

Definition of yarn faults

The object of the spinning process is to produce thread shaped structure with constant number of fibers in its cross section over the entire length.

The conditions of Spinning process and the variation associated with the raw materials there will be a random variation the yarn mass. The variation is the mass classified in to frequently-occurring and seldom-occurring faults.

Frequently-occurring yarn faults are thin places, thick places and Neps which are detected as imperfections with evenness testing equipment for 1KM (1000Mtrs).

Seldom-occurring yarn faults are thin- and thick places which occur so rarely that at least 100 km of yarn must be tested in order to detect them reliably.

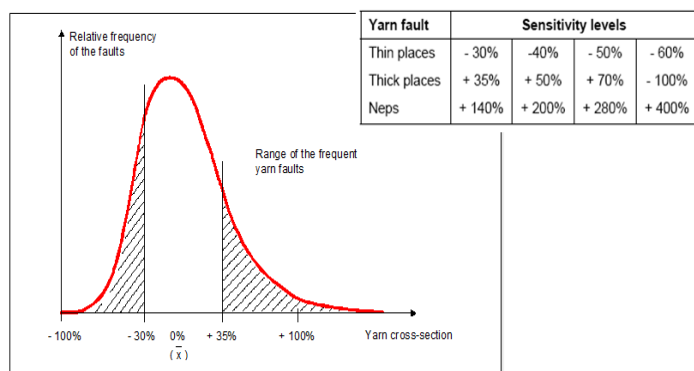


Figure 1

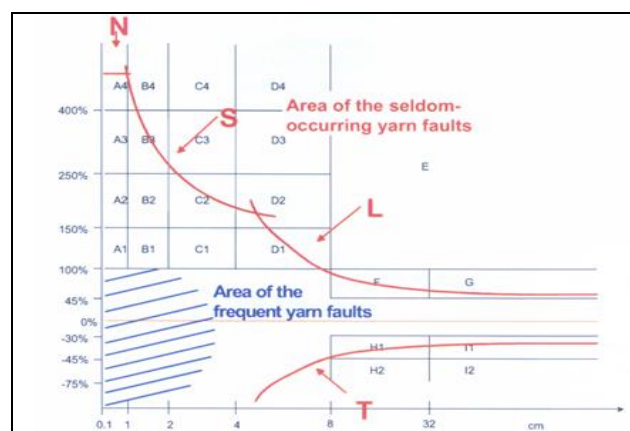


Figure 2

Frequent yarn faults (Imperfection – Figure 1) and seldom Yarn faults (Classimat – Figure 2) cannot be compared as these two types of faults differ in size.

The causes for seldom faults (Classimat) can be divided in to four groups according to their origin.

1. Raw materials and Carding
2. Spinning Process
3. Spinning
4. Improper Clearer setting in winding

1. Yarn faults associated with raw materials and carding:

These faults depend on raw materials largely determined by physical characteristics such as the count, Fiber length and short fiber content.

2. Yarn faults associated with spinning process:

The main characteristic of these faults is due to variation of cross section or poor adhesion of the fibers. In many cases, this involves fibers that were not taken in and drafted by the draw frames / Combers preparation process and therefore result in a large increase in the mass or cross section of the yarn.

3. Yarn faults associated with Spinning:

Majorly the yarn faults are caused by spun-in fiber fly from around the spinning machine and by fiber residue sticks to the drawframe or parts of spinning machine and is carried off and spun into the yarn.

Yarn faults may also influenced by the various possible settings of the spinning machine, such as draft or mouth width setting.

4. Yarn faults associated with improper clearer setting:

Clearer settings in the winding are to be set correctly according to the end quality requirements. The remaining yarn faults after the set clearing limit of the yarn clearer may affect the end product due to improper settings.

Seldom faults are classified by the different model/make of CLSSIMAT instrument gives different class values that due to differences in the algorithms.

The ONLINE Yarn clearer and OFFLINE CLSSIMAT values will be comparable only with same type of clearers used in both models.

The OFFLINE CLASSIMAT 3 instrument values are widely used by the world wide yarn buyers to evaluate the buying yarn quality.

Here with given below the possible reasons for classimat faults in each classes (Figure 3) and types of faults generated from ring machines (Figure 4) for your references,

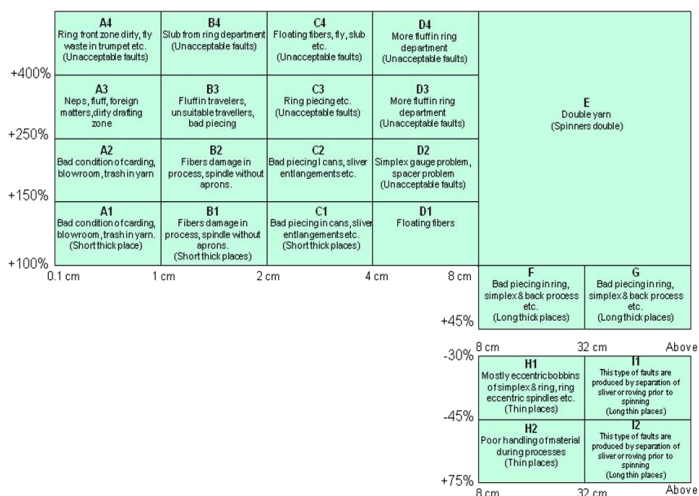


Figure 3a

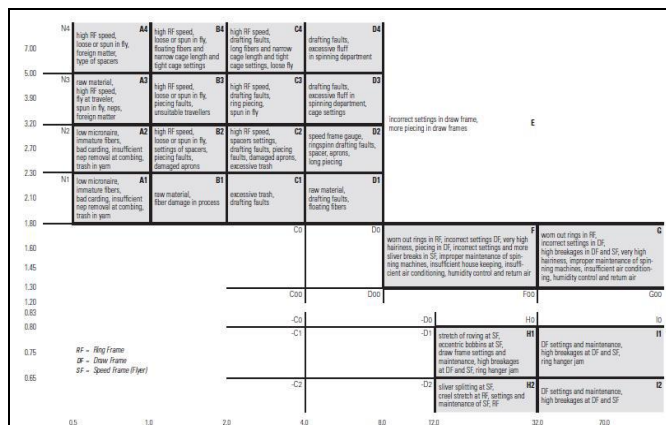


Figure 4b

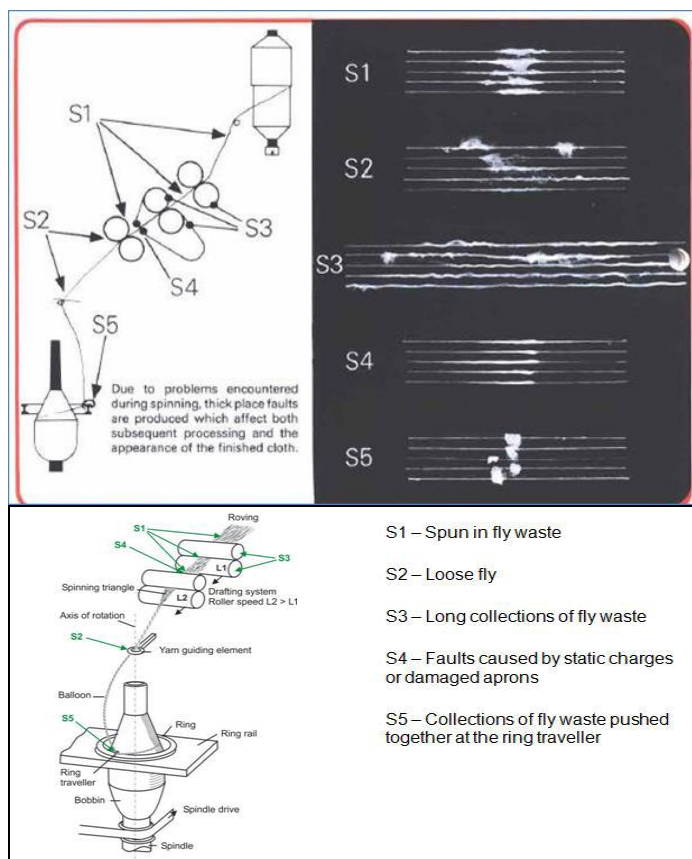


Figure 5

CLASSIMAT 3 faults Analysis and the Quality Trend

The objective for the analysis of quality trend of CLASSIMAT 3 faults is to understand the level of quality of your yarn and to predict achievable quality for each Count.

From our last 5 years test results data's we have analyzed according to below five categories with quality range,

(i) Total Faults:

$$A1+A2+A3+A4+B1+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G+H1+I1+H2+I2$$

(ii) Top 9 Class Faults

$$A4+B3+B4+C3+C4+D2+D3+D4+E$$

(iii) Top 12 Class Faults

$$A3+A4+B3+B4+C3+C4+D2+D3+D4+E+F+G$$

(iv) Top 16 Class Faults

$$A3+A4+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G$$

(v) Total Thin Faults

$$H1+I1+H2+I2$$

Quality Range – Total Faults

Up To 10	Faults between 0 to 10
11 To 30	Faults between 11 to 30
31 To 50	Faults between 31 to 50
51 To 70	Faults between 51 to 70
71 To 90	Faults between 71 to 90
91 To 110	Faults between 91 to 110
111 To 150	Faults between 111 to 150
151 To 200	Faults between 151 to 200
201 To 250	Faults between 201 to 250
251 To 300	Faults between 251 to 300
301 To 400	Faults between 301 to 400
401 To 500	Faults between 401 to 500

Figure 6

According to the above table (Figure 5) the test results of – **Total Faults** are analyzed and given in % of tests according to the fault levels.





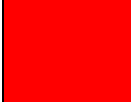
Quality Range - Top 9, Top 12, Top 16 and Total Thin Faults

0.0	Faults by 0
1.0	Faults by 1
2.0	Faults by 2
3.0	Faults by 3
4.0	Faults by 4
5.0	Faults by 5
8.0	Faults between 6 to 8
10.0	Faults between 9 to 10
15.0	Faults between 11 to 15
20.0	Faults between 16 to 20
25.0	Faults between 21 to 25
50.0	Faults between 26 to 50

Figure 7

According to the above table (Figure 6) the test results of - **Top 9, Top 12, Top 16 and Total Thin Faults** are analyzed and given in % of tests according to the fault levels.

In the each category has been marked with color code for easy references according to the grading as per our experience.

	Test results in this color code has VERY GOOD in Quality
	Test results in this color code has GOOD in Quality
	Test results in this color code has AVERAGE in Quality and need attention in the winding clearer settings
	Test results in this color code has BAD in Quality and needs to improve the Process Control
	Test results in this color code has VERY BAD in Quality and not acceptable

(i) **CLASSIMAT 3 – Total Faults QUALITY TREND**

(A1+A2+A3+A4+B1+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G+H1+I1+H2+I2)

	20 CCH	24 CCH	26 CCH	28 CCH	30 CCH	32 CCH	34 CCH	36 CCH	40 CCH
Up To 10	2.11%	1.19%	0.00%	0.00%	0.29%	0.68%	0.00%	0.00%	0.31%
11 To 30	12.63%	31.23%	20.72%	16.95%	12.31%	5.82%	13.54%	6.83%	2.19%
31 To 50	30.53%	29.64%	33.03%	20.34%	27.48%	16.10%	30.73%	25.47%	18.75%
51 To 70	29.47%	15.02%	23.72%	25.42%	25.48%	32.19%	28.13%	28.57%	23.13%
71 To 90	12.63%	7.11%	12.31%	13.56%	17.08%	23.63%	16.15%	21.12%	16.56%
91 To 110	8.42%	8.70%	7.21%	10.17%	8.02%	12.67%	6.77%	8.07%	14.69%
111 To 150	1.05%	3.95%	2.70%	11.86%	5.63%	6.85%	3.13%	7.45%	18.44%
151 To 200	1.05%	2.77%	0.00%	1.69%	2.39%	1.37%	0.52%	0.62%	3.75%
201 To 250	1.05%	0.40%	0.30%	0.00%	0.86%	0.68%	0.00%	1.86%	1.25%
251 To 300	1.05%	0.00%	0.00%	0.00%	0.29%	0.00%	1.04%	0.00%	0.94%
301 To 400	0.00%	0.00%	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%
401 To 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 8 – Total Faults (A1+A2+A3+A4+B1+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G+H1+I1+H2+I2)
(% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	20 CH	21 CH	24 CH	26 CH	28 CH	30 CH	32 CH	34 CH	36 CH	40 CH
Up To 10	1.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
11 To 30	27.91%	30.23%	6.38%	10.29%	4.17%	5.55%	3.36%	2.27%	0.88%	2.99%
31 To 50	27.91%	30.23%	24.82%	30.88%	35.42%	22.72%	19.40%	10.61%	9.73%	10.95%
51 To 70	15.70%	16.28%	20.57%	24.02%	25.00%	20.61%	29.48%	38.64%	16.81%	15.42%
71 To 90	8.72%	2.33%	21.99%	16.18%	16.67%	16.38%	22.95%	23.48%	35.40%	14.93%
91 To 110	7.56%	9.30%	9.22%	10.29%	10.42%	14.00%	11.94%	12.12%	15.04%	14.93%
111 To 150	5.23%	2.33%	9.22%	6.86%	4.17%	13.74%	8.58%	11.36%	15.04%	22.89%
151 To 200	5.81%	2.33%	5.67%	1.47%	4.17%	4.49%	2.43%	1.52%	3.54%	13.43%
201 To 250	0.00%	4.65%	1.42%	0.00%	0.00%	1.72%	1.31%	0.00%	2.65%	3.98%
251 To 300	0.00%	2.33%	0.71%	0.00%	0.00%	0.40%	0.37%	0.00%	0.00%	0.00%
301 To 400	0.00%	0.00%	0.00%	0.00%	0.00%	0.13%	0.19%	0.00%	0.88%	0.50%
401 To 500	0.00%	0.00%	0.00%	0.00%	0.00%	0.26%	0.00%	0.00%	0.00%	0.00%

Figure 9 - Total Faults (A1+A2+A3+A4+B1+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G+H1+I1+H2+I2)
(% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	2/40 ELITWIST	30 CCW & 30 CW	40 CCW	40 CW
Up To 10	0.00%	0.60%	0.00%	0.00%
11 To 30	69.84%	15.66%	1.28%	0.00%
31 To 50	20.63%	22.29%	12.39%	3.23%
51 To 70	7.94%	25.90%	21.37%	25.81%
71 To 90	1.59%	20.48%	18.38%	9.68%
91 To 110	0.00%	6.02%	18.80%	22.58%
111 To 150	0.00%	4.82%	19.66%	38.71%
151 To 200	0.00%	1.81%	5.13%	0.00%
201 To 250	0.00%	1.20%	2.14%	0.00%
251 To 300	0.00%	1.20%	0.85%	0.00%
301 To 400	0.00%	0.00%	0.00%	0.00%
401 To 500	0.00%	0.00%	0.00%	0.00%

Figure 10 - Total Faults (A1+A2+A3+A4+B1+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G+H1+I1+H2+I2)
(% of tests in the quality range with color code)

	VERY GOOD		GOOD		AVG		BAD		VERY BAD
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	30 KCW	30 KW	20 KH	21 KH	30 KH	32 KH	16 OE
Up To 10	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.67%
11 To 30	0.00%	0.00%	2.63%	0.00%	0.00%	0.00%	33.33%
31 To 50	0.00%	0.00%	2.63%	2.27%	0.00%	0.00%	33.33%
51 To 70	3.13%	0.00%	0.00%	4.55%	1.25%	0.85%	13.33%
71 To 90	15.63%	13.11%	10.53%	11.36%	1.88%	4.24%	3.33%
91 To 110	25.00%	9.84%	7.89%	4.55%	3.75%	3.39%	10.00%
111 To 150	34.38%	24.59%	26.32%	31.82%	22.50%	20.34%	0.00%
151 To 200	3.13%	21.31%	31.58%	29.55%	30.00%	29.66%	0.00%
201 To 250	12.50%	8.20%	10.53%	13.64%	18.13%	20.34%	0.00%
251 To 300	3.13%	13.11%	7.89%	0.00%	12.50%	10.17%	0.00%
301 To 400	3.13%	6.56%	0.00%	2.27%	6.25%	10.17%	0.00%
401 To 500	0.00%	3.28%	0.00%	0.00%	3.75%	0.85%	0.00%

Figure 11 - Total Faults (A1+A2+A3+A4+B1+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G+H1+I1+H2+I2)
(% of tests in the quality range with color code)

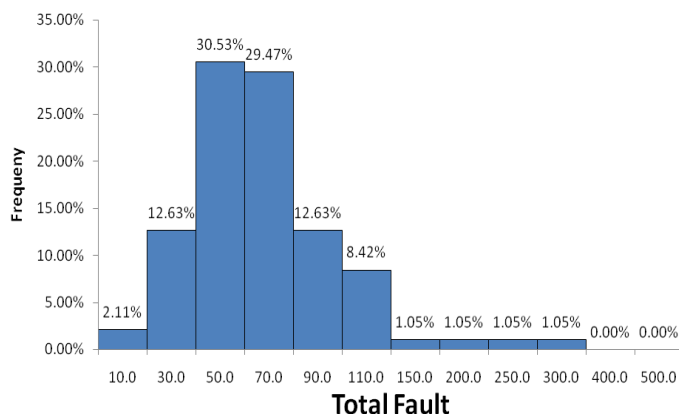
	VERY GOOD		GOOD		AVG		BAD		VERY BAD
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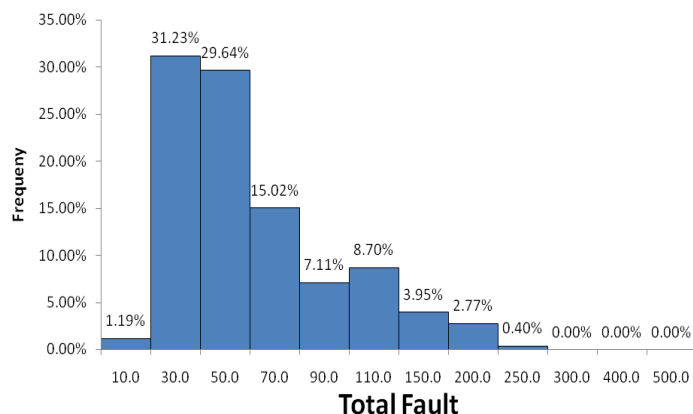
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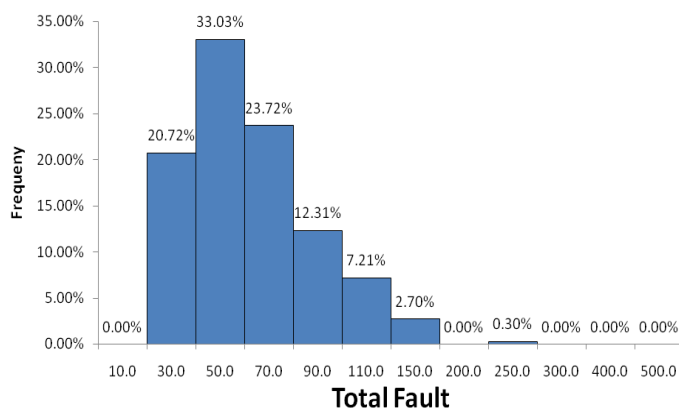
20 CCH



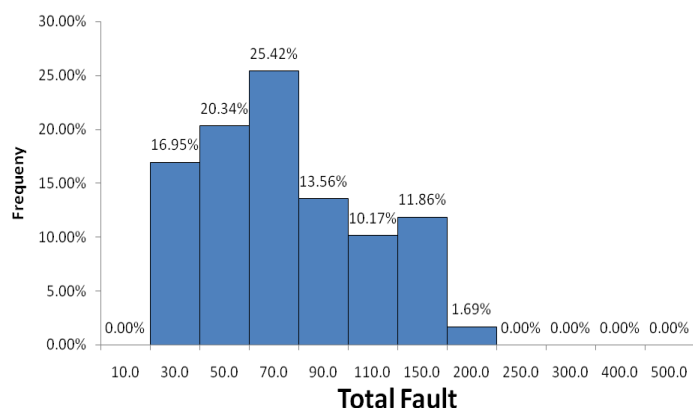
24 CCH



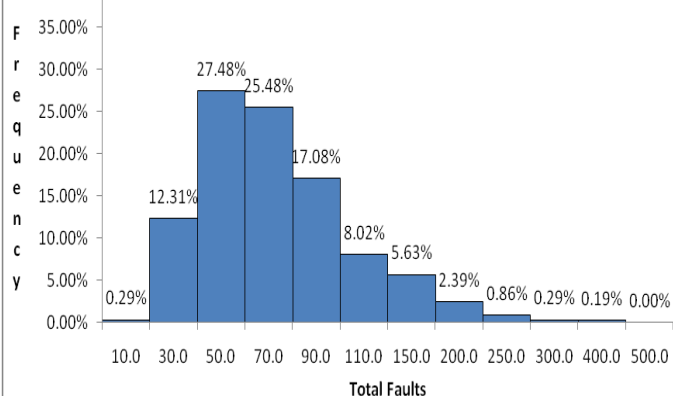
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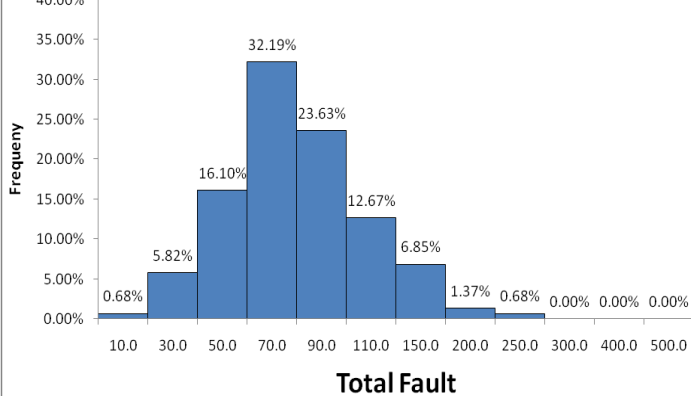
28 CCH



30 CCH



32 CCH

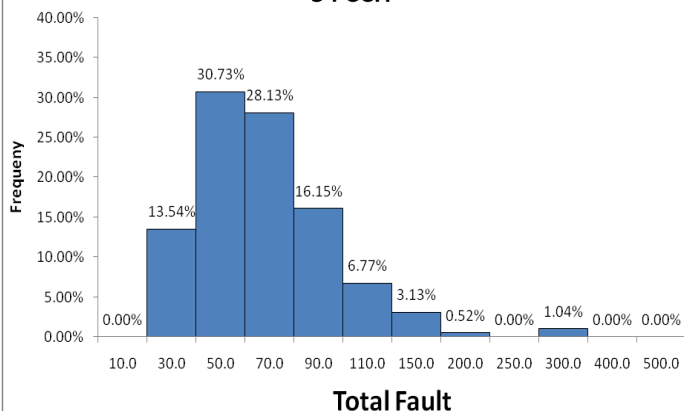




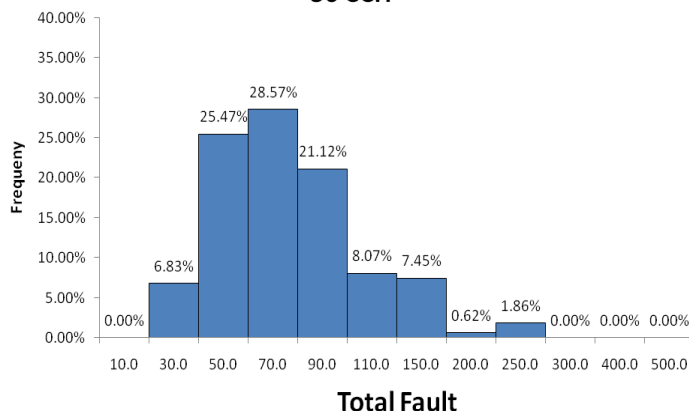
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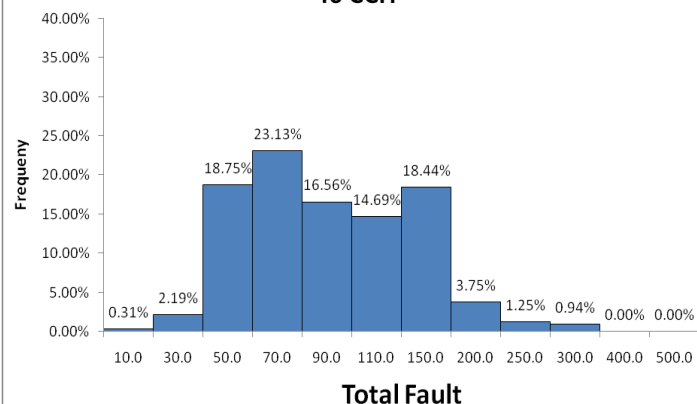
34 CCH



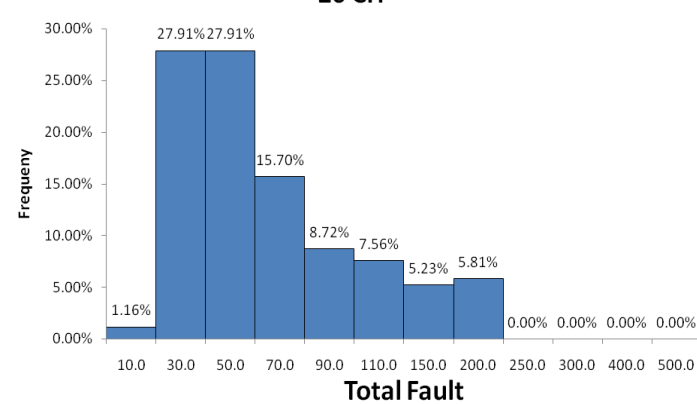
36 CCH



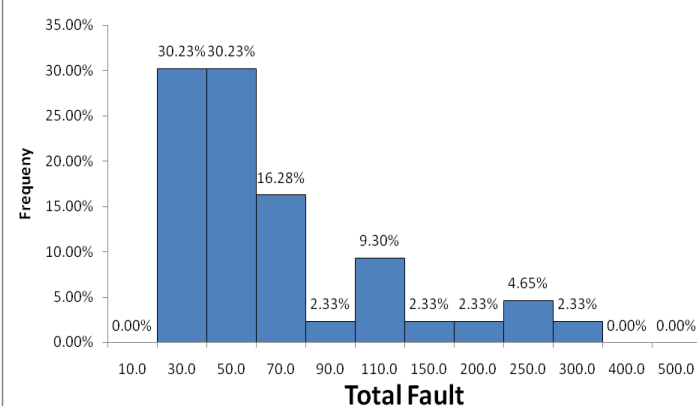
40 CCH



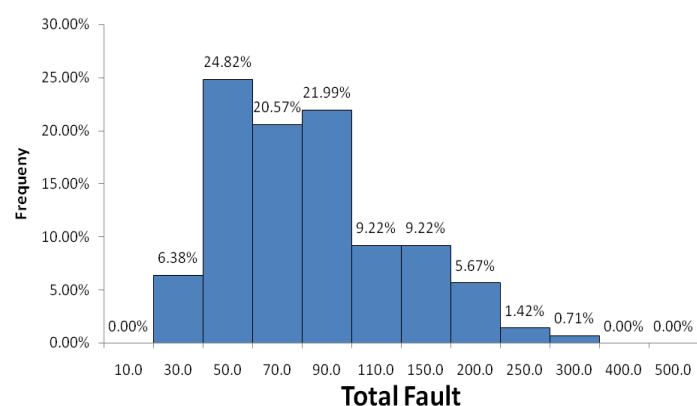
20 CH



21 CH



24 CH

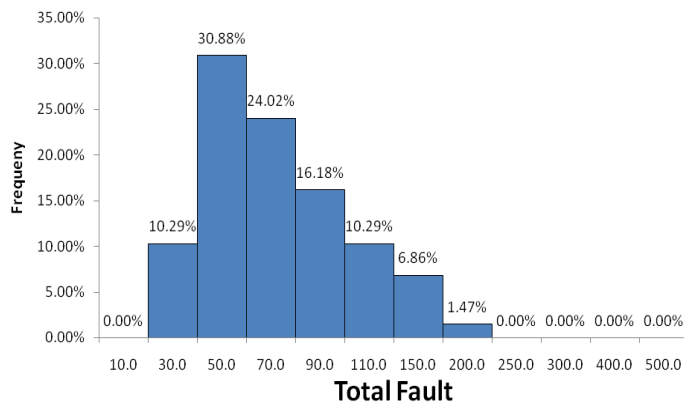




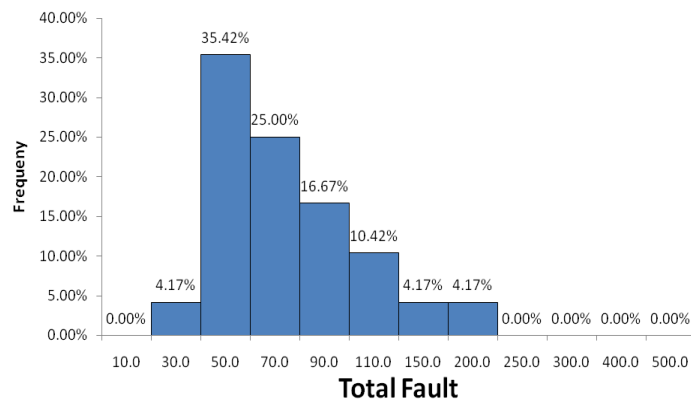
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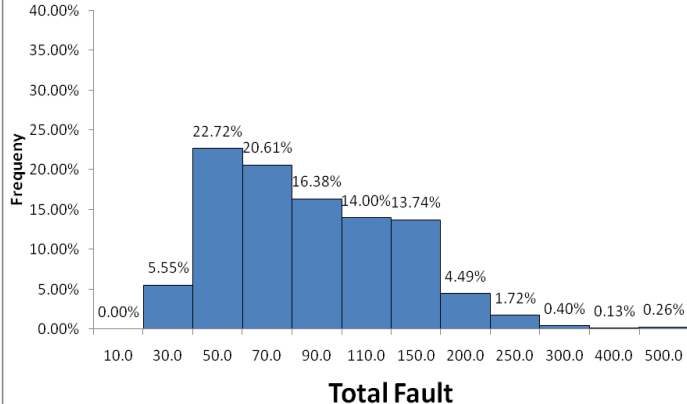
26 CH



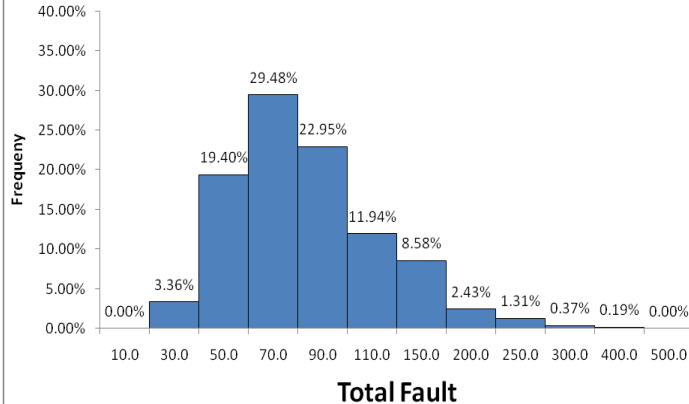
28 CH



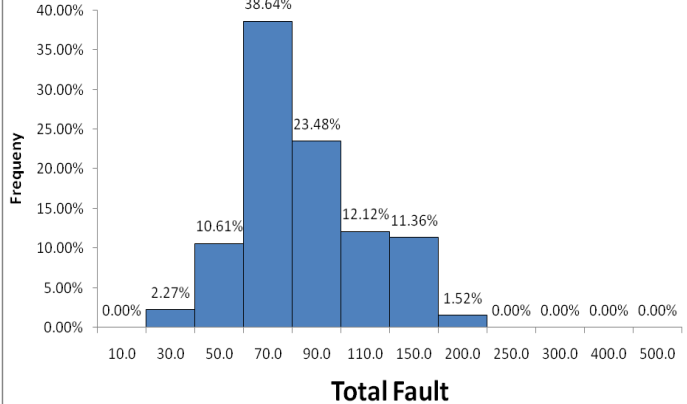
30 CH



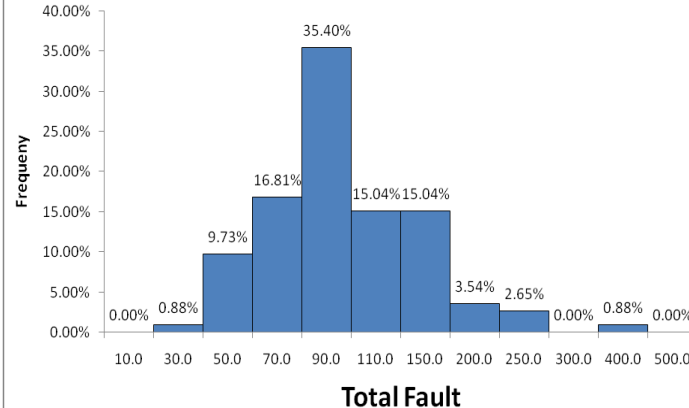
32 CH



34 CH



36 CH

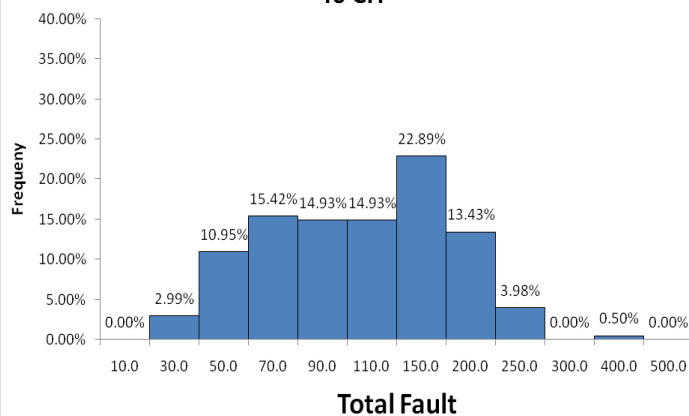




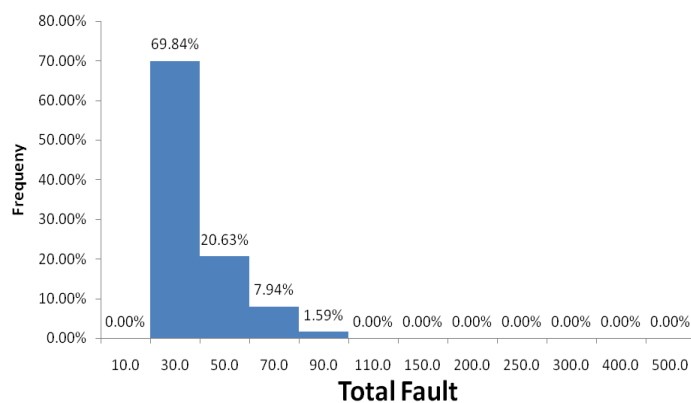
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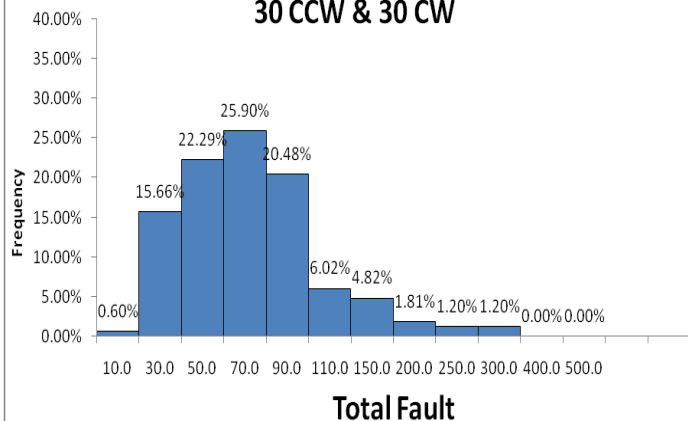
40 CH



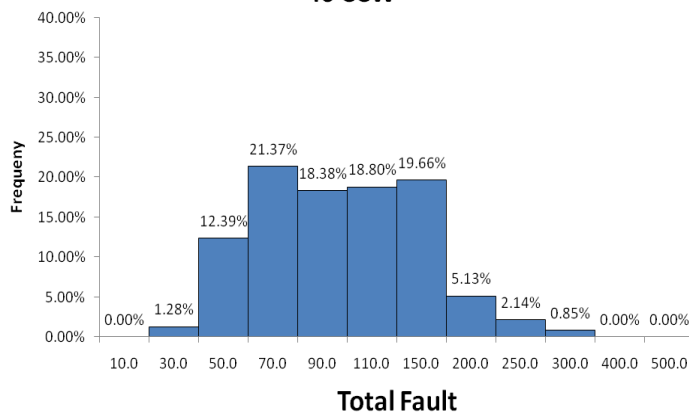
2/40 ELITWIST



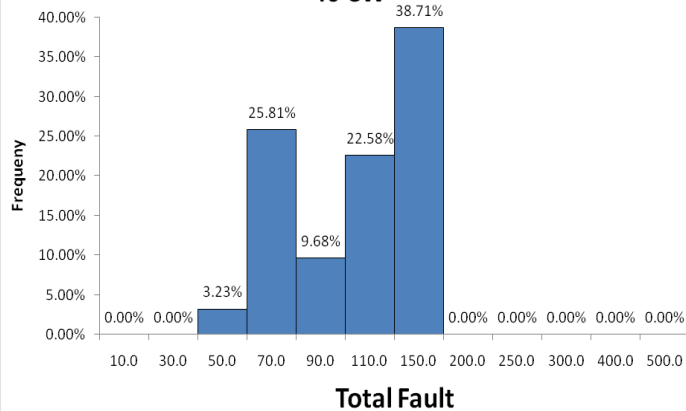
30 CCW & 30 CW



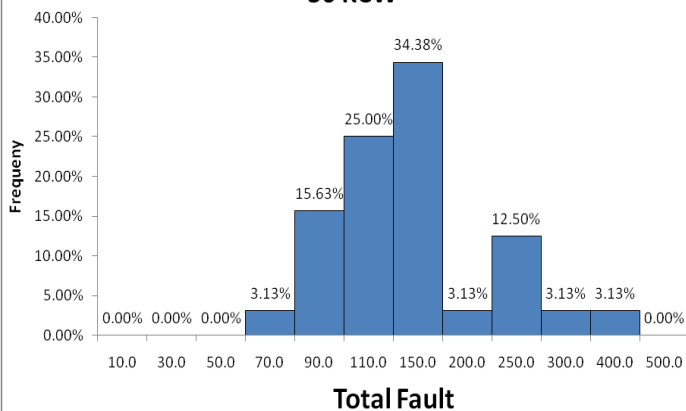
40 CCW



40 CW



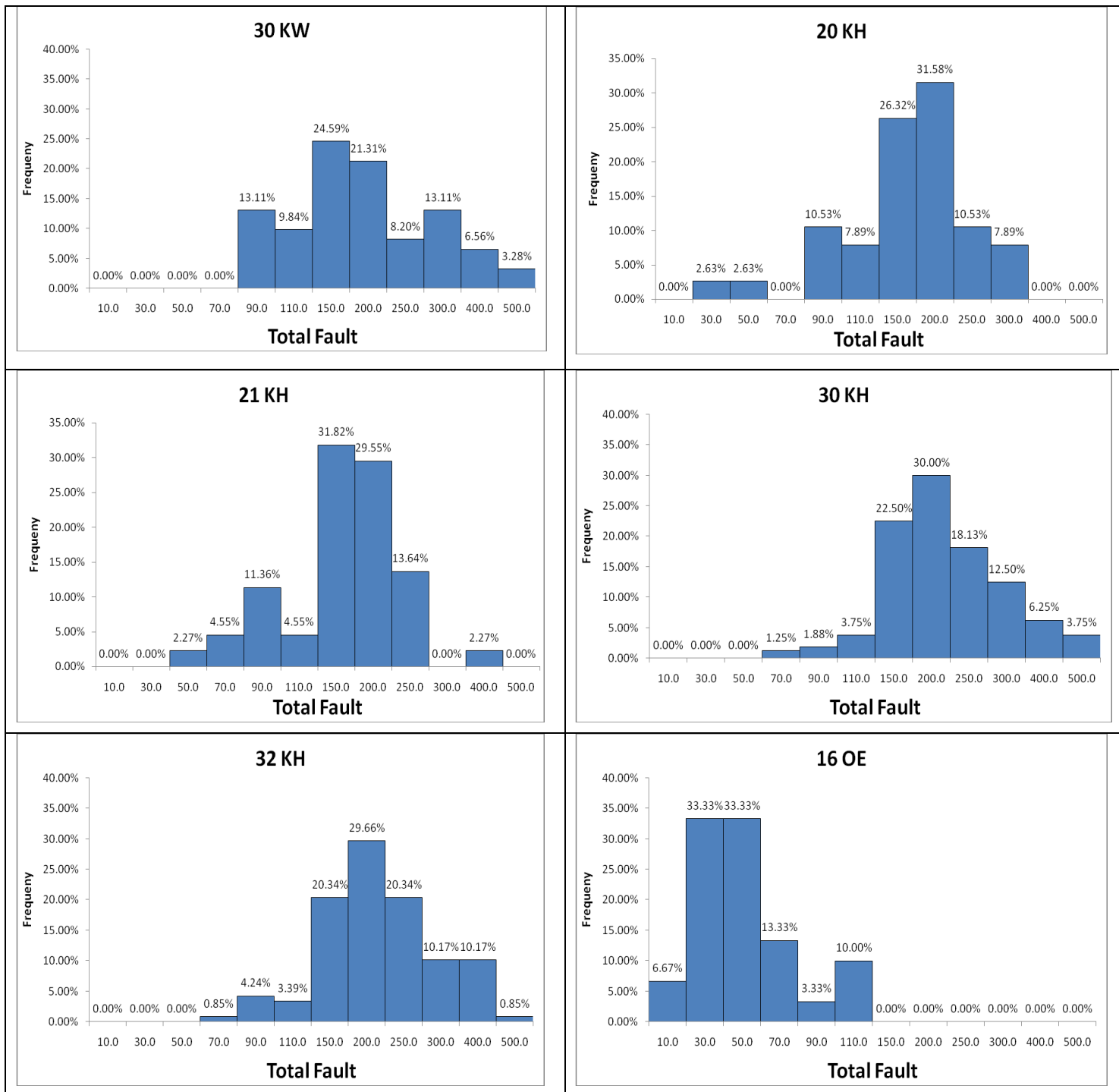
30 KCW





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(ii) CLASSIMAT 3 – Top 9 Faults QUALITY TREND

A4+B3+B4+C3+C4+D2+D3+D4+E

	20 CCH	24 CCH	26 CCH	28 CCH	30 CCH	32 CCH	34 CCH	36 CCH	40 CCH
0.0	95.79%	97.63%	98.50%	94.92%	97.61%	99.32%	97.40%	100.00%	96.56%
1.0	2.11%	0.79%	0.60%	3.39%	1.24%	0.34%	1.56%	0.00%	3.13%
2.0	1.05%	1.19%	0.90%	0.00%	0.76%	0.34%	0.52%	0.00%	0.31%
3.0	1.05%	0.40%	0.00%	1.69%	0.00%	0.00%	0.00%	0.00%	0.00%
4.0	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%
5.0	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%
8.0	0.00%	0.00%	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%
10.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.52%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 11 – Top 9 Faults A4+B3+B4+C3+C4+D2+D3+D4+E (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	20 CH	21 CH	24 CH	26 CH	28 CH	30 CH	32 CH	34 CH	36 CH	40 CH
0.0	97.09%	86.05%	92.91%	95.59%	95.83%	93.56%	95.71%	93.18%	93.81%	93.53%
1.0	0.58%	2.33%	4.96%	3.92%	4.17%	5.52%	3.17%	5.30%	3.54%	5.47%
2.0	0.00%	6.98%	0.71%	0.00%	0.00%	0.53%	0.37%	1.52%	0.00%	0.50%
3.0	1.16%	2.33%	1.42%	0.49%	0.00%	0.13%	0.56%	0.00%	1.77%	0.50%
4.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%
5.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.88%	0.00%
8.0	0.58%	0.00%	0.00%	0.00%	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%
10.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15.0	0.58%	2.33%	0.00%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 12 - Top 9 Faults A4+B3+B4+C3+C4+D2+D3+D4+E (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	2/40 ELITWIST	30 CCW & 30 CW	40 CCW	40 CW
0.0	100.00%	94.58%	93.16%	100.00%
1.0	0.00%	3.61%	5.56%	0.00%
2.0	0.00%	1.20%	1.28%	0.00%
3.0	0.00%	0.60%	0.00%	0.00%
4.0	0.00%	0.00%	0.00%	0.00%
5.0	0.00%	0.00%	0.00%	0.00%
8.0	0.00%	0.00%	0.00%	0.00%
10.0	0.00%	0.00%	0.00%	0.00%
15.0	0.00%	0.00%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%

Figure 13 - Top 9 Faults A4+B3+B4+C3+C4+D2+D3+D4+E (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	30 KCW	30 KW	20 KH	21 KH	30 KH	32 KH	16 OE
0.0	100.00%	93.75%	100.00%	100.00%	89.38%	91.74%	100.00%
1.0	0.00%	3.13%	0.00%	0.00%	5.00%	5.79%	0.00%
2.0	0.00%	0.00%	0.00%	0.00%	5.00%	1.65%	0.00%
3.0	0.00%	1.56%	0.00%	0.00%	0.63%	0.83%	0.00%
4.0	0.00%	1.56%	0.00%	0.00%	0.00%	0.00%	0.00%
5.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 124 - Top 9 Faults A4+B3+B4+C3+C4+D2+D3+D4+E (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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(iii) CLASSIMAT 3 – Top 12 Faults QUALITY TREND

A3+A4+B3+B4+C3+C4+D2+D3+D4+E+F+G

	20 CCH	24 CCH	26 CCH	28 CCH	30 CCH	32 CCH	34 CCH	36 CCH	40 CCH
0.0	88.42%	92.49%	97.30%	93.22%	89.03%	92.81%	93.75%	88.82%	85.31%
1.0	7.37%	4.74%	1.20%	3.39%	7.35%	5.82%	4.17%	8.07%	9.69%
2.0	1.05%	1.98%	0.30%	1.69%	1.53%	0.68%	1.04%	2.48%	3.44%
3.0	1.05%	0.40%	0.90%	0.00%	0.86%	0.34%	0.00%	0.62%	0.94%
4.0	1.05%	0.00%	0.00%	1.69%	0.38%	0.00%	0.52%	0.00%	0.31%
5.0	1.05%	0.00%	0.30%	0.00%	0.10%	0.34%	0.00%	0.00%	0.31%
8.0	0.00%	0.40%	0.00%	0.00%	0.48%	0.00%	0.00%	0.00%	0.00%
10.0	0.00%	0.00%	0.00%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%
15.0	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.52%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 15 – Top 12 Faults A3+A4+B3+B4+C3+C4+D2+D3+D4+E+F+G (% of tests in the quality range with color code)

	VERY GOOD		GOOD		AVG		BAD		VERY BAD
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	20 CH	21 CH	24 CH	26 CH	28 CH	30 CH	32 CH	34 CH	36 CH	40 CH
0.0	89.53%	81.40%	78.72%	84.31%	77.08%	78.19%	81.72%	83.33%	78.76%	75.12%
1.0	5.81%	4.65%	10.64%	11.76%	16.67%	14.06%	12.50%	12.12%	12.39%	14.43%
2.0	1.74%	4.65%	6.38%	1.96%	4.17%	3.94%	2.99%	3.79%	3.54%	7.46%
3.0	0.58%	2.33%	1.42%	1.47%	0.00%	2.37%	1.49%	0.00%	3.54%	1.99%
4.0	0.00%	0.00%	2.13%	0.00%	2.08%	0.53%	0.93%	0.00%	0.88%	1.00%
5.0	0.00%	2.33%	0.00%	0.00%	0.00%	0.39%	0.00%	0.76%	0.00%	0.00%
8.0	1.16%	2.33%	0.71%	0.49%	0.00%	0.39%	0.37%	0.00%	0.00%	0.00%
10.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15.0	0.58%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.88%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	2.33%	0.00%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%
50.0	0.58%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 16 - Top 12 Faults A3+A4+B3+B4+C3+C4+D2+D3+D4+E+F+G (% of tests in the quality range with color code)

	VERY GOOD		GOOD		AVG		BAD		VERY BAD
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	2/40 ELITWIST	30 CCW & 30 CW	40 CCW	40 CW
0.0	100.00%	88.55%	82.91%	80.65%
1.0	0.00%	6.02%	10.26%	19.35%
2.0	0.00%	2.41%	5.56%	0.00%
3.0	0.00%	1.20%	0.85%	0.00%
4.0	0.00%	0.00%	0.43%	0.00%
5.0	0.00%	0.60%	0.00%	0.00%
8.0	0.00%	1.20%	0.00%	0.00%
10.0	0.00%	0.00%	0.00%	0.00%
15.0	0.00%	0.00%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%

Figure 17 - Top 12 Faults A3+A4+B3+B4+C3+C4+D2+D3+D4+E+F+G (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	30 KCW	30 KW	20 KH	21 KH	30 KH	32 KH	16 OE
0.0	94.12%	84.38%	81.58%	90.91%	70.63%	72.73%	96.67%
1.0	2.94%	9.38%	10.53%	9.09%	15.63%	13.22%	3.33%
2.0	2.94%	1.56%	2.63%	0.00%	6.88%	6.61%	0.00%
3.0	0.00%	1.56%	2.63%	0.00%	2.50%	3.31%	0.00%
4.0	0.00%	0.00%	0.00%	0.00%	0.63%	2.48%	0.00%
5.0	0.00%	0.00%	2.63%	0.00%	0.63%	0.83%	0.00%
8.0	0.00%	0.00%	0.00%	0.00%	3.13%	0.83%	0.00%
10.0	0.00%	1.56%	0.00%	0.00%	0.00%	0.00%	0.00%
15.0	0.00%	1.56%	0.00%	0.00%	0.00%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 17 - Top 12 Faults A3+A4+B3+B4+C3+C4+D2+D3+D4+E+F+G (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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(iv) CLASSIMAT 3 – Top 16 Faults QUALITY TREND

A3+A4+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G

	20 CCH	24 CCH	26 CCH	28 CCH	30 CCH	32 CCH	34 CCH	36 CCH	40 CCH
0.0	25.26%	43.08%	35.74%	35.59%	33.78%	36.64%	45.31%	28.57%	27.19%
1.0	21.05%	14.62%	21.62%	22.03%	20.13%	23.97%	19.27%	22.36%	16.25%
2.0	10.53%	11.46%	7.21%	10.17%	9.83%	10.27%	13.54%	9.32%	13.13%
3.0	12.63%	7.51%	7.81%	10.17%	9.83%	10.62%	8.33%	11.80%	7.50%
4.0	6.32%	6.32%	10.51%	8.47%	6.97%	6.85%	2.60%	9.94%	11.56%
5.0	3.16%	2.37%	6.31%	3.39%	4.58%	2.40%	1.56%	5.59%	5.63%
8.0	8.42%	7.51%	7.81%	3.39%	7.73%	5.82%	5.21%	8.70%	8.75%
10.0	2.11%	3.95%	0.90%	0.00%	2.96%	1.37%	1.04%	1.86%	4.06%
15.0	5.26%	1.98%	1.20%	6.78%	2.58%	1.71%	1.56%	0.00%	4.06%
20.0	2.11%	0.40%	0.30%	0.00%	0.67%	0.00%	0.00%	0.00%	1.88%
25.0	2.11%	0.40%	0.30%	0.00%	0.29%	0.34%	1.04%	1.86%	0.00%
50.0	1.05%	0.40%	0.30%	0.00%	0.67%	0.00%	0.52%	0.00%	0.00%

Figure 18 – Top 16 Faults A3+A4+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G
(% of tests in the quality range with color code)

	VERY GOOD		GOOD		AVG		BAD		VERY BAD
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	20 CH	21 CH	24 CH	26 CH	28 CH	30 CH	32 CH	34 CH	36 CH	40 CH
0.0	34.88%	38.10%	19.86%	26.96%	29.17%	20.66%	19.78%	18.32%	14.29%	15.42%
1.0	9.88%	11.90%	14.18%	18.14%	22.92%	15.66%	20.90%	25.95%	21.43%	10.95%
2.0	9.88%	9.52%	13.48%	10.78%	12.50%	14.87%	14.55%	18.32%	12.50%	14.43%
3.0	10.47%	7.14%	17.02%	11.27%	10.42%	12.37%	15.11%	13.74%	12.50%	8.96%
4.0	8.14%	9.52%	8.51%	8.33%	6.25%	8.03%	10.82%	6.87%	11.61%	13.93%
5.0	6.98%	2.38%	3.55%	6.86%	4.17%	6.71%	5.41%	1.53%	5.36%	8.46%
8.0	6.40%	9.52%	10.64%	12.75%	6.25%	10.53%	8.21%	7.63%	9.82%	13.93%
10.0	3.49%	0.00%	6.38%	2.45%	0.00%	4.08%	1.68%	3.82%	8.04%	4.98%
15.0	6.98%	4.76%	4.26%	1.47%	4.17%	4.74%	2.05%	3.05%	3.57%	7.96%
20.0	1.16%	0.00%	1.42%	0.98%	2.08%	0.92%	0.56%	0.76%	0.00%	0.50%
25.0	0.58%	2.38%	0.71%	0.00%	2.08%	0.79%	0.37%	0.00%	0.89%	0.50%
50.0	0.58%	4.76%	0.00%	0.00%	0.00%	0.66%	0.56%	0.00%	0.00%	0.00%

Figure 19 – Top 16 Faults A3+A4+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G
(% of tests in the quality range with color code)

	VERY GOOD		GOOD		AVG		BAD		VERY BAD
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	2/40 ELITWIST	30 CCW & 30 CW	40 CCW	40 CW
0.0	66.67%	31.93%	12.39%	16.13%
1.0	20.63%	14.46%	17.09%	9.68%
2.0	4.76%	9.04%	15.38%	25.81%
3.0	3.17%	15.66%	14.96%	12.90%
4.0	3.17%	7.83%	11.11%	6.45%
5.0	1.59%	8.43%	5.98%	6.45%
8.0	0.00%	6.02%	13.25%	19.35%
10.0	0.00%	1.81%	4.70%	3.23%
15.0	0.00%	1.81%	3.85%	0.00%
20.0	0.00%	0.00%	0.43%	0.00%
25.0	0.00%	1.81%	0.00%	0.00%
50.0	0.00%	1.20%	0.85%	0.00%

Figure 20 – Top 16 Faults A3+A4+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G
(% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	30 KCW	30 KW	20 KH	21 KH	30 KH	32 KH	16 OE
0.0	20.59%	14.06%	23.68%	20.45%	8.13%	12.40%	43.33%
1.0	17.65%	15.63%	5.26%	15.91%	11.88%	10.74%	23.33%
2.0	14.71%	15.63%	0.00%	11.36%	3.75%	8.26%	6.67%
3.0	2.94%	10.94%	10.53%	20.45%	13.13%	18.18%	10.00%
4.0	5.88%	15.63%	5.26%	2.27%	13.75%	14.88%	0.00%
5.0	2.94%	6.25%	5.26%	6.82%	11.25%	7.44%	3.33%
8.0	14.71%	10.94%	23.68%	13.64%	18.75%	14.88%	6.67%
10.0	8.82%	1.56%	7.89%	2.27%	8.13%	4.96%	3.33%
15.0	8.82%	3.13%	7.89%	6.82%	8.75%	6.61%	3.33%
20.0	0.00%	4.69%	10.53%	0.00%	1.25%	1.65%	0.00%
25.0	0.00%	1.56%	0.00%	0.00%	0.63%	0.00%	0.00%
50.0	2.94%	0.00%	0.00%	0.00%	0.63%	0.00%	0.00%

Figure 21 – Top 16 Faults A3+A4+B2+B3+B4+C1+C2+C3+C4+D1+D2+D3+D4+E+F+G
(% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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(v) CLASSIMAT 3 – Total Thin Faults QUALITY TREND

H1+I1+H2+I2

	20 CCH	24 CCH	26 CCH	28 CCH	30 CCH	32 CCH	34 CCH	36 CCH	40 CCH
0.0	84.21%	90.12%	80.18%	81.36%	75.10%	67.12%	69.27%	65.84%	44.69%
1.0	9.47%	7.51%	13.81%	10.17%	16.41%	19.86%	17.71%	23.60%	27.50%
2.0	5.26%	2.37%	3.30%	8.47%	5.44%	8.22%	9.90%	3.11%	10.63%
3.0	0.00%	0.00%	1.50%	0.00%	2.29%	2.40%	2.08%	3.11%	7.50%
4.0	1.05%	0.00%	0.60%	0.00%	0.48%	0.68%	1.04%	3.11%	4.69%
5.0	0.00%	0.00%	0.00%	0.00%	0.19%	0.68%	0.00%	0.62%	2.19%
8.0	0.00%	0.00%	0.60%	0.00%	0.10%	0.68%	0.00%	0.62%	2.50%
10.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.34%	0.00%	0.00%	0.31%
15.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 22 – Total Thin Faults H1+I1+H2+I2 (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	20 CH	21 CH	24 CH	26 CH	28 CH	30 CH	32 CH	34 CH	36 CH	40 CH
0.0	87.21%	88.37%	72.34%	70.10%	77.08%	56.37%	57.65%	47.73%	35.40%	28.86%
1.0	10.47%	11.63%	19.15%	20.59%	20.83%	24.84%	24.81%	33.33%	30.09%	23.38%
2.0	1.16%	0.00%	4.96%	6.86%	0.00%	9.72%	9.70%	9.85%	15.04%	21.39%
3.0	0.58%	0.00%	1.42%	1.96%	0.00%	4.07%	3.73%	7.58%	7.96%	10.45%
4.0	0.58%	0.00%	0.71%	0.49%	0.00%	1.84%	1.87%	0.76%	4.42%	6.47%
5.0	0.00%	0.00%	0.71%	0.00%	2.08%	1.58%	1.49%	0.76%	2.65%	3.48%
8.0	0.00%	0.00%	0.71%	0.00%	0.00%	0.92%	0.19%	0.00%	2.65%	5.47%
10.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.26%	0.19%	0.00%	0.00%	0.00%
15.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.26%	0.37%	0.00%	1.77%	0.50%
20.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Figure 23 – Total Thin Faults H1+I1+H2+I2 (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	2/40 ELITWIST	30 CCW & 30 CW	40 CCW	40 CW
0.0	100.00%	63.25%	30.77%	35.48%
1.0	0.00%	22.29%	21.79%	25.81%
2.0	0.00%	10.24%	19.23%	29.03%
3.0	0.00%	1.81%	9.40%	3.23%
4.0	0.00%	0.60%	8.55%	0.00%
5.0	0.00%	1.81%	3.85%	0.00%
8.0	0.00%	0.00%	5.56%	6.45%
10.0	0.00%	0.00%	0.85%	0.00%
15.0	0.00%	0.00%	0.00%	0.00%
20.0	0.00%	0.00%	0.00%	0.00%
25.0	0.00%	0.00%	0.00%	0.00%
50.0	0.00%	0.00%	0.00%	0.00%

Figure 23 – Total Thin Faults H1+I1+H2+I2 (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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	30 KCW	30 KW	20 KH	21 KH	30 KH	32 KH	16 OE
0.0	5.88%	0.00%	5.26%	2.27%	3.13%	0.00%	36.67%
1.0	5.88%	4.69%	21.05%	6.82%	2.50%	1.65%	3.33%
2.0	11.76%	15.63%	18.42%	25.00%	6.25%	6.61%	6.67%
3.0	5.88%	9.38%	15.79%	13.64%	8.13%	7.44%	3.33%
4.0	8.82%	9.38%	13.16%	20.45%	16.25%	5.79%	0.00%
5.0	20.59%	21.88%	7.89%	6.82%	10.00%	8.26%	0.00%
8.0	29.41%	21.88%	7.89%	18.18%	19.38%	29.75%	20.00%
10.0	8.82%	4.69%	5.26%	2.27%	15.00%	13.22%	6.67%
15.0	2.94%	6.25%	2.63%	4.55%	6.25%	20.66%	13.33%
20.0	0.00%	3.13%	0.00%	0.00%	6.25%	4.96%	0.00%
25.0	0.00%	1.56%	2.63%	0.00%	3.75%	1.65%	3.33%
50.0	0.00%	1.56%	0.00%	0.00%	3.13%	0.00%	6.67%

Figure 24 – Total Thin Faults H1+I1+H2+I2 (% of tests in the quality range with color code)

	VERY GOOD	GOOD	AVG	BAD	VERY BAD
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