.085 -00218.644 +00626.657
125,-00716.568 -00100.710 +00915.236	305,-00538.472 -00428.942 +00716.864	485,-01046.626 -00189.492 +00628.137
126,-00711.802 -00128.317 +00916.657	306,-00537.520 -00402.388 +00715.776	486,-01044.952 -00129.301 +00630.041
127,-00707.841 -00150.806 +00918.416	307,-00538.404 -00383.317 +00717.991	487,-01043.907 -00110.601 +00630.815
128,-00703.499 -00172.899 +00918.549	308,-00538.360 -00362.457 +00716.909	488,-01042.452 -00086.767 +00632.255
129,-00699.747 -00198.022 +00921.213	309,-00539.538 -00339.421 +00717.386	489,-01039.354 -00047.246 +00633.934
130,-00696.204 -00221.172 +00922.421	310,-00542.813 -00297.561 +00717.617	490,-01036.542 -00015.329 +00637.495
131,-00692.280 -00247.644 +00922.835	311,-00546.295 -00257.103 +00715.825	491,-01053.358 -00018.162 +00684.636
132,-00688.690 -00273.036 +00921.573	312,-00550.559 -00221.966 +00715.344	492,-01056.104 -00041.685 +00684.118
133,-00687.234 -00300.916 +00924.849	313,-00555.079 -00188.269 +00714.069	493,-01057.451 -00064.750 +00681.140
134,-00685.298 -00327.381 +00925.178	314,-00560.046 -00155.637 +00712.708	494,-01058.374 -00080.176 +00679.876
135,-00684.301 -00349.857 +00926.911	315,-00565.092 -00124.916 +00711.044	495,-01059.951 -00103.201 +00678.954
136,-00681.180 -00376.851 +00923.704	316,-00569.532 -00099.222 +00709.095	496,-01060.473 -00119.157 +00677.020
137,-00680.838 -00399.380 +00926.412	317,-00577.084 -00068.502 +00709.897	497,-01061.256 -00148.105 +00674.281
138,-00678.727 -00423.073 +00925.869	318,-00580.139 -00045.341 +00705.922	498,-01062.092 -00180.801 +00673.468
139,-00676.137 -00450.725 +00927.096	319,-00585.192 -00022.679 +00705.265	499,-01061.883 -00221.453 +00672.436
140,-00673.509 -00476.340 +00928.156	320,-00588.938 -00003.384 +00703.129	500,-01061.025 -00241.635 +00671.631
141,-00891.423 -00495.006 +00511.020	321,-00596.158 +00027.416 +00702.124	501,-01060.178 -00263.151 +00672.407
142,-00897.621 -00470.762 +00508.653	322,-00614.422 +00024.512 +00747.497	502,-01058.627 -00283.333 +00672.719
143,-00905.673 -00442.787 +00507.456	323,-00609.640 +00000.676 +00750.413	503,-01055.926 -00306.294 +00671.988
144,-00912.157 -00422.017 +00505.785	324,-00604.024 -00022.158 +00750.212	504,-01052.417 -00329.671 +00671.297
145,-00916.907 -00405.477 +00503.849	325,-00600.278 -00041.204 +00752.014	505,-01047.306 -00356.146 +00671.578

146,-00922.839 -00387.255 +00504.375
147,-00927.341 -00369.093 +00503.030
148,-00931.580 -00351.499 +00502.982
149,-00936.533 -00325.293 +00501.264
150,-00939.604 -00308.366 +00500.978
151,-00942.269 -00289.846 +00500.255
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153,-00946.185 -00253.932 +00501.711
154,-00947.093 -00226.881 +00501.695
155,-00947.146 -00206.428 +00502.315
156,-00947.035 -00184.405 +00503.625
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162,-00941.481 -00068.738 +00509.089
163,-00941.567 -00054.705 +00511.458
164,-00940.242 -00031.730 +00512.857
165,-00955.661 -00030.383 +00557.916
166,-00957.852 -00061.162 +00555.930
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169,-00960.822 -00118.893 +00551.799
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171,-00962.229 -00166.228 +00549.617
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175,-00961.923 -00251.958 +00547.080
176,-00958.852 -00283.845 +00545.726
177,-00956.044 -00309.739 +00547.059
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179,-00947.712 -00352.642 +00547.219
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326,-00594.838 -00068.440 +00753.754
327,-00591.400 -00085.277 +00754.781
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331,-00576.565 -00169.669 +00758.982
332,-00573.025 -00193.661 +00759.934
333,-00570.623 -00214.882 +00761.828
334,-00568.199 -00237.381 +00763.562
335,-00564.819 -00260.254 +00762.223
336,-00562.400 -00289.473 +00764.196
337,-00560.412 -00316.922 +00765.384
338,-00557.813 -00347.967 +00763.912
339,-00557.023 -00392.431 +00765.038
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343,-00578.235 -00501.438 +00806.521
344,-00575.642 -00466.569 +00806.722
345,-00575.090 -00438.062 +00808.913
346,-00574.869 -00416.049 +00809.541
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354,-00595.589 -00172.849 +00806.603
355,-00601.982 -00131.754 +00803.944
356,-00607.584 -00099.305 +00801.390
357,-00614.808 -00063.694 +00799.853
358,-00621.166 -00032.782 +00797.862
359,-00627.399 -00007.468 +00798.118
360,-00634.346 +00025.113 +00794.808

506,-01042.556 -00378.033 +00673.394
507,-01034.236 -00408.162 +00674.315
508,-01025.879 -00435.715 +00675.924
509,-01017.317 -00463.252 +00678.995
510,-01007.435 -00491.579 +00681.203
511,-00997.324 -00519.009 +00683.598
512,-01012.935 -00521.737 +00730.211
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514,-01027.718 -00481.474 +00726.908
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516,-01044.018 -00432.975 +00724.554
517,-01055.284 -00391.751 +00720.309
518,-01064.154 -00356.501 +00720.024
519,-01069.364 -00328.097 +00719.304
520,-01072.413 -00304.862 +00718.678
521,-01074.830 -00282.950 +00719.093
522,-01076.718 -00256.648 +00719.444
523,-01078.554 -00225.316 +00721.225
524,-01078.585 -00203.895 +00720.620
525,-01078.920 -00174.212 +00722.781
526,-01077.955 -00149.259 +00722.645
527,-01076.730 -00116.436 +00724.623
528,-01075.059 -00093.018 +00724.844
529,-01072.535 -00048.648 +00729.431
530,-01069.548 -00017.490 +00731.561
531,-01086.609 -00021.116 +00778.806
532,-01088.216 -00044.748 +00775.335
533,-01089.759 -00067.469 +00773.405
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539,-01094.684 -00188.171 +00767.872
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541,-01093.711 -00230.765 +00765.919
542,-01092.755 -00252.868 +00765.679
543,-01091.627 -00271.647 +00765.664
544,-01088.947 -00299.855 +00765.168
545,-01085.024 -00328.096 +00764.897
546,-01079.355 -00358.749 +00766.880
547,-01074.298 -00381.065 +00766.830
548,-01064.961 -00415.565 +00768.391
549,-01059.051 -00436.185 +00770.364

		550,-01050.022 -00464.339 +00772.404 551,-01040.975 -00491.003 +00774.509 552,-01033.493 -00511.604 +00776.219 553,-01028.416 -00525.904 +00778.205

4) Part: EBR1_22-25m

X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)
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2 ,-00466.049 -00621.839 -00659.788	58 ,-00598.508 -00329.676 -00580.074	114,-00670.387 -00503.786 -00735.426
3 ,-00464.575 -00603.901 -00659.926	59 ,-00594.594 -00349.173 -00573.808	115,-00664.793 -00520.707 -00734.923
4 ,-00467.968 -00578.203 -00661.709	60 ,-00588.414 -00365.361 -00573.055	116,-00660.166 -00541.133 -00729.967
5 ,-00472.378 -00554.046 -00663.308	61 ,-00583.123 -00383.730 -00569.612	117,-00654.624 -00565.474 -00724.614
6 ,-00475.953 -00524.010 -00667.613	62 ,-00579.407 -00401.851 -00564.059	118,-00649.495 -00581.876 -00723.449
7 ,-00480.918 -00494.003 -00670.985	63 ,-00576.387 -00413.046 -00562.399	119,-00646.134 -00600.621 -00719.817
8 ,-00485.760 -00473.210 -00671.744	64 ,-00572.366 -00427.421 -00560.842	120,-00643.363 -00611.746 -00719.411
9 ,-00491.054 -00446.571 -00675.763	65 ,-00567.951 -00445.330 -00558.692	121,-00640.360 -00632.819 -00715.030
10 ,-00495.384 -00421.023 -00681.969	66 ,-00564.893 -00471.033 -00551.394	122,-00666.800 -00636.046 -00670.798
11 ,-00501.067 -00402.140 -00684.073	67 ,-00560.841 -00486.553 -00551.073	123,-00669.742 -00617.930 -00675.426
12 ,-00508.754 -00374.605 -00689.076	68 ,-00557.103 -00501.247 -00551.429	124,-00672.925 -00599.984 -00677.142
13 ,-00516.451 -00351.867 -00692.095	69 ,-00554.921 -00520.620 -00547.500	125,-00677.277 -00576.198 -00681.992
14 ,-00522.466 -00329.574 -00696.796	70 ,-00553.039 -00539.798 -00543.986	126,-00682.375 -00557.735 -00684.900
15 ,-00527.910 -00309.082 -00700.430	71 ,-00549.842 -00554.821 -00543.945	127,-00686.935 -00537.392 -00689.947
16 ,-00533.046 -00278.165 -00708.515	72 ,-00547.863 -00570.520 -00541.374	128,-00694.369 -00510.380 -00693.840
17 ,-00540.290 -00236.292 -00713.431	73 ,-00546.858 -00581.993 -00539.113	129,-00700.933 -00481.056 -00699.965
18 ,-00564.569 -00235.940 -00676.308	74 ,-00545.333 -00601.517 -00537.102	130,-00706.992 -00455.200 -00703.504
19 ,-00561.027 -00256.795 -00674.384	75 ,-00570.926 -00604.621 -00497.827	131,-00713.808 -00424.172 -00707.330
20 ,-00557.370 -00275.203 -00673.050	76 ,-00572.518 -00590.928 -00497.635	132,-00717.434 -00397.516 -00712.653
21 ,-00553.737 -00292.165 -00670.505	77 ,-00576.590 -00565.167 -00499.415	133,-00721.011 -00378.863 -00713.852
22 ,-00550.146 -00309.213 -00666.666	78 ,-00579.290 -00542.044 -00502.907	134,-00722.623 -00361.944 -00717.013
23 ,-00546.852 -00324.598 -00662.803	79 ,-00582.582 -00514.214 -00506.524	135,-00723.940 -00347.091 -00719.350
24 ,-00540.318 -00347.238 -00658.832	80 ,-00588.531 -00487.876 -00507.271	136,-00727.442 -00329.671 -00718.700
25 ,-00535.223 -00365.088 -00654.804	81 ,-00593.302 -00459.746 -00512.352	137,-00729.077 -00309.830 -00722.069
26 ,-00528.940 -00384.388 -00652.177	82 ,-00599.379 -00430.708 -00517.280	138,-00732.094 -00293.166 -00723.022
27 ,-00525.905 -00401.215 -00646.853	83 ,-00607.122 -00399.816 -00523.321	139,-00735.759 -00273.552 -00724.138
28 ,-00518.700 -00425.541 -00644.385	84 ,-00612.987 -00372.781 -00530.839	140,-00691.819 -00640.008 -00627.751
29 ,-00515.788 -00439.848 -00641.886	85 ,-00619.246 -00349.543 -00536.247	141,-00696.871 -00612.697 -00633.549
30 ,-00512.526 -00458.931 -00637.891	86 ,-00627.035 -00322.941 -00540.866	142,-00704.319 -00580.874 -00636.487
31 ,-00506.780 -00483.614 -00635.965	87 ,-00630.759 -00299.069 -00548.727	143,-00710.213 -00553.718 -00642.942
32 ,-00505.279 -00501.133 -00631.796	88 ,-00636.186 -00292.438 -00544.235	144,-00719.712 -00517.714 -00649.574
33 ,-00501.357 -00525.460 -00628.679	89 ,-00612.465 -00642.504 -00752.401	145,-00726.696 -00495.177 -00651.643
34 ,-00497.911 -00543.637 -00627.864	90 ,-00618.255 -00616.610 -00757.916	146,-00731.207 -00468.671 -00658.494
35 ,-00495.143 -00565.241 -00624.528	91 ,-00624.840 -00584.881 -00761.512	147,-00738.358 -00442.784 -00659.982
36 ,-00492.327 -00582.686 -00622.604	92 ,-00632.930 -00556.774 -00764.512	148,-00743.266 -00413.085 -00665.444

37 ,-00490.524 -00603.557 -00620.400	93 ,-00640.166 -00528.096 -00769.467	149,-00747.972 -00389.583 -00667.594
38 ,-00516.947 -00606.098 -00579.929	94 ,-00644.726 -00505.948 -00774.253	150,-00750.317 -00363.663 -00673.009
39 ,-00519.847 -00576.942 -00582.350	95 ,-00651.030 -00478.672 -00779.085	151,-00756.370 -00316.545 -00677.199
40 ,-00524.409 -00544.362 -00586.356	96 ,-00655.960 -00454.769 -00782.832	152,-00753.301 -00342.773 -00674.716
41 ,-00528.679 -00511.670 -00590.759	97 ,-00660.025 -00431.489 -00786.522	153,-00757.545 -00311.949 -00676.836
42 ,-00535.293 -00477.026 -00594.378	98 ,-00664.469 -00408.631 -00788.798	154,-00760.224 -00277.810 -00681.122
43 ,-00540.839 -00451.601 -00597.864	99 ,-00669.886 -00370.152 -00794.625	155,-00719.675 -00633.737 -00588.538
44 ,-00545.385 -00428.874 -00602.376	100,-00672.341 -00348.002 -00798.213	156,-00725.823 -00605.577 -00591.564
45 ,-00551.752 -00402.689 -00607.075	101,-00677.239 -00327.143 -00797.291	157,-00729.736 -00581.124 -00596.436
46 ,-00559.228 -00376.123 -00611.822	102,-00679.432 -00301.615 -00803.416	158,-00737.262 -00555.292 -00599.983
47 ,-00567.741 -00346.792 -00617.324	103,-00684.505 -00279.366 -00802.997	159,-00744.499 -00529.250 -00604.655
48 ,-00574.212 -00326.507 -00619.965	104,-00685.218 -00256.175 -00806.595	160,-00751.998 -00500.548 -00609.236
49 ,-00579.499 -00304.456 -00624.757	105,-00710.372 -00263.073 -00766.836	161,-00756.431 -00476.803 -00614.732
50 ,-00586.114 -00275.667 -00628.742	106,-00707.416 -00284.584 -00765.272	162,-00763.832 -00447.031 -00617.726
51 ,-00588.588 -00256.637 -00632.569	107,-00703.268 -00311.036 -00763.455	163,-00768.144 -00422.166 -00622.435
52 ,-00592.995 -00232.309 -00635.008	108,-00699.784 -00337.571 -00761.197	164,-00772.944 -00398.799 -00624.964
53 ,-00619.637 -00234.183 -00593.781	109,-00696.341 -00369.752 -00755.788	165,-00775.831 -00374.567 -00629.713
54 ,-00614.615 -00262.187 -00590.677	110,-00691.697 -00394.738 -00752.861	166,-00780.346 -00350.115 -00630.937
55 ,-00612.706 -00279.216 -00586.359	111,-00685.267 -00425.496 -00749.277	167,-00781.720 -00335.423 -00632.540
56 ,-00607.692 -00298.156 -00584.555	112,-00681.774 -00451.212 -00743.651	168,-00784.696 -00308.568 -00635.556
		169,-00787.520 -00287.504 -00637.778

5) Part: EBR2_1_22.38-25.40m

X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)
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151,+00333.758 -00610.058 +00658.155	311,+00204.768 -00319.240 +00864.984	471,+00309.795 -00415.853 +00561.632
152,+00335.733 -00620.237 +00660.881	312,+00206.529 -00338.513 +00872.686	472,+00311.406 -00435.461 +00564.992
153,+00336.400 -00627.407 +00663.071	313,+00208.925 -00367.479 +00883.870	473,+00311.714 -00452.706 +00568.283
154,+00336.895 -00635.083 +00665.575	314,+00210.477 -00385.673 +00890.538	474,+00311.999 -00467.256 +00571.206
155,+00338.826 -00646.081 +00668.947	315,+00212.307 -00399.805 +00895.318	475,+00315.272 -00497.380 +00576.722
156,+00339.905 -00658.661 +00673.067	316,+00214.745 -00421.540 +00902.416	476,+00314.771 -00520.834 +00582.171
157,+00339.519 -00668.605 +00676.701	317,+00215.843 -00438.580 +00907.962	477,+00318.590 -00549.638 +00587.880
158,+00340.571 -00680.522 +00680.825	318,+00217.605 -00459.668 +00914.482	478,+00320.001 -00579.997 +00595.186
159,+00343.775 -00697.962 +00686.279	319,+00219.100 -00476.434 +00919.371	479,+00321.227 -00605.790 +00601.788
160,+00344.832 -00708.757 +00689.688	320,+00219.075 -00491.406 +00923.886	480,+00322.406 -00632.025 +00609.176
		481,+00324.810 -00657.609 +00617.001
		482,+00328.725 -00683.673 +00625.934
		483,+00332.089 -00710.296 +00637.001
		484,+00333.065 -00733.680 +00648.919
		485,+00338.793 -00760.604 +00662.654

6) Part: EBR2_1_25-28m

X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)
1 ,-00617.720 -00430.658 +00183.985	126,-00766.898 -00453.094 +00266.691	251,-00839.051 -00560.441 +00332.262
2 ,-00620.522 -00441.491 +00184.611	127,-00772.666 -00467.551 +00266.243	252,-00833.580 -00541.266 +00330.417
3 ,-00623.500 -00452.174 +00183.991	128,-00778.379 -00483.668 +00267.896	253,-00828.511 -00524.869 +00329.975
4 ,-00625.806 -00461.369 +00184.999	129,-00784.646 -00500.890 +00269.786	254,-00823.346 -00508.822 +00329.341
5 ,-00628.423 -00473.511 +00186.361	130,-00788.742 -00511.762 +00268.931	255,-00817.684 -00490.337 +00326.632
6 ,-00631.153 -00485.194 +00185.996	131,-00795.293 -00532.117 +00270.735	256,-00812.046 -00473.686 +00324.993
7 ,-00633.339 -00496.604 +00187.597	132,-00800.066 -00547.836 +00271.797	257,-00806.107 -00457.106 +00323.714
8 ,-00635.764 -00508.663 +00187.694	133,-00804.893 -00566.241 +00274.577	258,-00801.284 -00444.850 +00324.135
9 ,-00637.398 -00519.177 +00190.211	134,-00808.147 -00578.327 +00274.506	259,-00795.590 -00428.900 +00321.731
10 ,-00639.982 -00530.772 +00188.112	135,-00812.242 -00595.196 +00275.835	260,-00787.495 -00407.990 +00320.801
11 ,-00642.276 -00543.864 +00190.125	136,-00815.814 -00609.744 +00276.146	261,-00782.370 -00394.464 +00318.610
12 ,-00645.172 -00557.770 +00190.981	137,-00819.642 -00626.084 +00278.001	262,-00777.253 -00382.149 +00318.151
13 ,-00647.111 -00566.256 +00191.241	138,-00823.813 -00639.970 +00276.714	263,-00772.045 -00368.728 +00315.988
14 ,-00648.618 -00572.506 +00191.233	139,-00827.932 -00655.126 +00280.570	264,-00767.035 -00356.803 +00315.715
15 ,-00651.745 -00585.298 +00191.807	140,-00832.876 -00668.213 +00280.145	265,-00762.793 -00347.094 +00315.557
16 ,-00655.058 -00598.291 +00192.654	141,-00837.679 -00681.031 +00283.445	266,-00756.610 -00332.213 +00313.789
17 ,-00658.308 -00610.879 +00193.821	142,-00832.285 -00689.146 +00327.807	267,-00745.375 -00331.040 +00364.178
18 ,-00661.277 -00621.017 +00195.329	143,-00825.837 -00674.024 +00328.373	268,-00752.185 -00346.536 +00364.640
19 ,-00665.128 -00632.660 +00196.348	144,-00820.497 -00658.943 +00327.471	269,-00757.745 -00359.299 +00364.566
20 ,-00671.016 -00649.666 +00198.410	145,-00815.953 -00645.596 +00327.694	270,-00762.480 -00370.893 +00365.863
21 ,-00674.644 -00659.259 +00198.696	146,-00811.517 -00631.050 +00327.071	271,-00769.466 -00387.844 +00366.796
22 ,-00677.974 -00668.551 +00200.019	147,-00807.258 -00614.808 +00326.635	272,-00774.759 -00401.880 +00369.163
23 ,-00681.120 -00676.783 +00200.648	148,-00801.941 -00591.857 +00324.333	273,-00779.106 -00413.166 +00370.462
24 ,-00685.286 -00687.051 +00200.249	149,-00797.427 -00575.827 +00323.661	274,-00783.954 -00425.449 +00370.629
25 ,-00688.222 -00694.929 +00202.074	150,-00791.932 -00557.230 +00323.078	275,-00789.093 -00439.918 +00373.289

26 ,-00692.095 -00704.559 +00203.406	151,-00788.332 -00544.541 +00323.306	276,-00793.944 -00452.852 +00373.976
27 ,-00696.352 -00715.134 +00204.467	152,-00783.229 -00528.474 +00323.644	277,-00797.453 -00462.572 +00374.585
28 ,-00700.040 -00724.597 +00205.172	153,-00778.358 -00513.660 +00323.432	278,-00801.646 -00474.317 +00375.273
29 ,-00704.722 -00737.160 +00206.825	154,-00773.369 -00498.569 +00321.896	279,-00806.031 -00487.140 +00376.475
30 ,-00708.433 -00746.915 +00208.118	155,-00768.200 -00483.463 +00319.849	280,-00810.630 -00501.808 +00378.679
31 ,-00712.399 -00755.697 +00208.534	156,-00764.303 -00472.239 +00318.905	281,-00814.469 -00514.169 +00380.162
32 ,-00698.695 -00747.267 +00255.894	157,-00759.039 -00456.945 +00316.433	282,-00818.863 -00527.805 +00380.360
33 ,-00694.582 -00737.618 +00256.301	158,-00755.677 -00448.731 +00317.246	283,-00823.201 -00541.058 +00379.804
34 ,-00688.868 -00722.736 +00253.977	159,-00751.539 -00439.364 +00320.263	284,-00827.122 -00554.680 +00381.002
35 ,-00683.229 -00707.741 +00251.550	160,-00747.915 -00430.479 +00317.994	285,-00830.302 -00566.465 +00382.611
36 ,-00677.249 -00692.207 +00248.274	161,-00741.467 -00413.716 +00313.748	286,-00833.345 -00577.885 +00383.711
37 ,-00670.630 -00677.073 +00247.960	162,-00737.548 -00403.793 +00310.929	287,-00836.651 -00590.637 +00384.881
38 ,-00665.707 -00664.210 +00246.289	163,-00732.986 -00393.078 +00314.099	288,-00839.890 -00602.349 +00384.284
39 ,-00660.836 -00650.657 +00245.659	164,-00730.600 -00385.437 +00312.429	289,-00843.467 -00617.033 +00385.186
40 ,-00656.548 -00636.920 +00244.066	165,-00729.150 -00406.157 +00360.897	290,-00845.902 -00628.501 +00386.605
41 ,-00651.471 -00619.928 +00242.594	166,-00734.021 -00417.586 +00361.680	291,-00848.784 -00640.789 +00386.554
42 ,-00647.552 -00604.089 +00240.634	167,-00739.437 -00430.038 +00362.659	292,-00850.504 -00649.684 +00387.940
43 ,-00643.653 -00588.798 +00238.870	168,-00745.336 -00442.735 +00362.418	293,-00853.531 -00663.124 +00387.422
44 ,-00640.020 -00573.190 +00238.019	169,-00750.359 -00455.282 +00363.045	294,-00578.331 -00440.432 +00177.073
45 ,-00636.745 -00559.452 +00237.354	170,-00755.613 -00470.043 +00364.036	295,-00580.566 -00451.413 +00175.749
46 ,-00633.828 -00546.990 +00237.469	171,-00760.168 -00483.311 +00365.409	296,-00582.410 -00462.564 +00176.632
47 ,-00630.635 -00531.383 +00236.918	172,-00766.050 -00499.460 +00365.302	297,-00584.237 -00473.729 +00177.569
48 ,-00628.360 -00520.534 +00237.303	173,-00770.154 -00512.981 +00366.957	298,-00586.620 -00487.064 +00178.239
49 ,-00625.309 -00502.209 +00234.065	174,-00773.718 -00524.880 +00369.006	299,-00589.364 -00503.013 +00179.860
50 ,-00622.091 -00488.280 +00234.635	175,-00777.774 -00537.258 +00368.130	300,-00592.305 -00518.450 +00180.472
51 ,-00619.306 -00473.305 +00231.563	176,-00781.746 -00551.220 +00369.036	301,-00595.605 -00536.234 +00182.558
52 ,-00615.576 -00460.402 +00233.244	177,-00784.958 -00564.774 +00371.798	302,-00600.695 -00560.654 +00184.136
53 ,-00612.893 -00450.385 +00232.962	178,-00789.543 -00581.048 +00372.332	303,-00605.139 -00580.125 +00184.414
54 ,-00609.229 -00438.090 +00233.413	179,-00793.764 -00597.292 +00373.560	304,-00609.236 -00596.788 +00184.663
55 ,-00607.967 -00431.426 +00231.130	180,-00796.682 -00610.335 +00376.359	305,-00612.574 -00610.661 +00186.029
56 ,-00598.429 -00439.180 +00282.700	181,-00801.383 -00626.555 +00375.523	306,-00618.101 -00630.791 +00186.746
57 ,-00600.809 -00449.886 +00284.713	182,-00805.286 -00640.785 +00375.547	307,-00623.455 -00649.953 +00189.951
58 ,-00603.168 -00459.732 +00285.844	183,-00810.509 -00657.909 +00375.220	308,-00629.277 -00667.604 +00191.917
59 ,-00605.494 -00469.734 +00286.530	184,-00814.553 -00671.326 +00377.482	309,-00637.050 -00688.551 +00193.941
60 ,-00607.690 -00478.940 +00285.304	185,-00819.742 -00683.046 +00375.499	310,-00645.818 -00708.984 +00195.586
61 ,-00609.831 -00488.030 +00284.619	186,-00884.864 -00666.154 +00242.944	311,-00653.982 -00726.808 +00198.355
62 ,-00611.670 -00498.559 +00286.080	187,-00881.651 -00648.795 +00240.474	312,-00661.210 -00741.044 +00199.205
63 ,-00613.867 -00510.390 +00287.178	188,-00877.678 -00631.311 +00240.440	313,-00666.684 -00751.152 +00199.476
64 ,-00615.792 -00520.255 +00288.112	189,-00873.796 -00613.921 +00238.574	314,-00673.038 -00763.244 +00201.961
65 ,-00617.763 -00530.200 +00288.086	190,-00870.706 -00601.087 +00237.403	315,-00663.550 -00763.585 +00251.202
66 ,-00619.728 -00541.727 +00289.039	191,-00867.839 -00589.753 +00236.441	316,-00654.657 -00746.199 +00246.805
67 ,-00622.609 -00556.239 +00290.102	192,-00864.891 -00578.800 +00235.985	317,-00644.439 -00726.383 +00245.522
68 ,-00625.282 -00567.580 +00289.955	193,-00862.091 -00568.039 +00234.723	318,-00635.018 -00705.764 +00242.505
69 ,-00628.857 -00580.940 +00289.212	194,-00859.143 -00557.429 +00233.810	319,-00625.278 -00682.198 +00240.094

70 ,-00631.727 -00594.034 +00292.095	195,-00855.767 -00545.821 +00233.160	320,-00616.092 -00656.000 +00237.169
71 ,-00635.473 -00607.715 +00292.965	196,-00852.248 -00534.083 +00232.342	321,-00609.860 -00635.927 +00235.635
72 ,-00640.371 -00623.577 +00293.350	197,-00849.047 -00523.281 +00231.317	322,-00603.916 -00614.888 +00235.182
73 ,-00645.964 -00640.077 +00293.531	198,-00845.778 -00513.043 +00230.637	323,-00598.858 -00594.389 +00233.836
74 ,-00650.768 -00652.917 +00293.584	199,-00841.673 -00500.728 +00230.383	324,-00593.990 -00573.050 +00232.172
75 ,-00655.771 -00666.909 +00295.568	200,-00838.493 -00491.019 +00229.769	325,-00588.826 -00548.936 +00230.348
76 ,-00661.844 -00681.381 +00294.605	201,-00833.275 -00475.207 +00228.291	326,-00584.599 -00528.404 +00229.582
77 ,-00669.238 -00700.284 +00298.445	202,-00828.654 -00461.721 +00226.591	327,-00581.540 -00514.191 +00230.266
78 ,-00677.896 -00720.167 +00298.915	203,-00824.309 -00450.318 +00226.511	328,-00578.277 -00495.354 +00228.164
79 ,-00683.003 -00732.201 +00299.696	204,-00820.887 -00440.495 +00224.812	329,-00575.061 -00478.628 +00228.439
80 ,-00686.522 -00741.734 +00300.635	205,-00816.777 -00429.861 +00225.042	330,-00572.093 -00461.798 +00227.955
81 ,-00652.372 -00682.535 +00346.819	206,-00812.774 -00419.342 +00224.105	331,-00570.238 -00450.771 +00227.185
82 ,-00643.302 -00658.581 +00343.111	207,-00809.092 -00409.747 +00223.137	332,-00568.638 -00440.084 +00225.839
83 ,-00637.096 -00642.174 +00343.801	208,-00805.239 -00399.793 +00221.905	333,-00559.158 -00440.245 +00274.117
84 ,-00628.533 -00614.438 +00341.213	209,-00800.872 -00388.753 +00221.379	334,-00562.732 -00461.658 +00275.272
85 ,-00623.146 -00594.997 +00339.483	210,-00797.188 -00379.499 +00219.824	335,-00564.643 -00474.796 +00277.341
86 ,-00618.940 -00576.949 +00337.198	211,-00791.334 -00365.595 +00219.589	336,-00567.189 -00489.692 +00278.385
87 ,-00613.458 -00554.102 +00337.105	212,-00786.243 -00353.918 +00219.354	337,-00570.321 -00504.829 +00277.414
88 ,-00609.771 -00535.080 +00334.133	213,-00782.538 -00344.769 +00218.117	338,-00572.927 -00520.754 +00280.170
89 ,-00607.223 -00520.559 +00331.857	214,-00779.007 -00336.426 +00217.242	339,-00576.788 -00539.853 +00280.828
90 ,-00603.160 -00501.478 +00332.675	215,-00767.835 -00334.408 +00265.428	340,-00579.873 -00553.887 +00281.104
91 ,-00600.375 -00488.032 +00332.468	216,-00772.054 -00343.195 +00264.315	341,-00583.279 -00569.243 +00281.891
92 ,-00597.225 -00473.781 +00332.271	217,-00775.788 -00352.306 +00265.647	342,-00587.639 -00587.989 +00282.829
93 ,-00593.887 -00457.984 +00329.717	218,-00779.762 -00362.007 +00266.755	343,-00591.850 -00605.516 +00283.893
94 ,-00591.007 -00447.376 +00329.420	219,-00783.919 -00372.138 +00267.828	344,-00597.094 -00625.659 +00285.693
95 ,-00588.844 -00438.554 +00328.451	220,-00789.194 -00385.133 +00268.860	345,-00603.408 -00646.760 +00286.448
96 ,-00855.060 -00696.909 +00234.461	221,-00793.612 -00397.076 +00271.265	346,-00607.728 -00660.111 +00287.495
97 ,-00852.144 -00690.128 +00233.834	222,-00798.352 -00408.514 +00271.272	347,-00612.756 -00674.537 +00289.356
98 ,-00847.304 -00677.895 +00231.620	223,-00801.999 -00418.605 +00273.327	348,-00619.387 -00691.083 +00290.037
99 ,-00842.612 -00665.942 +00231.638	224,-00806.511 -00430.087 +00273.628	349,-00625.355 -00705.597 +00292.153
100,-00838.951 -00654.930 +00230.022	225,-00810.448 -00440.875 +00274.947	350,-00631.695 -00719.467 +00293.680
101,-00835.142 -00643.133 +00230.095	226,-00815.672 -00455.301 +00276.196	351,-00638.023 -00732.757 +00295.841
102,-00832.240 -00630.742 +00227.830	227,-00819.078 -00464.271 +00276.216	352,-00644.836 -00745.909 +00296.828
103,-00827.781 -00614.081 +00227.233	228,-00823.593 -00477.118 +00277.235	353,-00654.197 -00762.952 +00297.719
104,-00824.824 -00601.552 +00227.660	229,-00827.328 -00488.137 +00278.188	354,-00643.934 -00761.976 +00347.484
105,-00821.884 -00587.633 +00224.517	230,-00830.838 -00499.197 +00279.569	355,-00636.707 -00748.864 +00346.283
106,-00817.731 -00574.037 +00226.059	231,-00834.659 -00509.872 +00278.760	356,-00628.824 -00733.686 +00344.566
107,-00813.775 -00560.069 +00225.338	232,-00837.796 -00521.283 +00281.558	357,-00620.514 -00716.561 +00342.510
108,-00809.262 -00544.168 +00222.945	233,-00841.230 -00532.950 +00283.375	358,-00612.796 -00698.850 +00339.933
109,-00804.947 -00530.794 +00222.139	234,-00844.789 -00544.090 +00283.107	359,-00606.823 -00684.524 +00339.321
110,-00800.214 -00516.045 +00220.852	235,-00847.769 -00554.042 +00283.192	360,-00599.441 -00664.480 +00337.218
111,-00794.424 -00498.805 +00219.706	236,-00851.569 -00567.218 +00283.761	361,-00593.091 -00645.286 +00335.505
112,-00786.192 -00475.485 +00218.949	237,-00854.570 -00578.024 +00284.401	362,-00587.889 -00627.958 +00334.823
113,-00782.128 -00463.855 +00217.551	238,-00857.319 -00588.720 +00285.497	363,-00582.077 -00605.327 +00332.879

114,-00778.248 -00453.016 +00216.652	239,-00859.907 -00599.778 +00287.570	364,-00577.816 -00586.545 +00330.413
115,-00774.272 -00441.518 +00214.695	240,-00862.880 -00611.360 +00287.686	365,-00574.705 -00574.159 +00330.795
116,-00766.655 -00425.154 +00213.963	241,-00865.786 -00622.461 +00287.386	366,-00571.411 -00559.289 +00329.754
117,-00762.854 -00417.178 +00214.355	242,-00868.366 -00635.830 +00289.891	367,-00569.189 -00548.151 +00328.255
118,-00758.516 -00405.131 +00210.547	243,-00871.148 -00648.139 +00289.954	368,-00565.591 -00531.276 +00328.041
119,-00754.907 -00397.215 +00212.948	244,-00874.485 -00663.334 +00290.089	369,-00562.970 -00517.814 +00327.372
120,-00751.276 -00386.149 +00211.069	245,-00864.396 -00664.904 +00338.406	370,-00560.415 -00503.671 +00326.070
121,-00749.271 -00378.179 +00208.405	246,-00859.797 -00641.994 +00336.396	371,-00558.151 -00491.354 +00325.472
122,-00741.140 -00386.770 +00258.985	247,-00856.098 -00627.320 +00337.153	372,-00556.335 -00481.178 +00325.083
123,-00745.830 -00399.045 +00258.034	248,-00852.317 -00609.949 +00334.502	373,-00553.945 -00468.326 +00325.464
124,-00751.359 -00414.646 +00260.922	249,-00847.869 -00593.384 +00334.511	374,-00552.424 -00457.981 +00323.784
125,-00758.241 -00431.586 +00263.300	250,-00843.724 -00575.924 +00331.851	375,-00550.846 -00449.164 +00323.874
		376,-00549.853 -00442.903 +00323.336
		377,-00549.287 -00438.786 +00322.660

7) Part: EBR2_1_16-19m

X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)
1 ,-00668.329 -00714.321 +00105.203	218,-00573.723 -00474.559 +00180.347	435,-00625.802 -00643.416 +00341.336
2 ,-00987.281 -00110.406 +00242.972	219,-00577.281 -00499.839 +00181.551	436,-00626.789 -00657.699 +00342.364
3 ,-00997.331 -00136.383 +00245.396	220,-00580.869 -00523.285 +00183.061	437,-00615.032 -00654.292 +00392.709
4 ,-01003.201 -00152.356 +00246.976	221,-00584.998 -00545.009 +00182.822	438,-00614.255 -00642.231 +00392.039
5 ,-01008.241 -00166.422 +00248.478	222,-00589.288 -00567.444 +00184.314	439,-00612.820 -00629.099 +00391.749
6 ,-01014.304 -00189.405 +00250.216	223,-00595.518 -00596.322 +00187.087	440,-00610.877 -00613.986 +00389.745
7 ,-01020.861 -00216.941 +00251.784	224,-00601.512 -00620.191 +00188.394	441,-00609.146 -00605.132 +00389.559
8 ,-01028.668 -00244.685 +00253.800	225,-00610.078 -00652.127 +00191.318	442,-00607.408 -00595.612 +00388.714
9 ,-01037.911 -00278.449 +00255.530	226,-00616.068 -00671.426 +00191.793	443,-00604.233 -00578.719 +00387.980
10 ,-01044.899 -00307.264 +00257.323	227,-00628.080 -00674.402 +00141.728	444,-00602.003 -00565.658 +00386.177
11 ,-01050.876 -00335.947 +00259.370	228,-00621.049 -00649.216 +00137.297	445,-00599.357 -00550.941 +00385.476
12 ,-01056.804 -00368.400 +00260.546	229,-00614.270 -00624.346 +00135.421	446,-00596.947 -00540.569 +00387.394
13 ,-01060.421 -00396.125 +00262.309	230,-00608.682 -00603.012 +00134.854	447,-00595.087 -00529.725 +00386.284
14 ,-01063.539 -00427.238 +00261.910	231,-00602.461 -00576.599 +00133.725	448,-00593.285 -00519.180 +00385.182
15 ,-01064.352 -00450.490 +00262.663	232,-00596.970 -00550.229 +00132.696	449,-00591.258 -00509.356 +00386.747
16 ,-01064.277 -00474.107 +00262.499	233,-00590.843 -00516.977 +00132.260	450,-00589.631 -00496.160 +00384.065
17 ,-01063.234 -00507.668 +00261.095	234,-00586.099 -00485.253 +00130.707	451,-00587.976 -00484.465 +00383.270
18 ,-01061.654 -00528.454 +00261.400	235,-00582.049 -00454.559 +00129.330	452,-00585.646 -00471.495 +00385.166
19 ,-01059.931 -00551.377 +00260.004	236,-00579.453 -00432.251 +00128.415	453,-00583.703 -00457.618 +00384.512
20 ,-01057.400 -00577.934 +00259.285	237,-00576.300 -00403.652 +00128.182	454,-00582.035 -00443.033 +00382.367
21 ,-01055.410 -00593.898 +00259.558	238,-00574.005 -00375.799 +00126.551	455,-00580.034 -00429.799 +00383.455
22 ,-01053.146 -00613.697 +00258.500	239,-00571.985 -00350.799 +00126.724	456,-00578.774 -00415.815 +00381.555
23 ,-01039.372 -00616.549 +00306.617	240,-00570.392 -00324.147 +00125.849	457,-00576.977 -00399.598 +00381.967
24 ,-01041.951 -00593.180 +00308.343	241,-00568.914 -00293.503 +00125.379	458,-00574.960 -00386.964 +00385.827
25 ,-01044.271 -00572.821 +00308.578	242,-00566.834 -00268.077 +00124.179	459,-00574.032 -00373.508 +00384.635
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27 ,-01048.088 -00530.663 +00309.369	244,-00561.743 -00221.651 +00122.902	461,-00572.796 -00345.152 +00380.351
28 ,-01049.595 -00509.185 +00309.611	245,-00559.994 -00200.463 +00123.951	462,-00572.243 -00333.256 +00379.147
29 ,-01050.442 -00487.443 +00310.518	246,-00559.715 -00184.779 +00122.298	463,-00570.899 -00321.293 +00381.656
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37 ,-01035.193 -00322.561 +00306.484	254,-00620.621 -00273.327 +00137.292	471,-00564.039 -00224.516 +00379.229
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43 ,-01006.698 -00210.158 +00298.321	260,-00625.230 -00347.314 +00138.249	477,-01005.102 -00597.167 +00245.729
44 ,-01002.475 -00191.667 +00296.572	261,-00626.257 -00361.719 +00139.176	478,-01005.218 -00584.397 +00246.541
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47 ,-00983.126 -00131.155 +00291.961	264,-00630.554 -00403.640 +00139.939	481,-01007.655 -00541.782 +00248.442
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161,-00528.963 -00212.450 +00270.796	378,-00604.454 -00453.517 +00285.970	595,-00966.785 -00556.688 +00391.184
162,-00531.222 -00234.968 +00270.558	379,-00602.620 -00441.277 +00285.969	596,-00966.236 -00571.991 +00388.089
163,-00532.993 -00252.017 +00271.029	380,-00600.613 -00426.734 +00286.773	597,-00965.198 -00587.269 +00388.331
164,-00535.272 -00274.536 +00272.105	381,-00599.162 -00410.702 +00284.839	598,-00964.690 -00607.763 +00387.045
165,-00537.069 -00302.547 +00272.605	382,-00597.798 -00397.645 +00284.871	599,-00949.820 -00604.315 +00438.707
166,-00538.540 -00330.374 +00272.919	383,-00596.466 -00382.250 +00284.632	600,-00951.766 -00582.835 +00439.095
167,-00540.029 -00353.417 +00273.789	384,-00595.102 -00366.401 +00284.764	601,-00952.727 -00561.690 +00440.051
168,-00542.156 -00380.333 +00274.405	385,-00593.895 -00350.583 +00284.659	602,-00953.253 -00543.151 +00442.798
169,-00545.641 -00414.855 +00274.269	386,-00593.115 -00338.140 +00284.509	603,-00954.479 -00526.482 +00443.470
170,-00548.008 -00437.710 +00275.609	387,-00592.527 -00322.347 +00282.397	604,-00955.713 -00507.326 +00444.071
171,-00549.858 -00454.783 +00277.010	388,-00591.005 -00310.501 +00285.684	605,-00956.386 -00485.731 +00444.883
172,-00553.693 -00483.091 +00277.296	389,-00590.482 -00296.466 +00284.700	606,-00956.827 -00467.101 +00443.392
173,-00557.785 -00510.772 +00278.360	390,-00589.580 -00283.935 +00285.182	607,-00956.541 -00447.791 +00442.011
174,-00562.311 -00539.114 +00280.771	391,-00588.543 -00272.051 +00285.555	608,-00955.532 -00428.432 +00442.578
175,-00566.443 -00561.106 +00281.716	392,-00587.261 -00257.008 +00284.753	609,-00953.927 -00406.535 +00442.356
176,-00571.078 -00580.702 +00280.789	393,-00586.169 -00240.500 +00282.089	610,-00951.876 -00385.763 +00441.503
177,-00576.518 -00604.462 +00282.511	394,-00584.801 -00227.268 +00282.437	611,-00949.616 -00367.627 +00440.122
178,-00581.216 -00623.788 +00284.566	395,-00583.544 -00214.890 +00283.040	612,-00945.949 -00345.534 +00438.521
179,-00585.521 -00639.355 +00285.359	396,-00583.345 -00201.825 +00282.234	613,-00941.407 -00323.587 +00437.362
180,-00590.048 -00654.704 +00285.970	397,-00583.915 -00196.009 +00281.901	614,-00937.090 -00304.122 +00436.119
181,-00594.854 -00670.405 +00287.093	398,-00573.613 -00200.099 +00329.595	615,-00933.454 -00289.471 +00435.840
182,-00606.772 -00674.120 +00238.145	399,-00574.067 -00216.121 +00330.042	616,-00928.716 -00267.976 +00431.213
183,-00599.334 -00650.606 +00237.805	400,-00574.851 -00225.590 +00330.648	617,-00922.576 -00248.069 +00432.235
184,-00593.026 -00628.109 +00236.304	401,-00576.533 -00238.496 +00328.983	618,-00917.466 -00229.989 +00430.367
185,-00587.595 -00605.379 +00233.328	402,-00576.890 -00249.445 +00331.950	619,-00912.882 -00213.564 +00428.421
186,-00581.607 -00581.943 +00234.184	403,-00577.875 -00258.321 +00331.309	620,-00909.004 -00199.992 +00427.338
187,-00578.460 -00564.952 +00231.130	404,-00578.818 -00268.034 +00330.537	621,-00903.011 -00178.712 +00425.326
188,-00574.697 -00546.379 +00231.109	405,-00579.205 -00281.057 +00332.872	622,-00898.901 -00165.856 +00427.144
189,-00573.753 -00540.967 +00229.934	406,-00579.936 -00292.945 +00332.355	623,-00896.397 -00154.005 +00426.022
190,-00568.891 -00511.644 +00228.083	407,-00580.846 -00303.420 +00329.990	624,-00884.854 -00156.199 +00471.490
191,-00565.389 -00490.157 +00228.600	408,-00581.312 -00318.090 +00331.939	625,-00888.351 -00172.551 +00472.917
192,-00561.926 -00463.855 +00227.363	409,-00581.923 -00327.206 +00331.218	626,-00892.685 -00189.263 +00475.743
193,-00559.819 -00446.431 +00226.596	410,-00582.399 -00339.605 +00332.747	627,-00897.202 -00203.591 +00476.530
194,-00557.289 -00424.276 +00225.839	411,-00583.266 -00351.077 +00332.524	628,-00902.244 -00219.636 +00477.331
195,-00555.099 -00404.709 +00226.024	412,-00584.017 -00362.197 +00332.681	629,-00908.173 -00239.710 +00478.785
196,-00554.102 -00388.363 +00223.171	413,-00584.723 -00372.950 +00333.279	630,-00912.379 -00254.485 +00480.275
197,-00551.236 -00356.919 +00223.822	414,-00585.418 -00383.579 +00334.129	631,-00916.995 -00272.027 +00482.587
198,-00549.312 -00329.847 +00223.658	415,-00586.139 -00394.582 +00335.901	632,-00920.412 -00286.265 +00484.646
199,-00548.491 -00310.274 +00222.311	416,-00587.739 -00407.513 +00334.473	633,-00924.985 -00304.613 +00485.334
200,-00547.566 -00293.261 +00222.771	417,-00589.017 -00417.936 +00333.984	634,-00929.183 -00322.091 +00484.949
201,-00544.829 -00262.489 +00221.995	418,-00590.212 -00429.875 +00335.223	635,-00932.404 -00338.261 +00485.779
202,-00542.232 -00240.194 +00222.154	419,-00592.061 -00443.325 +00334.896	636,-00935.082 -00354.430 +00487.540

203,-00540.190 -00218.950 +00221.000	420,-00593.895 -00459.486 +00337.158	637,-00937.884 -00372.242 +00487.808
204,-00538.464 -00185.211 +00220.679	421,-00595.734 -00472.602 +00338.329	638,-00940.022 -00386.129 +00487.034
205,-00549.136 -00188.109 +00171.783	422,-00597.518 -00484.349 +00338.947	639,-00941.301 -00403.497 +00489.494
206,-00549.996 -00210.540 +00173.101	423,-00599.231 -00495.153 +00339.475	640,-00942.231 -00420.154 +00490.708
207,-00552.961 -00240.853 +00173.494	424,-00602.140 -00511.359 +00338.989	641,-00943.404 -00436.181 +00489.753
208,-00556.124 -00270.217 +00174.534	425,-00604.465 -00522.604 +00338.164	642,-00944.220 -00454.625 +00488.965
209,-00557.858 -00292.161 +00175.500	426,-00606.673 -00536.385 +00340.084	643,-00944.196 -00473.492 +00489.536
210,-00558.208 -00293.486 +00174.416	427,-00609.476 -00550.016 +00339.544	644,-00943.210 -00489.888 +00491.593
211,-00559.182 -00318.192 +00175.580	428,-00612.382 -00563.497 +00338.822	645,-00942.641 -00506.495 +00490.785
212,-00560.453 -00343.153 +00176.964	429,-00615.999 -00582.124 +00339.613	646,-00941.034 -00524.442 +00492.421
213,-00562.586 -00368.378 +00176.158	430,-00618.594 -00596.079 +00339.977	647,-00940.210 -00539.643 +00490.397
214,-00564.722 -00395.612 +00177.754	431,-00620.417 -00605.741 +00340.368	648,-00938.042 -00560.878 +00492.355
215,-00566.987 -00418.243 +00178.377	432,-00622.244 -00615.682 +00340.697	649,-00937.063 -00580.908 +00492.356
216,-00569.027 -00437.130 +00178.997	433,-00624.255 -00627.815 +00340.668	650,-00936.431 -00596.814 +00491.616
217,-00571.152 -00455.650 +00180.095	434,-00625.350 -00637.970 +00341.653	651,-00935.158 -00606.707 +00491.684

8) Part: EBR2_2_25-28m

X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)	X(mm), Y(mm), Z(mm)
1 ,-1.540467e+03, -5.164519e+02, -2.162224e+03	138,-1.696413e+03, -6.097566e+02, -2.073423e+03	275,-1.728664e+03, -7.342357e+02, -1.961496e+03
2 ,-1.541833e+03, -5.254250e+02, -2.163622e+03	139,-1.698754e+03, -6.242150e+02, -2.071981e+03	276,-1.727536e+03, -7.194369e+02, -1.961762e+03
3 ,-1.543830e+03, -5.376322e+02, -2.162001e+03	140,-1.701165e+03, -6.400060e+02, -2.071362e+03	277,-1.726286e+03, -7.083838e+02, -1.961193e+03
4 ,-1.546161e+03, -5.498042e+02, -2.163012e+03	141,-1.703154e+03, -6.511955e+02, -2.072445e+03	278,-1.724780e+03, -6.965994e+02, -1.960531e+03
5 ,-1.547529e+03, -5.629239e+02, -2.161681e+03	142,-1.704916e+03, -6.631473e+02, -2.071603e+03	279,-1.723525e+03, -6.782948e+02, -1.963672e+03
6 ,-1.548788e+03, -5.762510e+02, -2.162676e+03	143,-1.706508e+03, -6.745290e+02, -2.070967e+03	280,-1.721207e+03, -6.630424e+02, -1.962534e+03
7 ,-1.549331e+03, -5.898104e+02, -2.161247e+03	144,-1.707676e+03, -6.840893e+02, -2.070833e+03	281,-1.718922e+03, -6.474664e+02, -1.962375e+03
8 ,-1.550256e+03, -6.008244e+02, -2.161897e+03	145,-1.708952e+03, -6.954418e+02, -2.071101e+03	282,-1.716182e+03, -6.298429e+02, -1.962370e+03
9 ,-1.550894e+03, -6.126654e+02, -2.161884e+03	146,-1.710254e+03, -7.090539e+02, -2.070744e+03	283,-1.713152e+03, -6.102815e+02, -1.963587e+03
10 ,-1.551843e+03, -6.212748e+02, -2.163988e+03	147,-1.711817e+03, -7.234588e+02, -2.070640e+03	284,-1.710377e+03, -5.952619e+02, -1.963402e+03
11 ,-1.552162e+03, -6.346317e+02, -2.162529e+03	148,-1.713193e+03, -7.351902e+02, -2.070227e+03	285,-1.708053e+03, -5.810643e+02, -1.964720e+03
12 ,-1.553018e+03, -6.471388e+02, -2.162672e+03	149,-1.716803e+03, -7.530799e+02, -2.071803e+03	286,-1.704285e+03, -5.641999e+02, -1.963767e+03
13 ,-1.553919e+03, -6.597872e+02, -2.162385e+03	150,-1.719781e+03, -7.670056e+02, -2.070379e+03	287,-1.701214e+03, -5.499678e+02, -1.964246e+03
14 ,-1.555409e+03, -6.713718e+02, -2.163257e+03	151,-1.723974e+03, -7.850919e+02, -2.068798e+03	288,-1.698559e+03, -5.353713e+02, -1.966756e+03
15 ,-1.557097e+03, -6.847418e+02, -2.163298e+03	152,-1.709241e+03, -7.827386e+02, -2.017655e+03	289,-1.695236e+03, -5.218250e+02, -1.966378e+03
16 ,-1.557018e+03, -6.840788e+02, -2.163382e+03	153,-1.705315e+03, -7.628737e+02, -2.020500e+03	290,-1.691847e+03, -5.067112e+02, -1.967423e+03
17 ,-1.558884e+03, -6.951071e+02, -2.164294e+03	154,-1.702310e+03, -7.461192e+02, -2.021589e+03	291,-1.688732e+03, -4.943045e+02, -1.967406e+03
18 ,-1.560747e+03, -7.077943e+02, -2.163487e+03	155,-1.699718e+03, -7.221763e+02, -2.023017e+03	292,-1.685573e+03, -4.799867e+02, -1.969165e+03
19 ,-1.563074e+03, -7.217444e+02, -2.162976e+03	156,-1.697620e+03, -7.035070e+02, -2.023148e+03	293,-1.682730e+03, -4.689944e+02, -1.969483e+03
20 ,-1.566717e+03, -7.395816e+02, -2.162763e+03	157,-1.695325e+03, -6.821960e+02, -2.023243e+03	294,-1.679281e+03, -4.559464e+02, -1.969861e+03
21 ,-1.571514e+03, -7.604687e+02, -2.162683e+03	158,-1.693625e+03, -6.683456e+02, -2.023769e+03	295,-1.676618e+03, -4.458227e+02, -1.970368e+03
22 ,-1.574009e+03, -7.734006e+02, -2.159936e+03	159,-1.691745e+03, -6.574695e+02, -2.022560e+03	296,-1.673928e+03, -4.368272e+02, -1.970033e+03
23 ,-1.576613e+03, -7.835522e+02, -2.159838e+03	160,-1.689416e+03, -6.385755e+02, -2.025112e+03	297,-1.671755e+03, -4.277674e+02, -1.971389e+03
24 ,-1.581862e+03, -8.027165e+02, -2.159798e+03	161,-1.686049e+03, -6.210173e+02, -2.023770e+03	298,-1.732558e+03, -7.863017e+02, -1.964091e+03
25 ,-1.584139e+03, -8.111872e+02, -2.158405e+03	162,-1.683833e+03, -6.054635e+02, -2.026057e+03	299,-1.731584e+03, -7.777511e+02, -1.962195e+03
26 ,-1.587853e+03, -8.249213e+02, -2.158179e+03	163,-1.680185e+03, -5.858907e+02, -2.026916e+03	300,-1.730767e+03, -7.648797e+02, -1.961583e+03
27 ,-1.590338e+03, -8.355478e+02, -2.157051e+03	164,-1.677193e+03, -5.704375e+02, -2.027849e+03	301,-1.730114e+03, -7.509432e+02, -1.962228e+03

28 ,-1.593518e+03, -8.458310e+02, -2.155892e+03	165,-1.673647e+03, -5.525837e+02, -2.029376e+03	302,-1.728929e+03, -7.358254e+02, -1.962192e+03
29 ,-1.582792e+03, -8.479476e+02, -2.111127e+03	166,-1.670198e+03, -5.391455e+02, -2.028355e+03	303,-1.554216e+03, -8.617289e+02, -2.164422e+03
30 ,-1.579355e+03, -8.384558e+02, -2.112072e+03	167,-1.666285e+03, -5.204034e+02, -2.032744e+03	304,-1.550809e+03, -8.528809e+02, -2.165480e+03
31 ,-1.575726e+03, -8.244721e+02, -2.112343e+03	168,-1.662996e+03, -5.086029e+02, -2.032509e+03	305,-1.547349e+03, -8.443754e+02, -2.165293e+03
32 ,-1.573275e+03, -8.152177e+02, -2.113309e+03	169,-1.659623e+03, -4.947175e+02, -2.033193e+03	306,-1.543367e+03, -8.329701e+02, -2.166861e+03
33 ,-1.569245e+03, -8.021227e+02, -2.112618e+03	170,-1.657175e+03, -4.804364e+02, -2.035650e+03	307,-1.539499e+03, -8.217020e+02, -2.167359e+03
34 ,-1.564064e+03, -7.831067e+02, -2.113437e+03	171,-1.643555e+03, -4.807946e+02, -1.986944e+03	308,-1.534944e+03, -8.078518e+02, -2.167865e+03
35 ,-1.560603e+03, -7.688475e+02, -2.113823e+03	172,-1.645860e+03, -4.937301e+02, -1.984807e+03	309,-1.530363e+03, -7.932109e+02, -2.167836e+03
36 ,-1.557611e+03, -7.567399e+02, -2.113869e+03	173,-1.647779e+03, -5.039971e+02, -1.982355e+03	310,-1.526735e+03, -7.784316e+02, -2.169413e+03
37 ,-1.553965e+03, -7.410390e+02, -2.113888e+03	174,-1.650740e+03, -5.177618e+02, -1.980412e+03	311,-1.524410e+03, -7.675238e+02, -2.170769e+03
38 ,-1.550816e+03, -7.256967e+02, -2.114045e+03	175,-1.655988e+03, -5.354493e+02, -1.981386e+03	312,-1.521476e+03, -7.554431e+02, -2.169848e+03
39 ,-1.548589e+03, -7.117194e+02, -2.114997e+03	176,-1.659053e+03, -5.473182e+02, -1.982370e+03	313,-1.518195e+03, -7.373319e+02, -2.170419e+03
40 ,-1.546523e+03, -6.998290e+02, -2.114730e+03	177,-1.662637e+03, -5.681946e+02, -1.979218e+03	314,-1.516623e+03, -7.253128e+02, -2.171925e+03
41 ,-1.545190e+03, -6.917613e+02, -2.114707e+03	178,-1.665050e+03, -5.834804e+02, -1.978635e+03	315,-1.514067e+03, -7.092952e+02, -2.170630e+03
42 ,-1.543034e+03, -6.742411e+02, -2.114933e+03	179,-1.667915e+03, -5.997796e+02, -1.977785e+03	316,-1.512784e+03, -6.970936e+02, -2.171709e+03
43 ,-1.541391e+03, -6.597887e+02, -2.114605e+03	180,-1.670990e+03, -6.175485e+02, -1.976891e+03	317,-1.511256e+03, -6.820782e+02, -2.171683e+03
44 ,-1.540442e+03, -6.480887e+02, -2.115104e+03	181,-1.673282e+03, -6.341438e+02, -1.975744e+03	318,-1.510409e+03, -6.685580e+02, -2.172720e+03
45 ,-1.539396e+03, -6.350814e+02, -2.114472e+03	182,-1.676460e+03, -6.529265e+02, -1.975478e+03	319,-1.508367e+03, -6.526289e+02, -2.169949e+03
46 ,-1.538782e+03, -6.174656e+02, -2.115735e+03	183,-1.679152e+03, -6.721957e+02, -1.973778e+03	320,-1.507842e+03, -6.397389e+02, -2.171326e+03
47 ,-1.537291e+03, -5.965834e+02, -2.114757e+03	184,-1.681412e+03, -6.885947e+02, -1.973720e+03	321,-1.507025e+03, -6.244747e+02, -2.171686e+03
48 ,-1.536207e+03, -5.808085e+02, -2.114903e+03	185,-1.684154e+03, -7.102156e+02, -1.974451e+03	322,-1.506932e+03, -6.147458e+02, -2.173237e+03
49 ,-1.534880e+03, -5.690799e+02, -2.113100e+03	186,-1.686559e+03, -7.297072e+02, -1.974163e+03	323,-1.505600e+03, -5.989382e+02, -2.170867e+03
50 ,-1.533635e+03, -5.537023e+02, -2.113904e+03	187,-1.688689e+03, -7.460273e+02, -1.972715e+03	324,-1.504887e+03, -5.861299e+02, -2.170527e+03
51 ,-1.531357e+03, -5.421839e+02, -2.112753e+03	188,-1.691701e+03, -7.592816e+02, -1.973943e+03	325,-1.504846e+03, -5.728371e+02, -2.171890e+03
52 ,-1.529893e+03, -5.343805e+02, -2.112660e+03	189,-1.694397e+03, -7.734449e+02, -1.971268e+03	326,-1.504728e+03, -5.629068e+02, -2.172630e+03
53 ,-1.527690e+03, -5.229543e+02, -2.112538e+03	190,-1.712611e+03, -4.270151e+02, -2.115079e+03	327,-1.504130e+03, -5.521089e+02, -2.171471e+03
54 ,-1.527380e+03, -5.166452e+02, -2.113481e+03	191,-1.716036e+03, -4.391500e+02, -2.114688e+03	328,-1.503506e+03, -5.420087e+02, -2.170089e+03
55 ,-1.514833e+03, -5.240889e+02, -2.067616e+03	192,-1.718694e+03, -4.480126e+02, -2.114936e+03	329,-1.503608e+03, -5.283590e+02, -2.171775e+03
56 ,-1.515812e+03, -5.334160e+02, -2.065493e+03	193,-1.721623e+03, -4.594057e+02, -2.114193e+03	330,-1.503029e+03, -5.188309e+02, -2.170461e+03
57 ,-1.517464e+03, -5.436108e+02, -2.065700e+03	194,-1.724289e+03, -4.704748e+02, -2.112964e+03	331,-1.502926e+03, -5.084887e+02, -2.170593e+03
58 ,-1.519720e+03, -5.575337e+02, -2.065709e+03	195,-1.727137e+03, -4.816920e+02, -2.112987e+03	332,-1.541872e+03, -8.627264e+02, -2.116890e+03
59 ,-1.521157e+03, -5.710513e+02, -2.065953e+03	196,-1.729985e+03, -4.942495e+02, -2.111394e+03	333,-1.537215e+03, -8.510504e+02, -2.117691e+03
60 ,-1.522707e+03, -5.828458e+02, -2.067462e+03	197,-1.732639e+03, -5.044731e+02, -2.111518e+03	334,-1.532824e+03, -8.393010e+02, -2.118340e+03
61 ,-1.523277e+03, -5.928104e+02, -2.067013e+03	198,-1.735010e+03, -5.138928e+02, -2.111750e+03	335,-1.528865e+03, -8.289964e+02, -2.117972e+03
62 ,-1.524201e+03, -6.045096e+02, -2.067112e+03	199,-1.737204e+03, -5.250235e+02, -2.110236e+03	336,-1.524717e+03, -8.162290e+02, -2.119433e+03
63 ,-1.525243e+03, -6.172602e+02, -2.067820e+03	200,-1.739453e+03, -5.350203e+02, -2.110073e+03	337,-1.520405e+03, -8.020937e+02, -2.120377e+03
64 ,-1.525846e+03, -6.276588e+02, -2.067739e+03	201,-1.742275e+03, -5.465332e+02, -2.110589e+03	338,-1.516125e+03, -7.868049e+02, -2.120831e+03
65 ,-1.526521e+03, -6.398390e+02, -2.067962e+03	202,-1.745059e+03, -5.594875e+02, -2.110246e+03	339,-1.512791e+03, -7.722139e+02, -2.122793e+03
66 ,-1.527214e+03, -6.525146e+02, -2.066956e+03	203,-1.747038e+03, -5.700182e+02, -2.109333e+03	340,-1.509076e+03, -7.563263e+02, -2.122185e+03
67 ,-1.528928e+03, -6.656527e+02, -2.068126e+03	204,-1.749443e+03, -5.821448e+02, -2.109146e+03	341,-1.505729e+03, -7.396389e+02, -2.122793e+03
68 ,-1.530109e+03, -6.770407e+02, -2.068401e+03	205,-1.752260e+03, -5.981552e+02, -2.108769e+03	342,-1.504122e+03, -7.265722e+02, -2.124444e+03
69 ,-1.532249e+03, -6.904070e+02, -2.069484e+03	206,-1.753723e+03, -6.069287e+02, -2.107990e+03	343,-1.502321e+03, -7.127548e+02, -2.124935e+03
70 ,-1.534029e+03, -7.014540e+02, -2.068991e+03	207,-1.755942e+03, -6.193131e+02, -2.108275e+03	344,-1.500213e+03, -6.961021e+02, -2.124551e+03
71 ,-1.536544e+03, -7.158800e+02, -2.069948e+03	208,-1.757678e+03, -6.314273e+02, -2.107439e+03	345,-1.498516e+03, -6.803432e+02, -2.124134e+03
72 ,-1.538368e+03, -7.298947e+02, -2.066706e+03	209,-1.760007e+03, -6.470357e+02, -2.106972e+03	346,-1.497447e+03, -6.682802e+02, -2.124327e+03
73 ,-1.541266e+03, -7.426836e+02, -2.067523e+03	210,-1.762205e+03, -6.616187e+02, -2.107256e+03	347,-1.496120e+03, -6.483832e+02, -2.125281e+03
74 ,-1.544999e+03, -7.597315e+02, -2.066825e+03	211,-1.763346e+03, -6.728346e+02, -2.105944e+03	348,-1.494657e+03, -6.330872e+02, -2.123794e+03
75 ,-1.547982e+03, -7.723309e+02, -2.066456e+03	212,-1.765406e+03, -6.871992e+02, -2.106830e+03	349,-1.493832e+03, -6.195233e+02, -2.123678e+03

76 ,-1.551036e+03, -7.847685e+02, -2.065566e+03	213,-1.767010e+03, -7.018792e+02, -2.106850e+03	350,-1.493214e+03, -6.061777e+02, -2.124312e+03
77 ,-1.552938e+03, -7.939327e+02, -2.064380e+03	214,-1.768268e+03, -7.168234e+02, -2.105930e+03	351,-1.492452e+03, -5.899874e+02, -2.123883e+03
78 ,-1.556776e+03, -8.063041e+02, -2.063926e+03	215,-1.769698e+03, -7.298480e+02, -2.107150e+03	352,-1.492160e+03, -5.755200e+02, -2.124801e+03
79 ,-1.560498e+03, -8.201104e+02, -2.062581e+03	216,-1.769984e+03, -7.413579e+02, -2.105077e+03	353,-1.491795e+03, -5.605702e+02, -2.124676e+03
80 ,-1.564208e+03, -8.336464e+02, -2.061980e+03	217,-1.770815e+03, -7.548130e+02, -2.104891e+03	354,-1.491462e+03, -5.473481e+02, -2.124720e+03
81 ,-1.565856e+03, -8.388595e+02, -2.062211e+03	218,-1.771164e+03, -7.687733e+02, -2.104315e+03	355,-1.491056e+03, -5.307909e+02, -2.124920e+03
82 ,-1.551553e+03, -8.357177e+02, -2.014253e+03	219,-1.771936e+03, -7.819403e+02, -2.105273e+03	356,-1.490675e+03, -5.180121e+02, -2.124339e+03
83 ,-1.548436e+03, -8.251877e+02, -2.014004e+03	220,-1.758591e+03, -7.846124e+02, -2.057079e+03	357,-1.490515e+03, -5.085649e+02, -2.124381e+03
84 ,-1.546307e+03, -8.165259e+02, -2.015356e+03	221,-1.758430e+03, -7.691626e+02, -2.059161e+03	358,-1.477097e+03, -5.095803e+02, -2.072757e+03
85 ,-1.542993e+03, -8.060381e+02, -2.014195e+03	222,-1.757138e+03, -7.516900e+02, -2.057997e+03	359,-1.477323e+03, -5.270443e+02, -2.072291e+03
86 ,-1.538819e+03, -7.886431e+02, -2.016971e+03	223,-1.756167e+03, -7.369876e+02, -2.058060e+03	360,-1.477931e+03, -5.417712e+02, -2.073494e+03
87 ,-1.534394e+03, -7.693258e+02, -2.018784e+03	224,-1.755100e+03, -7.201305e+02, -2.059088e+03	361,-1.478670e+03, -5.607225e+02, -2.074801e+03
88 ,-1.530221e+03, -7.523096e+02, -2.019390e+03	225,-1.753638e+03, -7.034245e+02, -2.059497e+03	362,-1.479196e+03, -5.755763e+02, -2.075335e+03
89 ,-1.526555e+03, -7.372506e+02, -2.018555e+03	226,-1.751864e+03, -6.884227e+02, -2.059157e+03	363,-1.479577e+03, -5.904667e+02, -2.074772e+03
90 ,-1.523568e+03, -7.200751e+02, -2.019742e+03	227,-1.750358e+03, -6.751782e+02, -2.059610e+03	364,-1.480448e+03, -6.033950e+02, -2.075967e+03
91 ,-1.520747e+03, -7.041881e+02, -2.019830e+03	228,-1.748258e+03, -6.600609e+02, -2.059485e+03	365,-1.480690e+03, -6.169885e+02, -2.074354e+03
92 ,-1.517642e+03, -6.811370e+02, -2.020663e+03	229,-1.745901e+03, -6.451880e+02, -2.058724e+03	366,-1.481619e+03, -6.270844e+02, -2.075762e+03
93 ,-1.515737e+03, -6.622315e+02, -2.020754e+03	230,-1.743773e+03, -6.287193e+02, -2.060263e+03	367,-1.482038e+03, -6.339791e+02, -2.075037e+03
94 ,-1.513977e+03, -6.445321e+02, -2.020150e+03	231,-1.740829e+03, -6.156201e+02, -2.058112e+03	368,-1.483178e+03, -6.479406e+02, -2.075708e+03
95 ,-1.513296e+03, -6.254112e+02, -2.021553e+03	232,-1.738451e+03, -5.990006e+02, -2.059895e+03	369,-1.483532e+03, -6.589392e+02, -2.073701e+03
96 ,-1.512024e+03, -6.112081e+02, -2.020497e+03	233,-1.734698e+03, -5.777342e+02, -2.060710e+03	370,-1.485240e+03, -6.758077e+02, -2.074758e+03
97 ,-1.511034e+03, -5.968726e+02, -2.020893e+03	234,-1.731528e+03, -5.630452e+02, -2.060712e+03	371,-1.485989e+03, -6.857412e+02, -2.074081e+03
98 ,-1.510159e+03, -5.829000e+02, -2.021739e+03	235,-1.728382e+03, -5.460034e+02, -2.062632e+03	372,-1.487881e+03, -7.032273e+02, -2.074086e+03
99 ,-1.508765e+03, -5.675884e+02, -2.021621e+03	236,-1.724687e+03, -5.297310e+02, -2.062933e+03	373,-1.491419e+03, -7.263173e+02, -2.075591e+03
100,-1.507098e+03, -5.533719e+02, -2.021173e+03	237,-1.722028e+03, -5.189187e+02, -2.062851e+03	374,-1.493912e+03, -7.432066e+02, -2.073923e+03
101,-1.505187e+03, -5.414752e+02, -2.021887e+03	238,-1.718936e+03, -5.061216e+02, -2.062979e+03	375,-1.497590e+03, -7.612602e+02, -2.074159e+03
102,-1.502541e+03, -5.277670e+02, -2.021037e+03	239,-1.715403e+03, -4.926050e+02, -2.062543e+03	376,-1.500711e+03, -7.761414e+02, -2.072023e+03
103,-1.501509e+03, -5.220978e+02, -2.019460e+03	240,-1.711675e+03, -4.757385e+02, -2.064445e+03	377,-1.503895e+03, -7.877076e+02, -2.072729e+03
104,-1.733737e+03, -7.712295e+02, -2.116796e+03	241,-1.708414e+03, -4.631444e+02, -2.065080e+03	378,-1.507790e+03, -8.018240e+02, -2.071449e+03
105,-1.731355e+03, -7.615089e+02, -2.117150e+03	242,-1.705162e+03, -4.512118e+02, -2.065240e+03	379,-1.512455e+03, -8.175847e+02, -2.070459e+03
106,-1.727770e+03, -7.432897e+02, -2.117492e+03	243,-1.702390e+03, -4.407566e+02, -2.065659e+03	380,-1.516368e+03, -8.294491e+02, -2.069423e+03
107,-1.725877e+03, -7.282499e+02, -2.118234e+03	244,-1.699018e+03, -4.269840e+02, -2.067571e+03	381,-1.520374e+03, -8.409968e+02, -2.068169e+03
108,-1.724149e+03, -7.150066e+02, -2.117973e+03	245,-1.685584e+03, -4.272263e+02, -2.020279e+03	382,-1.523496e+03, -8.488816e+02, -2.068166e+03
109,-1.722734e+03, -7.009411e+02, -2.119336e+03	246,-1.690469e+03, -4.461768e+02, -2.018332e+03	383,-1.526465e+03, -8.561611e+02, -2.068122e+03
110,-1.721409e+03, -6.873383e+02, -2.119811e+03	247,-1.693644e+03, -4.583035e+02, -2.017125e+03	384,-1.529460e+03, -8.637034e+02, -2.068052e+03
111,-1.719218e+03, -6.721599e+02, -2.119664e+03	248,-1.697018e+03, -4.713208e+02, -2.016787e+03	385,-1.516662e+03, -8.640814e+02, -2.020031e+03
112,-1.716867e+03, -6.564839e+02, -2.119941e+03	249,-1.699999e+03, -4.840299e+02, -2.015556e+03	386,-1.511595e+03, -8.520922e+02, -2.019906e+03
113,-1.714662e+03, -6.410622e+02, -2.120744e+03	250,-1.703210e+03, -4.971036e+02, -2.014971e+03	387,-1.504328e+03, -8.329507e+02, -2.020461e+03
114,-1.712507e+03, -6.273732e+02, -2.120620e+03	251,-1.706062e+03, -5.097207e+02, -2.013805e+03	388,-1.500812e+03, -8.228248e+02, -2.020631e+03
115,-1.710282e+03, -6.142468e+02, -2.120920e+03	252,-1.709405e+03, -5.241720e+02, -2.013206e+03	389,-1.496899e+03, -8.112123e+02, -2.020959e+03
116,-1.707905e+03, -6.006901e+02, -2.121661e+03	253,-1.713002e+03, -5.391604e+02, -2.013442e+03	390,-1.493662e+03, -7.998434e+02, -2.022498e+03
117,-1.706102e+03, -5.889406e+02, -2.123068e+03	254,-1.716251e+03, -5.545633e+02, -2.012839e+03	391,-1.490811e+03, -7.895271e+02, -2.023093e+03
118,-1.703300e+03, -5.763626e+02, -2.122489e+03	255,-1.719056e+03, -5.672373e+02, -2.012999e+03	392,-1.488060e+03, -7.773044e+02, -2.024465e+03
119,-1.699538e+03, -5.563837e+02, -2.123850e+03	256,-1.721931e+03, -5.828413e+02, -2.011942e+03	393,-1.485020e+03, -7.644516e+02, -2.024978e+03
120,-1.697432e+03, -5.454513e+02, -2.125267e+03	257,-1.723396e+03, -5.918534e+02, -2.010893e+03	394,-1.482558e+03, -7.527869e+02, -2.025087e+03
121,-1.694409e+03, -5.324744e+02, -2.125997e+03	258,-1.725469e+03, -6.022133e+02, -2.011111e+03	395,-1.480213e+03, -7.402061e+02, -2.024875e+03
122,-1.692335e+03, -5.241147e+02, -2.126571e+03	259,-1.727916e+03, -6.165921e+02, -2.011316e+03	396,-1.477592e+03, -7.237391e+02, -2.025202e+03
123,-1.688927e+03, -5.110617e+02, -2.126701e+03	260,-1.729680e+03, -6.289478e+02, -2.010218e+03	397,-1.476048e+03, -7.111218e+02, -2.026567e+03

124,-1.686244e+03, -4.999109e+02, -2.126917e+03	261,-1.732014e+03, -6.416799e+02, -2.011010e+03	398,-1.474029e+03, -6.958053e+02, -2.025418e+03
125,-1.683323e+03, -4.866418e+02, -2.126866e+03	262,-1.732951e+03, -6.514977e+02, -2.009142e+03	399,-1.473310e+03, -6.846537e+02, -2.027555e+03
126,-1.681538e+03, -4.790535e+02, -2.126127e+03	263,-1.735060e+03, -6.638190e+02, -2.010366e+03	400,-1.471945e+03, -6.730578e+02, -2.026265e+03
127,-1.679842e+03, -4.648086e+02, -2.129993e+03	264,-1.736421e+03, -6.752860e+02, -2.009995e+03	401,-1.471094e+03, -6.621763e+02, -2.026973e+03
128,-1.667767e+03, -4.756031e+02, -2.079734e+03	265,-1.737768e+03, -6.850033e+02, -2.010295e+03	402,-1.470350e+03, -6.481248e+02, -2.028218e+03
129,-1.670274e+03, -4.873665e+02, -2.079787e+03	266,-1.739459e+03, -7.000355e+02, -2.009966e+03	403,-1.469032e+03, -6.325105e+02, -2.027336e+03
130,-1.673253e+03, -4.996610e+02, -2.080446e+03	267,-1.740702e+03, -7.126692e+02, -2.010012e+03	404,-1.468241e+03, -6.190739e+02, -2.027497e+03
131,-1.676172e+03, -5.111726e+02, -2.080838e+03	268,-1.741943e+03, -7.304228e+02, -2.008601e+03	405,-1.467342e+03, -6.050495e+02, -2.026411e+03
132,-1.679559e+03, -5.257295e+02, -2.079156e+03	269,-1.743491e+03, -7.444373e+02, -2.010445e+03	406,-1.466579e+03, -5.889140e+02, -2.026363e+03
133,-1.682744e+03, -5.389585e+02, -2.078195e+03	270,-1.744404e+03, -7.579577e+02, -2.011040e+03	407,-1.466053e+03, -5.745495e+02, -2.026074e+03
134,-1.685785e+03, -5.544314e+02, -2.075763e+03	271,-1.744691e+03, -7.748889e+02, -2.009661e+03	408,-1.465860e+03, -5.610198e+02, -2.026720e+03
135,-1.688383e+03, -5.652010e+02, -2.076905e+03	272,-1.745388e+03, -7.867843e+02, -2.009957e+03	409,-1.465346e+03, -5.483392e+02, -2.025856e+03
136,-1.690907e+03, -5.808386e+02, -2.074089e+03	273,-1.730480e+03, -7.582493e+02, -1.961648e+03	410,-1.465357e+03, -5.373846e+02, -2.026915e+03
137,-1.694084e+03, -5.956501e+02, -2.074397e+03	274,-1.729416e+03, -7.458614e+02, -1.961183e+03	411,-1.465210e+03, -5.208899e+02, -2.027261e+03
		412,-1.464735e+03, -5.075696e+02, -2.026125e+03