



# USTER® *TESTER 5*

## Application Report

### Definition and explanation of deviation rate

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The Deviation Rate DR is defined as the frequency of yarn mass exceeding adjustable mass and length limits. The Deviation Rate can be determined one- or two-sided.

As the below graph shows, represents the line M in the diagram the mean yarn mass of the measured length L and  $+\alpha$  and  $-\alpha$  represent lines of the positive and negative deviation limits (e.g.  $\pm 5\%$ ) of the mean yarn mass. This means, that the amount of the rated value deviation  $DR_{(x\%, ym)\%}$  (e.g.  $DR_{(+/-5\%, 1,5m)\%}$ ) is calculated as the relation of the sum of all length ( $l_1, l_2, \dots, l_n$ ), which overstep the level  $\pm\alpha$  in positive and negative direction concerning the measured length L.

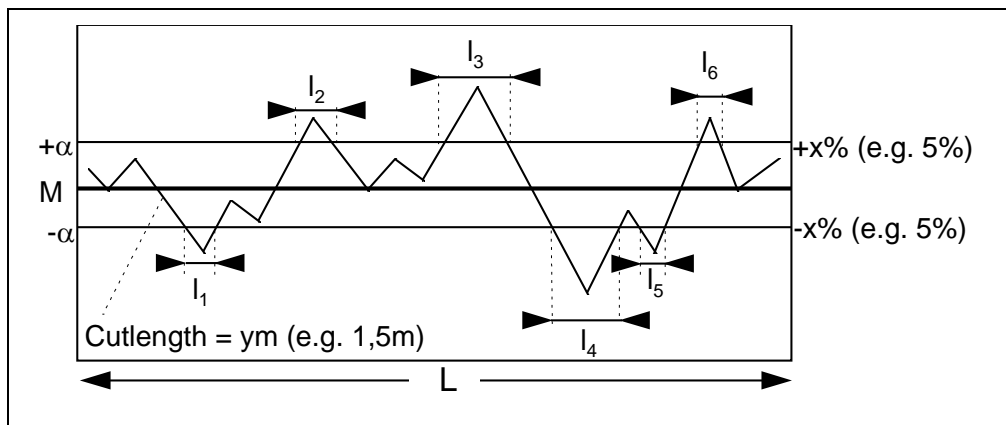


Fig. 1  
Illustration of rated value  
of Deviaton Rate DR%

Mathematical calculation of the Deviation Rate (rated value deviation):

$$DR_{(x\%, ym)\%} = \frac{\sum l_i(+) + \sum l_i(-)}{L} \times 100(\%)$$

e.g. in the graph 1:  $l_i(+) = l_2, l_3, l_6$  and  $l_i(-) = l_1, l_4, l_5$   
further be valid:

$$DR(+)\% = \frac{\sum l_i(+)}{L} \times 100(\%)$$

$$DR(-)\% = \frac{\sum l_i(-)}{L} \times 100(\%)$$

The USTER® TESTER 5 shows the printout of the Deviation Rate  $DR_{(x\%, ym)\%}$  dependant on the set levels  $\pm\alpha$  (e.g.  $\pm 5\%$ ) just as the  $DR(+)(+x\%, ym)\%$  and  $DR(-)(-x\%, ym)\%$ . The  $DR(+)(+x\%, ym)\%$  and  $DR(-)(-x\%, ym)\%$  allow an information concerning the skewness of the distribution by help of a numeric value (UT3 shows this only in the histogram). After the measurement the Deviation Rate  $DR_{(x\%, ym)\%}$  of the set level  $\alpha$  will be calculated. The USTER® TESTER 5 allows only two-sided Deviation rates.

With the USTER® *TESTER 5* it is possible to define different Deviation Rates. One is called  $DR_{Normal}$  which is calculated by the limits  $\pm\alpha = \pm 5\%$  and the reference length 8 mm ( $DR_{Normal}\% = DR_{(\pm 5\%, 8\text{ mm})}\%$ ), additional the  $\alpha$  is free adjustable. The other three Deviation Rates (DR) are free adjustable by different cut length and limits ( $\alpha$ ).

The Deviation Rate DR will be not pushed by Uster Technologies. This feature is just introduced as a sales argument against the competitor, especially in the Japanese market.

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