QDA at KP

QUALITY ASSURANCE
AND
CUSTOMER REQUIREMENTS

Quality Data Analysis

QDA
- software for use in quality assurance

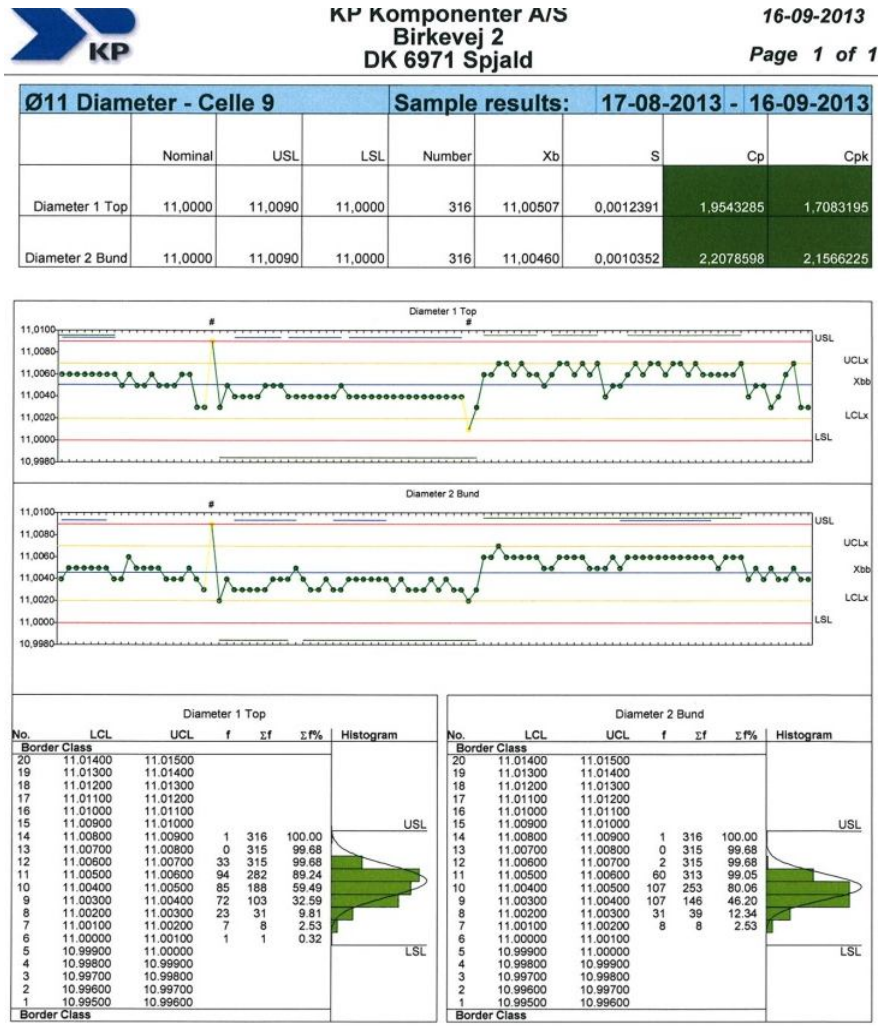
At KPK, we focus on our customers. We want to ensure our customers consistent top quality that always meet the customer's specified requirements and specifications.

To ensure these parameters in our current production and NPI-phase (New Product Introduction) we use a variety of QDA modules as

- SPC (Statistical Process Control)
- Control chart
- Control instructions

The use of these QDA modules ensures, that we always know the status of the products we currently produce.

Statistic Process Control



KP Komponenter A/S
Birkevej 2
DK 6971 Spjald

16-09-2013
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Ø11 Diameter - Celle 9				Sample results:			17-08-2013 - 16-09-2013	
	Nominal	USL	LSL	Number	Xb	S	Cp	Cpk
Diameter 1 Top	11,0000	11,0090	11,0000	316	11,00507	0,0012391	1,9543285	1,7083195
Diameter 2 Bund	11,0000	11,0090	11,0000	316	11,00460	0,0010352	2,2078598	2,1566225

Diameter 1 Top

No.	LCL	UCL	f	Σf	Σf%	Histogram
Border Class						
20	11.01400	11.01500				
19	11.01300	11.01400				
18	11.01200	11.01300				
17	11.01100	11.01200				
16	11.01000	11.01100				
15	11.00900	11.01000				
14	11.00800	11.00900	1	316	100.00	
13	11.00700	11.00800	0	315	99.68	
12	11.00600	11.00700	33	315	99.68	
11	11.00500	11.00600	94	282	89.24	
10	11.00400	11.00500	85	188	59.49	
9	11.00300	11.00400	72	103	32.59	
8	11.00200	11.00300	23	31	9.81	
7	11.00100	11.00200	7	8	2.53	
6	11.00000	11.00100	1	1	0.32	
5	10.99900	11.00000				
4	10.99800	10.99900				
3	10.99700	10.99800				
2	10.99600	10.99700				
1	10.99500	10.99600				
Border Class						

Diameter 2 Bund

No.	LCL	UCL	f	Σf	Σf%	Histogram
Border Class						
20	11.01400	11.01500				
19	11.01300	11.01400				
18	11.01200	11.01300				
17	11.01100	11.01200				
16	11.01000	11.01100				
15	11.00900	11.01000				
14	11.00800	11.00900	1	316	100.00	
13	11.00700	11.00800	0	315	99.68	
12	11.00600	11.00700	2	315	99.68	
11	11.00500	11.00600	60	313	99.05	
10	11.00400	11.00500	107	253	80.06	
9	11.00300	11.00400	107	146	46.20	
8	11.00200	11.00300	31	39	12.34	
7	11.00100	11.00200	8	8	2.53	
6	11.00000	11.00100				
5	10.99900	11.00000				
4	10.99800	10.99900				
3	10.99700	10.99800				
2	10.99600	10.99700				
1	10.99500	10.99600				
Border Class						

This graph shows an example of data enrolled in QDA SPC database.

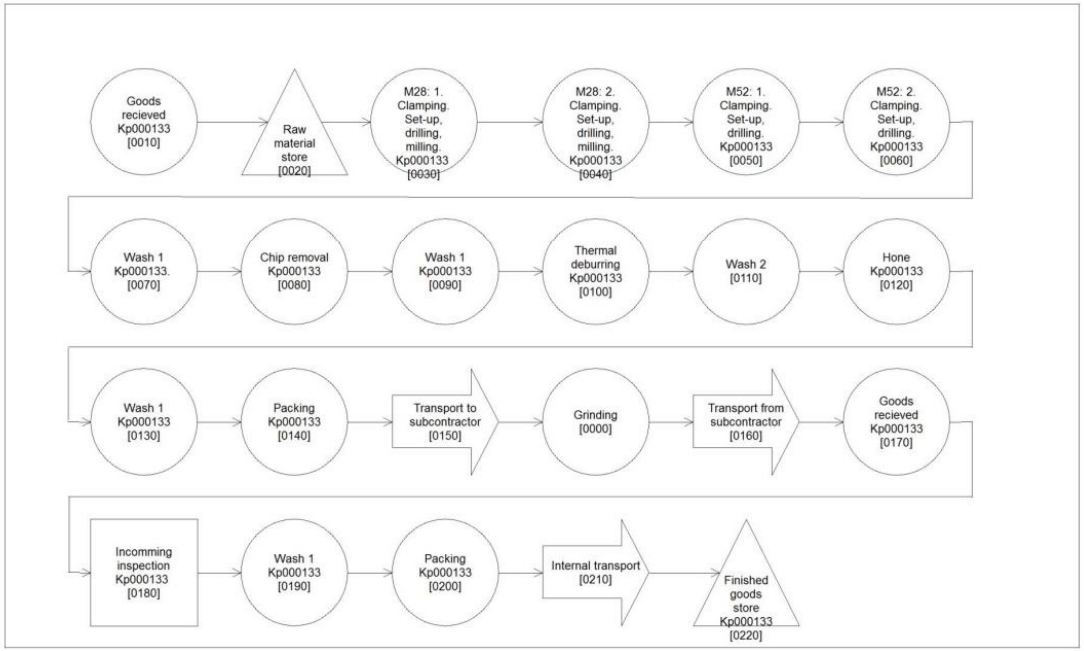
It is evident that the process is ongoing and is produced with a Cpk on the positive side of 1.33, which is the minimum requirement (=/> 1,33).

The system is online and follows the processes 24/7.

Flow chart

KP KOMPONENTER

Created by: Poul Erik Kamstrup Creation date: 26-08-2013 11:10:16 Part: DN11137827	**Proces Flow Diagram** **- 11137827 OSPE-**	Page 1 Print date.09-09-2013



The above flow chart shows the individual process steps, which function the steps have and on which there are tests, checks and inspections.

Control chart

[ ] Prototype [ ] Pre-Launch [X] Production

Control Plan Number	Key Contact/Phone	Date (Orig.)	Date (Rev.)
155L6620		02-10-2008	21-08-2013
Part Number/Latest Change Level	**Draw up by**	**Customer Engineering Approval/Date (If Req'd.)**	
DN11103457 3 vom 21-08-2013	Kaj		
Part Name/Description	**Supplier/Plant Approval/Date**	**Customer Quality Approval/Date (If Req'd.)**	
PVB 32			
Supplier/Plant	**Supplier Code**	**Approved by**	**Approval Date**	**Other Approval/Date (If Req'd.)**
dania		Henning Christiansen	02-10-2008	

PART/ PROCESS NUMBER	PROCESS NAME/ OPERATION DESCRIPTION	MACHINE, DEVICE, JIG,TOOLS, FOR MFG.	CHARACTERISTICS			SPECIAL CHAR. CLASS	METHODS				CONTROL METHOD
			NO.	PRODUCT	Description		PRODUCT/PROCESS SPECIFICATION/ TOLERANCE	EVALUATIONTECHNIQUE/ MEASUREMENT	SAMPLE SIZE	SAMPLE FREQ	
0030	155L6543_Flade 100,200,300 & 400		4	Flade 400 Ruhed 1	Ra 3,2		ok/ikke ok	Ruhedsmåler	2	Skift	
0040	155L6543_Flade 200		1	Frispor Dybde	0,025 ± 0,015		ok/ikke ok	Ur med bro	2	Skift	
0040	155L6543_Flade 200		2	Frispor Bredde	50 ± 1		ok/ikke ok	Skydelære	2	Skift	
0040	155L6543_Flade 200		29	Kantnorm	- 0,3		ok/ikke ok	Visuel	2	Skift	
0040	155L6543_Flade 200		3	Hul 4 Dybde	4 ± 0,5		ok/ikke ok	Skydelære	2	Skift	
0040	155L6543_Flade 200		4	Hul 4 Diameter 1	Ø10,4 ± 0,2		ok/ikke ok	Glat dorn	2	Skift	
0040	155L6543_Flade 200		17	Hul 5 Dybde 1	15,5 max		ok/ikke ok	Glat dorn	2	Skift	
0040	155L6543_Flade 200		28	Hul 6 Diameter 1	Ø8,5 ± 0,1		ok/ikke ok	Glat dorn	2	Skift	
0040	155L6543_Flade 200		20	Hul 25,26 Diameter 2	Ø4 ± 0,1		ok/ikke ok	Glat dorn	2	Skift	
0040	155L6543_Flade 200		30	Hul 7 Diameter 1	Ø10,4 ± 0,1		ok/ikke ok	Glat dorn	2	Skift	
0040	155L6543_Flade 200		22	Hul 7 Dybde	15,5 max.		ok/ikke ok	Skydelære	2	Skift	
0040	155L6543_Flade 200		27	Hul 1 Diameter 1	13 ± 0,1		ok/ikke ok	Glat dorn	2	Skift	
0040	155L6543_Flade 200		24	Hul 1	Måles efter standard		ok/ikke ok		2	Skift	
0040	155L6543_Flade 200		25	Hul 43	Måles efter standard		ok/ikke ok		2	Skift	
0040	155L6543_Flade 200		26	Hul 26	Måles efter standard		ok/ikke ok		2	Skift	
0041	11064852		1	Diameter 1	Ø20,6 ±0,15		ok/ikke ok	Glat dorn	2	Skift	
0041	11064852		2	Dybde 1	2,125 ±0,055	Key	ok/ikke ok	Ur med bro	2	Skift	
0041	11064852		3	Ruhed 1	Ra3,2 Rz16 (Ingen ridser/vibrationer)		ok/ikke ok	Visuel	2	Skift	
0042	11067595		2	Ruhed 1	Ra3,2 (Fri for rivninger og vibrationer)		ok/ikke ok	Visuel	2	Skift	
0042	11067595		1	Diameter 1	Ø14,8 ±0,1		ok/ikke ok	Glat dorn	2	Skift	
0042	11067595		3	Dybde 1	2,125 ±0,055		ok/ikke ok	Ur med bro	2	Skift	

This is an example of a control chart which shows

- which part of the work piece to be inspected
- what to be checked
- where there are critical measurements
- which measuring tool to be used
- the number of measurements
- how often.