

## B+V Industrietechnik

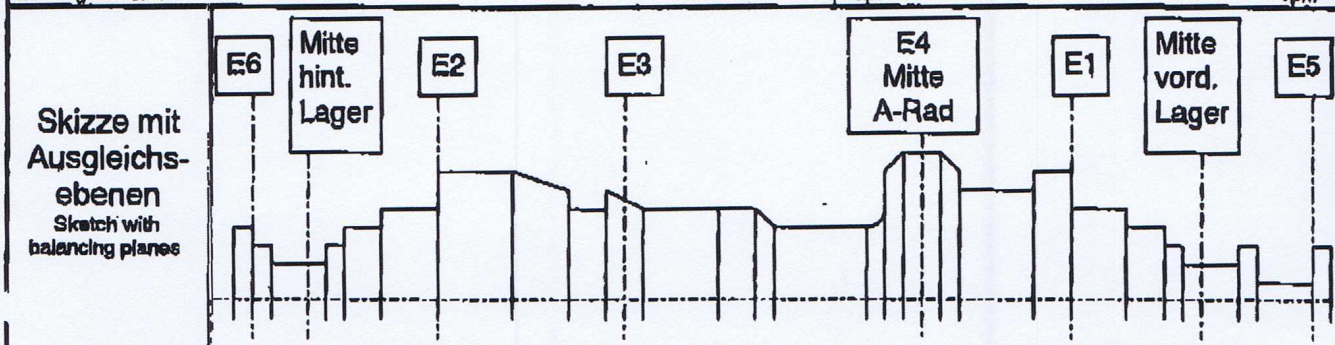


# Auswuchtprotokoll für Auftrag: P-900057

(Balancing Certificate for order)

ThyssenKrupp

|                                   |                           |                   |                            |
|-----------------------------------|---------------------------|-------------------|----------------------------|
| Auftraggeber<br>Customer          | Starachowice              | Datum<br>Date     | 23.03.2004                 |
| Art des Auftrages<br>Type of item | Turbinenläufer MARC 4-C10 | Gewicht<br>Weight | 1820 Kg                    |
| Lagerabstand<br>Bearing distance  | 2500 mm                   | Drehzahl<br>Speed | 7966 min <sup>-1</sup> rpm |



| Massenausgleich<br>Counterbalance |                           | niedertourig<br>low-speed 1500 min <sup>-1</sup> rpm |      |      |      | hohtourig<br>high-speed 7966 min <sup>-1</sup> rpm                                                            |  |
|-----------------------------------|---------------------------|------------------------------------------------------|------|------|------|---------------------------------------------------------------------------------------------------------------|--|
|                                   | Ebene<br>Plane            | 1                                                    | 2    | 2    | 3    | <b>1. Eigenform:</b><br>Ebene 3: 330° = 22,5g entn.<br><br><b>2. Eigenform:</b><br>Ebene 5: 165° = 7,4g entn. |  |
|                                   | Winkel<br>Angle [°]       | 350                                                  | 46   | 340  | 150  |                                                                                                               |  |
|                                   | Radius<br>Radius [mm]     | 163                                                  | 188  | 188  | 140  |                                                                                                               |  |
|                                   | Gewicht<br>Weight [g]     | 14,5                                                 | 19,2 | 13,2 | x    |                                                                                                               |  |
|                                   | gebohrt<br>bore [g]       | x                                                    | x    | x    | 50,5 |                                                                                                               |  |
|                                   | geschliffen<br>abrade [g] | x                                                    | x    | x    | x    |                                                                                                               |  |

|                                                          |                                                                                                                                                                                                   |                                                                                                                                                                             |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| geforderte<br>Auswuchtgüte<br>required balancing quality | Massenexzentrizität $e[\mu\text{m}]$ in den Lagerebenen nach ISO 1940:<br>Centre of gravity in bearing planes according to ISO 1940:<br><b><math>G 2,5 \Rightarrow e = 3,0 \mu\text{m}</math></b> | Schwinggeschwindigkeit $v[\text{mm/s}]$ in den Lagerebenen nach ISO:<br>Vibration velocity in bearing planes according to ISO:<br><b><math>v = 0,71 \text{ mm/s}</math></b> |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                         |                                                           |                                                           |                                                             |                                                             |
|---------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| erreichte<br>Auswuchtgüte<br>achieved balancing quality | vorne<br>front<br><b><math>e = 0,3 \mu\text{m}</math></b> | hinten<br>rear<br><b><math>e = 1,5 \mu\text{m}</math></b> | vorne<br>front<br><b><math>v = 0,42 \text{ mm/s}</math></b> | hinten<br>rear<br><b><math>v = 0,45 \text{ mm/s}</math></b> |
|---------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|

|                     |                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Bemerkung<br>Remark | Der Turbinenläufer wurde 3min mit $n = 9161 \text{ min}^{-1}$ geschleudert.<br><br><input type="checkbox"/> mit Zusatzversteifung gewuchtet |
| Abnahme:<br>Accept  | B&V Industrietechnik<br>23.03.2004                                                                                                          |

 IAF 65  
Leitz