Antoni P. Barbacki: **Technical Aspects of Geothermal Energy Utilization in Małopolska Region** • Geomatics and Environmental Engineering 2009, Vol. 3, No. 4

The paper discusses the technical aspects of geothermal energy utilization in Małopolska and provides a brief description of the technological solutions available to exploit the thermal aquifers typical of this region, for heating and recreation. It includes some technological solutions for the recovery and management of heat in this area, together with examples of how heat pumps and combined heat and power units are used in Poland.

Keywords: geothermal aquifers, space-heating, thermal pools, heat pumps

Małgorzata Buśko, Anna Przewięźlikowska: **Analysis of Legal Regulations Concerning the Division of a Building Lot, with a Building on It, in View of Geodesic and Construction Regulations** • Geomatics and Environmental Engineering 2009, Vol. 3, No. 4

The subject of this article is the analysis of the legal regulations concerning the issue of dividing of a developed property, with a building on it, in the aspect of the inconsistencies found in such regulations. Particular attention was given to the definitions of property, record parcel, building and civil structure. The legal provisions, technical standards and geodesic standards, as quoted in the article, lead to the conclusion that the regulations pertaining to the division of property are imprecise, non-cohesive, and often contradictory.

Keywords: land and property register, division of property, building, property, record parcel

Paweł Ćwiąkała, Mikołaj Skulich, Mariusz Frukacz: **Preliminary Study of the Possibility to Use a Mobile Measurement Rosette for Testing Horizontal Distortions** • Geomatics and Environmental Engineering 2009, Vol. 3, No. 4

The structure and characteristics of a measuring system referred to as the "mobile measurement rosette" have been presented and

the subject of the study using the rosette has been discussed. The system in question allows measurement of horizontal distortion of land subjected to the impacts of mining exploitation. It has to be stressed that horizontal distortions of land in mining areas are among the major indices of deformation describing the impact of mining exploitation on the surface and building structures thereon, and studies are still underway as to the problem of continuous measurement and interpretation of results obtained. One of the keys to proper operation of the system is to consider the effect of thermal expansion of the rosette material. The results of laboratory and field tests presented herein indicate the possibility to use the system for measurement of horizontal distortion in areas affected by mining exploitation.

Keywords: measurement rosettes, mining geodesy, horizontal distortion, horizontal deformation

Wojciech Drzewiecki, Agnieszka Osak: **Application of Landsat Imagery Based Vegetation Indices to Imperviousness Index Mapping** • Geomatics and Environmental Engineering 2009, Vol. 3, No. 4

The paper focuses on imperviousness index mapping with satellite remote sensing approach based on vegetation indices. Imperviousness factor can be defined as a percent of the total considered area covered by impervious surfaces (any materials that are impervious to water, such as rooftops, streets, driveways, parking lots, etc.). With Landsat TM images comparable maps can be obtained for the time period from mid-80s to present. The imperviousness factor map of City of Cracow was prepared for 1996. Imperviousness factor accuracy was estimated for 20 percent.

Keywords: imperviousness index, land cover mapping, vegetation indices, satellite remote sensing, Landsat TM

Sławomir Mikrut: **Photogrammetric and Laser Scanning Data Integration** • Geomatics and Environmental Engineering 2009, Vol. 3, No. 4

The subject of research included integration of laser scanning data with photogrammetric data, and an attempt at identifying the "bottlenecks" in available technologies, and offering proposals for solving them. The research was conducted based on an exemplary facility, located in the Ethnographic Park of the Village Museum at Tokarnia, Poland. One of the museum exhibits, a windmill, was utilised as a test field, as there was a good access to it, as well as because

of certain, expected complications related to processing parts of the windmill, such as e.g. penthouses. The research employed a Z-F Zoller-Fröhlich, model IMAGER 5006 laser scanner, a Rollei 6008 digital photogrammetric camera, a TCR 405 POWER prismless total station, RealWorks Survey Advanced, Photomodeler and Dephos software, as well as own algorithms, collected in the authorial feature extraction software (FES). In this paper, a certain pattern of integration of photogrammetric data with a point cloud was proposed. It was based on that pattern, that the exemplary project was developed. Also, an attempt was made at improving the quality of integration though the use of algorithms of sub-pixel edging of data, both in the digital image, and in the point cloud. The so-developed methodology is useful, not only when surveying historic buildings and structures. It can also be applied in the course of works related to the surveys of buildings, industrial facilities, boring towers, etc. Also known are non--typical applications of the method, which include e.g. the survey of a post- accident condition conducted by the police on the accident spot, as well as a whole array of applications of the air scanning, which (due to their extensive scope) have not been included in this paper. The completed experiments as well as data from the literature on the subject make it possible to declare that the results of the use of photogrammetry combined with laser scanning are promising. This is a quick and an efficient technology. Owing to scanning, we can obtain a very large amount of data, while photogrammetry provides radiometric data of a high quality. That combination seems to be indispensable in near future, and one may expect it will quickly be developing.

Keywords: laser scanning, photogrammetry, feature extracting

Tomasz Pirowski, Joanna Baran, Michał Dzień: **Initial Evaluation of Fused Satellite Images Aplicability to Vectorisation and Classification** • Geomatics and Environmental Engineering 2009, Vol. 3, No. 4

The article presents results of integrating spectral images of lower resolution with higher resolution panchromatic images. The analysis was performed on Landsat and IRS images. Four different methods of integration were applied. The aim of the research was twofold: to evaluate pan-sharpened images from photo interpretation point of view (in the process of feature borders vectorisation) and to assess their applicability for supervised spectral classification procedures. In both cases the reference data were obtained from airborne orthophotomap.

Keywords: satellite data fusion, visual assessment, vectorisation, classification, applicability evaluation, Landsat, IRS

Anna Trembecka, Anita-Kwartnik-Pruc: **Installing Devices for Sending Liquids, Steam, Gas and Electric Power through Someone Else's Real Estates** • Geomatics and Environmental Engineering 2009, Vol. 3, No. 4

The investments connected with the necessity of conducting on someone else's real estate devices used to send media, cause conflicts between transferring enterprises and the owners of the real estate. Thus the authors decided to present a full range of the possibilities of establishing the rights for someone else's real estate to put industrial devices there, regarding the introduced on 3rd August 2008 transfer of easement. The article also presents the surveying activities at the establishment of this easement.

Sabina Źróbek: **Market Value and Cost Value in Valuation Theory and Practice** • Geomatics and Environmental Engineering 2009, Vol. 3, No. 4

This article makes a comparison between market and cost (or reconstruction) value. Market value can significantly differ from reconstruction value, especially when the latter one is improperly assessed. In Poland, each of presented value has its own rules of valuation and interpretation. Thus, changing the valuation base can result in significant differences in the valuation outcome. However, author made some efforts to prove that with specific assumptions concerning data use and procedures of analysis, the results of both kinds of values can be very similar. Therefore cost value can be treated as a substitute for market value. This thesis can be noticed in many countries and has been already proved in many cases.

Keywords: bases of value, basis of valuation, market value, cost value