



**POLISH
TECHNICAL
REVIEW**





POLISH TECHNICAL REVIEW

SIGMA

SIGMA PUBLISHERS OF TECHNICAL PERIODICALS AND BOOKS FOR THE CENTRAL TECHNICAL ORGANIZATION (NOT)
00-950 Warsaw, ul. Czackiego 3/5. P.O.B. 1004. Tel: 39-11-34. Issued in English, French, German and Russian

CONTENTS

MACHINE TOOLS AND INSTRUMENTS

Horizontal machining centre	2
A three-coordinate measuring machine with a CNC control system	3
A non-sparking alloy	5
Machine tool slide handwheel unit (patent)	6
UZEp-450 jaw-type electrode holder	6

AVIATION

PZL-Kitty Hawk multi-purpose helicopter	7
---	---

CHEMISTRY

Tungsten from production wastes	9
Regulation of outflow of loose material from a bin (patent)	10
A thermally stable polyurethane foam	11
Film for printing and drawing	12
Manufacture of aryloxyphosphazenes (patent)	12
Universal laboratory shaker	13
Mixing gellatinizable reaction stocks (patent)	13

FARMING MACHINERY

Machinery for the preservation of green fodder	14
--	----

SHIPBUILDING

Pontoon of a floating crane	16
New tuna vessel	17
Polish Register of Shipping	17

MINING

New shielding lining	18
Convection dryer (patent)	18

CONTROL AND MEASUREMENT EQUIPMENT

An automatic digital ellipsometer	19
Three-channel recorder	21
Diluter	21

PATENTS

Si (Li) nuclear radiation spectrometric detector	22
A hydrant closing assembly	22
A pipe cooler for hot industrial gases	22
IN BRIEF	8
ECONOMIC SURVEY	15, 20, 23

A three-coordinate measuring machine with a CNC control system

Control of large number of dimensions of intricately-shaped objects is a labour-consuming process. This problem has been solved by the use of three-coordinate measuring machines, especially those equipped with a CNC computer-controlled system. The Institute of Machining in Cracow is now working on their development. The already produced model MP 700 A is discussed on p. 3.

PZL-Kitty Hawk multi-purpose helicopter

For many years now the PZL Factory of Transport Equipment at Świdnik has been manufacturing and exporting helicopters of different sizes and purposes. The article on p. 7 discusses the newest model of a multi-purpose, light PZL-Kitty Hawk helicopter which may be supplied in three different versions (for the transport of passengers and/or cargo, for work in agriculture and as an evacuation helicopter). It is powered by two Allison 250-C20B turbo-engines of a take-off power of 313 kW which guarantees optimum performance.

Chemistry

In connection with the increasing deficiency of materials the issue of recycling acquires increasing importance also in chemistry. Hence the importance of the chemical method recovering tungsten from waste produced during the manufacture of electric contacts. The details are given in an article on p. 9. Another interesting subject discussed in the current issue are thermally stable polyurethane foams (p. 11), developed by the Warsaw Technological University which do not change their properties in temperatures up to 135 °C and even 150 °C, which considerably extends their range of applications. The issue brings also descriptions of patents connected with chemistry.

Programmatic Council: B. Doweyko, S. Gruzewski (President), J. Gwiazdzirski, A. Hanftwurcel, L. Lachowski, B. Janiewska, L. Olejarz, K. Warchot, T. Wąsac

Editorial staff: A. Hanftwurcel (editor-in-chief), J. L. Toeplitz (assistant editor), I. Chmielewska (assistant editor), S. Hilscher (managing editor), E. Karska, Z. Schellenberg, A. Witkowski, J. Wolf

English version: E. Karska

Graphic layout: F. Barącz

Production manager: A. Dziewulska-Kijas

Advertising section: T. Cupryś

Cover photo: PZL-Kitty Hawk Helicopter

Photos in the issue: Z. Błazewicz, H. Kwiat, D. Nalewajko, "Foto-Universal"

Subscription orders should be addressed to the Ars Polona-Ruch, 00-950 Warsaw, P.O.B. 1001, Krakowskie Przedmieście 7, or to one of the representatives of this company abroad. The annual subscription rate (12 issues) amounts to US \$25.20 (L. 14.40) or the equivalent in other currencies. In the socialist countries, catalogue prices of the local distribution centres apply.

Photocomposition: Wydawnictwo NOT-SIGMA, Warsaw

Printing Office: ŁDA - Zakład 1 - offset, zam. 1430/80

INDEX No 36915