

PROGRAM
17th CONFERENCE „FATIGUE OF AIRCRAFT STRUCTURES”
11 – 12 JANUARY 2024

THURSDAY, 11 JANUARY 2024

10:00 – 11:15 Session 1

WELCOME AND CONFERENCE OPENING

Antoni NIEPOKÓLCZYCKI

Łukasiewicz Research Network – Institute of Aviation, Warsaw, Poland

UTILISING ROBOTIC ARM FOR NDT INSPECTION

Piotr SYNASZKO, Michał SINIARSKI, Krzysztof DRAGAN

Air Force Institute of Technology, Warsaw, Poland.

HIGH-TEMPERATURE FATIGUE TESTING OF TURBINE BLADES

**Mateusz KOPEĆ, Dominik KUKLA, Mirosław WYSZKOWSKI,
Zbigniew L. KOWALEWSKI**

*Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw,
Poland*

INITIAL ANALYSIS OF PW-X10 LOAD SPECTRA

Stanisław GAJEK

Warsaw University of Technology, Warsaw, Poland

11:15 – 11:30 Break

11:30 – 13:00 Session 2

**EFFECT OF HEAT TREATMENT ON DAMPING AND VIBRATION
FREQUENCIES OF ADDITIVELY MANUFACTURED STRUCTURE WITH
INHERENT DAMPING**

**Grzegorz MONETA, Sławomir CIEŚLAK, Wojciech WDOWIŃSKI,
Maciej MALICKI, Sebastian SZĄLKOWSKI, Michał FEDASZ, Sebastian
PIECKA, Konrad RACZKO, Jakub PIŁCZYŃSKI**

Łukasiewicz Research Network – Institute of Aviation, Warsaw, Poland

**NEW TECHNOLOGY LAYERED STRUCTURE IMPLEMENTED IN BIG “U” –
THE ELEMENT OF GYROPLANE ROTOR CRADLE**

Michał TRENDAK
Aviation Artur Trendak

**AUTOMATIZATION OF THE SIGNAL PROCESSING METHODS BASED ON
THE MACHINE LEARNING APPROACH**

Krzysztof DRAGAN, Piotr SYNASZKO, Michał DZIENDZIKOWSKI
Air Force Institute of Technology, Warsaw, Poland

13:00 – 13:30 Break

13:30 – 15:00 Session 3

**ADVANCES IN HIGH CYCLIC TESTING USING ELECTRODYNAMIC TEST
SYSTEMS**

Andrea DENGO
Step-Lab

**USAGE OF COMPENSATORS AND PROPER TUNING IN TESTING OF
AEROSPACE STRUCTURES**

Michał JABŁOŃSKI
Elhys Sp. z o.o.

**INVESTIGATION OF EDDY CURRENT SENSORS EFFICIENCY IN
DAMAGE DETECTION FOR ALUMINIUM AND STEEL STRUCTURES**

**Kamil KOWALCZYK, Michał DZIENDZIKOWSKI, Patryk NIEDBAŁA,
Artur KURNYTA, Krzysztof DRAGAN**
Air Force Institute of Technology, Warsaw, Poland

FRIDAY, 12 JANUARY 2024

10:00 – 11:15 Session 4

FAILURE ANALYSIS OF DAMAGED IMPELLER FROM CONTAMINATED GAS COMPRESSOR

Anna POLNIK

Baker Hughes, Warsaw, Poland

CRACK PROPAGATION POTENTIAL OF LOAD SEQUENCES DEVELOPED USING DIFFERENT FLIGHT PARAMETERS

**Piotr REYMER¹, Kamil KOWALCZYK², Marta BARAN²,
Dominik NOWAKOWSKI²,**

Michał DZIENDZIKOWSKI², Andrzej LESKI³

¹ *Military University of Technology, Warsaw, Poland*

² *Air Force Institute of Technology, Warsaw, Poland*

³ *Łukasiewicz Research Network – Institute of Aviation, Warsaw, Poland*

LANDING GEAR SHOCK ABSORBER STATIC CHARACTERISTIC AS CONDITION INDICATOR

Zbigniew SKORUPKA

Łukasiewicz Research Network – Institute of Aviation, Warsaw, Poland

11:15 – 11:30 Break

11:30 – 13:00 Session 5

STUDY OF TRANSLAMINAR FRACTURE TOUGHNESS OF CARBON FIBER REINFORCED AEROSPACE COMPOSITE MATERIALS USING DIGITAL IMAGE CORRELATION METHOD

**Dominik NOWAKOWSKI, Magdalena REYMER, Marta BARAN,
Janusz LISIECKI**

Air Force Institute of Technology, Warsaw, Poland

TESTING THE ADHESION OF EPOXY RESINS UNDER ACCELERATED AGING CONDITIONS

Klaudia OLKOWICZ¹, Artur KURNYTA^{1,2}

¹ *Air Force Institute of Technology, Warsaw, Poland*

² *Łukasiewicz Research Network – Institute of Aviation, Warsaw, Poland*

THE ISSUE OF ACCURACY IN AIRCRAFT LOAD SPECTRUM ESTIMATION

Mirosław RODZEWICZ

Warsaw University of Technology, Warsaw, Poland

13:00 – 13:30 Break

13:30 – 15:00 Session 6

COMPARISON OF NUMERICAL METHODS FOR OBTAINING STRESS INTENSITY FACTOR

Patryk CIĘŻAK¹, Piotr REYMER¹, Andrzej LESKI^{1,2}, Marta BARAN³, D. GŁOWACKI³, A. GŁOWACKA⁴, F. FRIEDERSDORF⁵, L. VAZQUEZ GOMEZ⁶

¹ *Military University of Technology – Faculty of Mechanical Engineering, ul. gen. Sylwestra Kaliskiego 2; 00-908 Warszawa 46*

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⁴ *Warsaw University of Technology, pl. Politechniki 1, 00-661 Warsaw, Poland*

⁵ *Luna Labs USA, 706 Forest St # A, Charlottesville, VA 22903, USA*

⁶ *National Research Council of Italy, Corso Stati Uniti, 4, 35127 Padova PD, Italy*

INVESTIGATION ON DAMAGE DETECTION CAPABILITY OF PZT SENSORS BASED ON FULL WAVEFIELD MEASUREMENTS

Michał DZIENDZIKOWSKI^{1,2}, Kamil KOWALCZYK¹, Patryk NIEDBAŁA¹, Krzysztof DRAGAN¹

¹ *Air Force Institute of Technology, ul. Księcia Bolesława 6, 01-494 Warszawa, Poland*

² *Warsaw University of Technology, Faculty of Materials Science and Engineering, ul. Wołoska 141, 02-507 Warsaw, Poland*

SELECTED ISSUES OF THE HELICOPTER ROTOR DRIVE SYSTEM OPERATION MONITORING AND FATIGUE TESTING TEST STAND DESIGN

Paweł GRYGORCEWICZ, Zbigniew SKORUPKA, Mirosław KOZERA, Sławomir CIEŚLAK, Konrad RACZKO

Łukasiewicz Research Network – Institute of Aviation, Warsaw, Poland

KINETIC THEORY STRENGTH OF MATERIALS (KTSM), STRENGTH AND RELIABILITY SYSTEM (SARSYS)

Alex OUDOVIKINE

STEDAX Inc., Maple, Ontario, Canada

CONFERENCE CLOSING

Antoni NIEPOKÓLCZYCKI

Łukasiewicz Research Network – Institute of Aviation, Warsaw, Poland