

THE HISTORY OF BIAS

Blas Instrumenten Analyse System | Brass Instrument Analysis System

1982: B1982: BIAS 1 analog version. Gregor Widholm develops a measuring arrangement for input impedance measurement with Brüel & Kjaer devices. The central elements are an analog sine wave generator the ramp voltage of the XY-recorder and a measuring head specially designed for the artificial mouth. developed for the artificial mouth. Measurement curves are recorded on calibrated paper. Acquisition costs: approx. 40.000.- €

1988: Widholm & Ossmann [BIAS 2 hybrid version]. The analog impedance data are recorded via the 8-bit converter card Metrabyte DASH-8 for further processing in the PC. Due to the of the XY-recorder a ramp generator has to be built to control the sine generator. be built. Problems with synchronization. The evaluation program is written in ASYST Ver.1. The intonation error is output in list form and in a bar graph. First attempts with sum function and weightings. Except for the AC/DC card no significant costs, since self-built.

1990: Widholm & Winkler [BIAS Version 3]. First fully digital version. The sine sweep is controlled by a digital generator controlled by an IEEE interface and transmitted by the 16-bit data acquisition card Metrabyte DASH-16 for further processing in the PC. Experiments for the design of a menu.

1992: Widholm & Winkler & KDS [BIAS Version 3.1]. Completely new concept. No external devices more. The „Multiton method“ developed by Winkler reduces the measurement time by a factor of 100 and increases the frequency resolution to double. New intonation algorithms are tested and implemented. A digital signal processor (Burr Brown ZB) integrated in the PC and clocked at 50 MHz is used. processor (Burr Brown ZB34) generates the excitation signal. The data supplied by a newly developed head are processed by a specially developed subsystem with an integrated 16-bit converter, preamplifier, filter and power amplifier. A new graphical user interface for Microsoft Windows 3 is designed. BIAS is developed as a Windows application written in Visual Basic V 2. KDS is responsible for the DSP control and large parts of the program. New features: Impulse response, impurity analysis and zoom function. Costs: 16.500,- €

1993: BIAS Version 3.2. The first system ready for series production. New features are: Sound analysis of played tones, measurement of curves with the help of the cursor, musical calculator as an „Add On“ program and tests with integrated database system. For the first time the system can be absolute acoustic ohms can be calibrated. Cost: 15.000,-€.

1994: BIAS becomes network-compatible. Experiments with response evaluation.

1995: BIAS version 4.0. The software is completely restructured by Viktor Kletzer. A new software developed by Archibald Kremser, guarantees a user-friendly administration of the data and allows a user-friendly management of the data and allows a variety of search criteria. New features: Response of the individual notes. Response factor of the entire instrument. Printout of certificates. BIAS is certified within the ISO 9000 quality assurance system in Germany as a measurement system. First attempts to adapt the system for clarinets.

1996: BIAS version 5.0. Fundamental changes in the Microsoft Windows operating system force an internal restructuring of the software. an internal restructuring of the software, it is rewritten in Visual Basic Ver. 6. The user interface remains unchanged externally. KDS develops a new, smaller and more stable interface box. Costs: 4.500,- to 7.700,- € depending on the version.

1996: BIAS Version 5.1. Archibald Kremser develops the „Physical Modeling“ module. With this changes in the computer and predict their effects on the intonation. intonation can be predicted. The basis for this is the transmission line model according to Dan Mapes- Riordan, with the help of which the impedance can be calculated from the bore data.

1998: Paul Anglmayer develops a calibration procedure to neutralize the acoustic properties of the measuring head. neutralize the acoustic properties of the measuring head.

1999: Wilfried Kausel develops an optimization package based on the Rosenbrock algorithm. program package, the „Optimiser“. After selection of the desired properties (improvements) the program gives the instrument maker exactly the changes to be made. to be made. The program package allows the creation of individual components such as different bells, leadpipes and slides, which can then be combined to create any instrument. In addition, it has sophisticated „software tools“ that allow various machining steps carried out in the various processing steps carried out in reality on the virtual bore.

2000: BIAS 5.2 SC version. Alexander Mayer develops a soundcard version. With a new small box connected directly to the soundcard, the expensive DSP board and interface box become superfluous. The excitation signal is output via the sound card, the analog signals are digitized in the sound card. The filtering performed in the former Interface Box are now performed by the software. The SC Box now only contains the amplifiers. This makes BIAS mobile and (to a limited extent) usable with LapTops and notebooks.

2001: Alexander Mayer adapts the SC Box in such a way that old measuring heads can be directly connected. and thus the upgrade of old systems can be done without any problems.

2002: BIAS 5.3 USB version. Alexander Mayer develops a measuring head, which contains all electronics electronics and can be directly connected to the USB port of a computer without intermediate computer without any intermediate boxes or power supply. This avoids problems with different sound cards. problems with different sound cards can be avoided.

2003: BIAS Version 6.0. Together with Hermann Stallbaumer, Wilfried Kausel completely restructures the BIAS software is completely restructured and written in Delphi Ver. 6. The user interface is redesigned. The integration of the optimizer is prepared software-wise. New features: Statistic functions, phase, Q-factor, etc. The database management and the export and import functions will be are simplified.

2006: BIAS 6.1 Wilfried Kausel eliminates structural weaknesses and integrates the Optimiser into BIAS. is integrated. A separate administrator program allows the assignment of passwords and user rights, as well as the creation of new, individual instruments in the system database. The analysis software VIAS is adapted by Kausel and integrated as a Research & Science module. With this the range of possible measurement methods and excitation forms is greatly expanded. BIAS 6.1 is intensively tested internally.

2007: Alexander Mayer and Wilfried Kausel create the hardware and software prerequisites for to perform impulse hammer measurements with VIAS. Thus an easily transportable and efficient measurement system for stringed instruments. With the Research&Science module, the calibration process for BIAS can now be carried out more precisely and the results can be presented in the form of a „Calibration Matrix“. stored in the form of a „Calibration Matrix“ as a BIAS readable „CAL“ file. Wind instruments measured with VIAS wind instruments can be written directly into the BIAS database. For the first time there is a communication between BIAS, VIAS and the optimizer.

2008: Wilfried Kausel and Helmut Kühnelt implement after an idea of Werner Winkler (1996) a method to measure flute instruments in BIAS. Head and foot joint are measured separately and combined to an impedance curve by BIAS at the push of a button. This is a first step towards an extension of BIAS for woodwind instruments.

2013: BIAS 7. The problems already announced with WIN 8 and the new security architecture of WIN 10 forced us to completely reprogram BIAS. From the previous version only the user interface remained unchanged for obvious reasons. Wilfried Kausel and Hermann Stallbaumer implemented an admin program for account management and a diagnostic account management and a diagnostics program for remote diagnostics, in order to easily correct to be able to easily correct incorrect settings made by customers.

2016: Wilfried Kausel programs a „transient window“ that provides information about the response and the draw range, as well as sound comparisons of different instruments. From now on new simulation models and other new features were/are added at irregular intervals. features have been added. ■