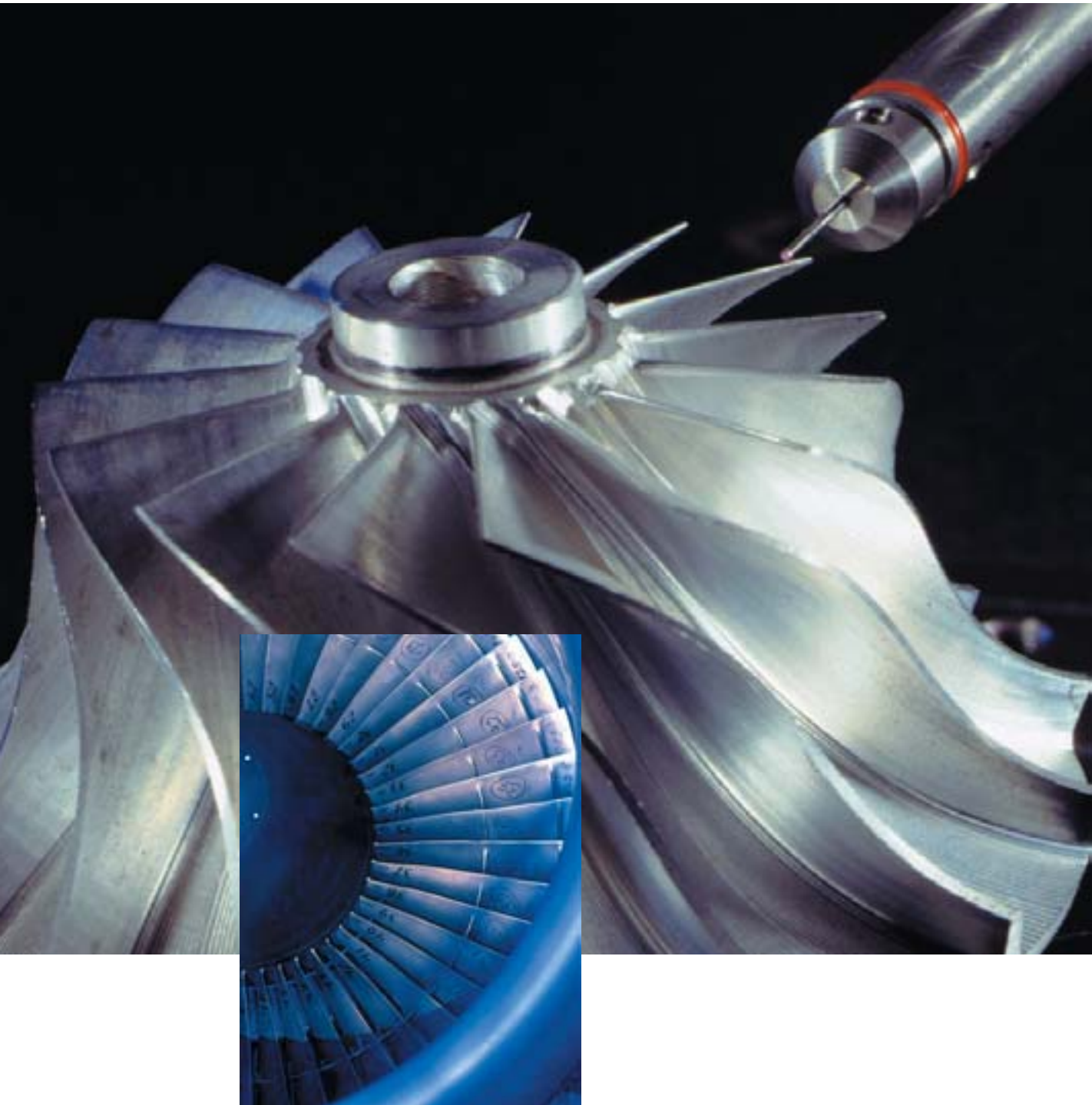# Blade^{Pro}
Efficient Evaluation
of Turbine Blades

Blade^{Pro}

ZEISS

We make it visible.

Conveniently evaluate turbine blades with Blade^{Pro}

There are many different parameters and analyzing procedures available to evaluate the quality of turbine blades. Carl Zeiss gathered this information from several manufacturers during a comprehensive study. It provided the basis for the development of Blade^{Pro} software for the evaluation of turbine blade measurements.
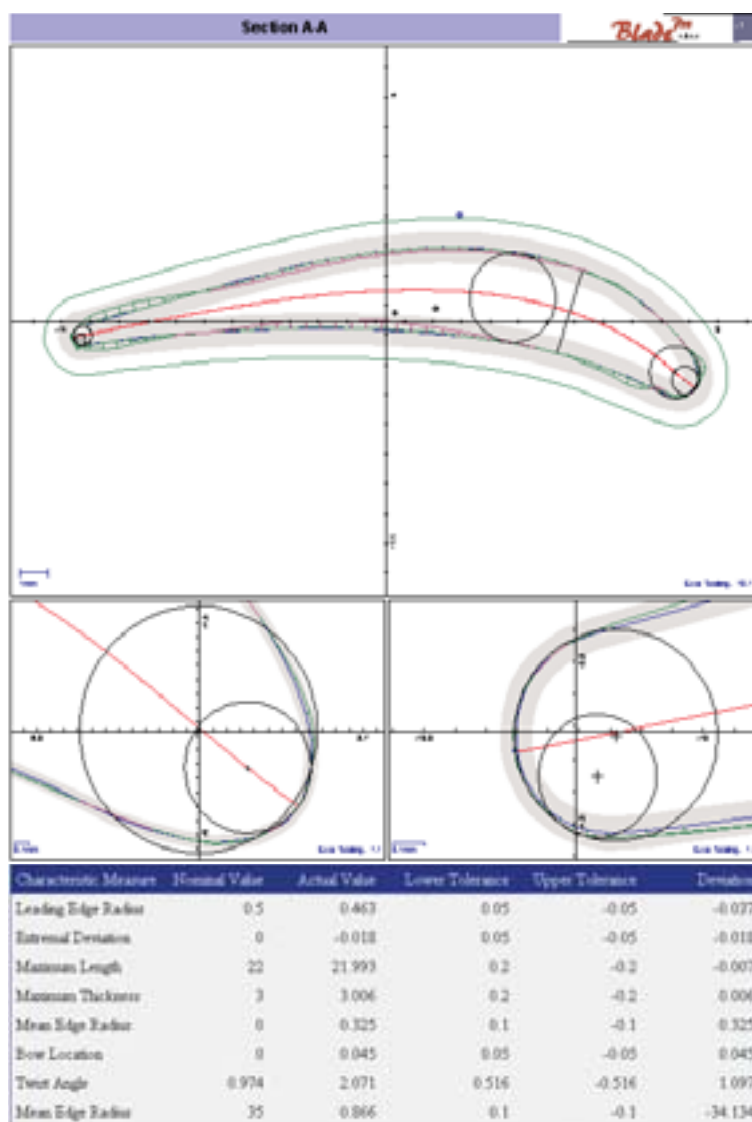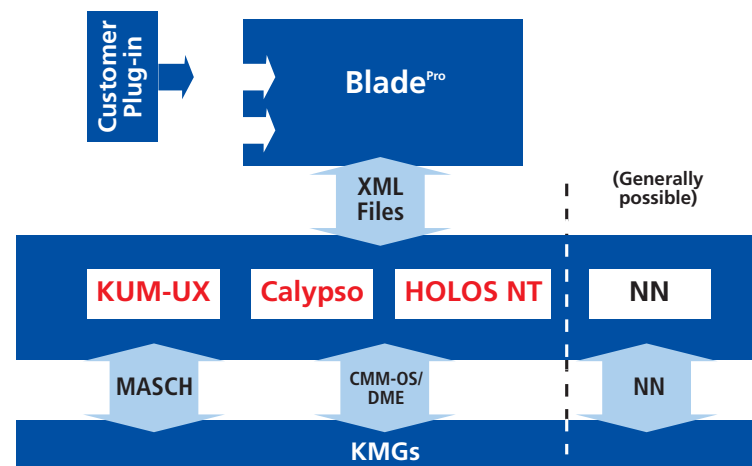
A state-of-the-art XML interface enables two-way communication between Blade^{Pro} evaluation software and your existing system.

Blade^{Pro} – key advantages

Blade^{Pro} determines an extremely wide range of blade parameters from the measuring results, such as:

- Form deviation of the blade profile
- Maximum blade length and maximum blade thickness
- Corner radius of the entrance and exit edge
- Thickness of the entrance and exit edge
- Blade thickness at any point of the nominal profile
- Torsion angle of the blade
- Blade length parallel to the chord line
- Profile waviness
- Batch point, center of gravity, mean line, etc.

Blade^{Pro} component concept

Characteristic Measure	Nominal Value	Actual Value	Lower Tolerance	Upper Tolerance	Deviation
Leading Edge Radius	0.5	0.463	0.05	-0.05	-0.037
Internal Deviation	0	-0.018	0.05	-0.05	-0.018
Maximum Length	22	21.993	0.2	-0.2	-0.007
Maximum Thickness	3	3.006	0.2	-0.2	0.006
Mean Edge Radius	0	0.325	0.1	-0.1	0.325
Bow Location	0	0.045	0.05	-0.05	0.045
Twist Angle	0.974	2.071	0.516	-0.516	1.097
Mean Edge Radius	35	0.866	0.1	-0.1	-34.134

Blade^{Pro} – an overview

An algorithm patented for Carl Zeiss accounts for super-proportional length errors, enabling evaluation of tolerance-critical areas of entrance and exit edges.

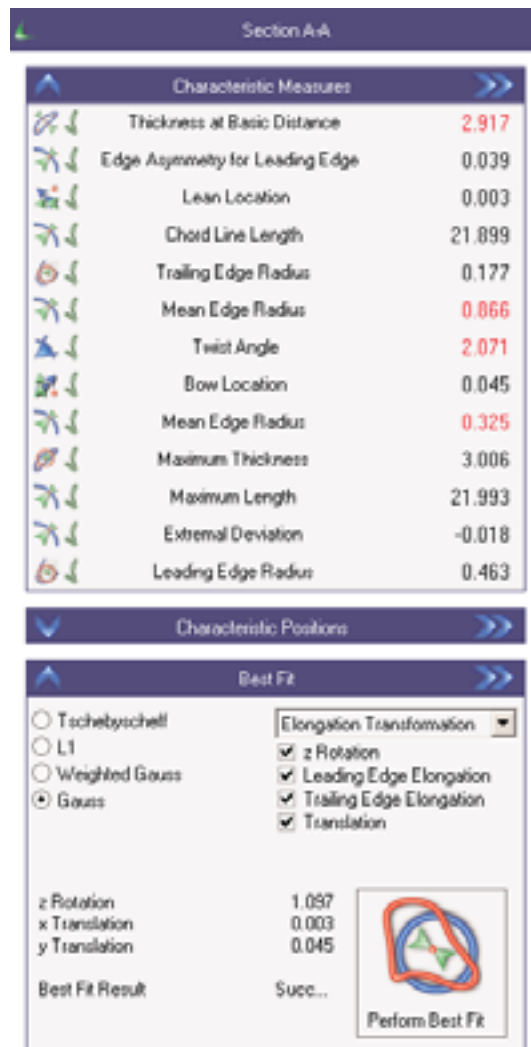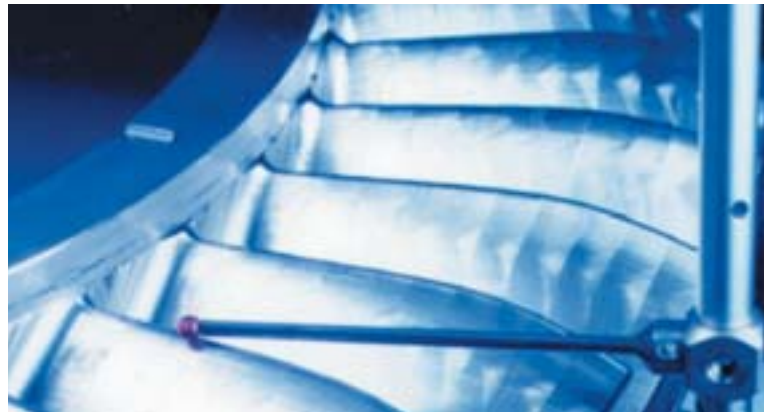### Data exchange, data management
- Section-oriented evaluation aided by nominal data and measuring data from any measuring machine
- Flexible connection to measuring machines via XML file interface
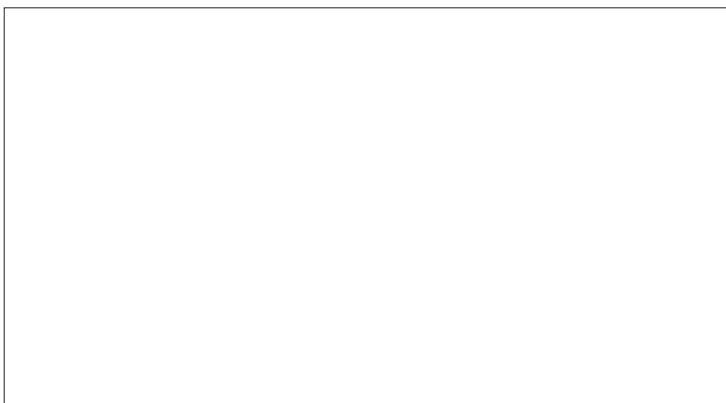- XML standard for data import and export

Graphical user interface
- Intuitive operation – based on standard Windows© applications
- Protocol options: graphic, text, XML, HTML
- Graphic protocol system: DIN A4 – A0 and corresponding ANSI formats
- Work interactively with protocol preview
- Flexible compilation and labeling of the sections of a document as a graphic
- Summarizing overview of several blade documents
- Free allocation of dynamic and static features for protocol identification

Adaptation
- Numerous configurations, e.g., graphic, print, data exchange, calculation
- Customized protocol forms and expansion of features

Section A-A	
Characteristic Measures	
Thickness at Basic Distance	2.917
Edge Asymmetry for Leading Edge	0.039
Lean Location	0.003
Chord Line Length	21.899
Trailing Edge Radius	0.177
Mean Edge Radius	0.866
Twist Angle	2.071
Bow Location	0.045
Mean Edge Radius	0.325
Maximum Thickness	3.006
Maximum Length	21.993
Extremal Deviation	-0.018
Leading Edge Radius	0.463

Characteristic Positions

Best Fit

- ○ Tschebyscheff
- ○ L1
- ○ Weighted Gauss
- ⊙ Gauss

Elongation Transformation ▼
- ☑ z Rotation
- ☑ Leading Edge Elongation
- ☑ Trailing Edge Elongation
- ☑ Translation

z Rotation	1.097
x Translation	0.003
y Translation	0.045
Best Fit Result	Succ...

Perform Best Fit

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