WORLD METEOROLOGICAL ORGANIZATION

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COMMISSION FOR INSTRUMENT AND METHODS OF OBSERVATION
OPAG-CAPACITY BUILDING

EXPERT TEAM ON RICS, QUALITY MANAGEMENT SYSTEMS AND COMMERCIAL INSTRUMENTS INITIATIVES,
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Report on commercial instrument initiatives and developments

Submitted by HMEI

Summary and Purpose of Document

This document contains details, provided by some HMEI Member manufacturers, on their new products and developments.

ACTION PROPOSED

The meeting is invited to use this information during its deliberations.

INTRODUCTION

The Association of HydroMeteorological Equipment Industry (HMEI) is an association with eighty-seven members from 21 countries worldwide, which produce meteorological and/or hydrological, hardware, software and systems.

This document reports on some developments from our member manufacturers and considers other methods of discovering new and improved products and developments.

NEW COMMERCIAL INSTRUMENTS AND DEVELOPMENTS

Information is given below on new developments and products that have been provided to HMEI by its Member manufacturers in the last 6 months. This is in no way meant to be definitive.

New Rainfall Logging System due out from Casella CEL
Casella is interested in developing world markets for this new system that they have under development.

The Rainfall Logging System:

Casella have been supplying such loggers for many years, and this latest version offers many improved features, these include:
Sealed Peli case type enclosure
Increased memory capacity (64K > 13000 events)
PDA software capabilities
Extended battery life.

Future development- Remote solar powered GSm facility for remote data download
Intensity correction in software
Resolution to 1 second

A PDF data Sheet on this product is available at the HMEI website www.hydrometeoindustry.org NEW Product section.

CASELLA CEL, www.casellacel.com
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Development of New Integrated Quality Management System in Logotronic Datalogger
Logotronic has introduced their new *Geolog SG* Datalogger, for applications in remote measuring stations. This Datalogger has new features of, Graphical data output, Image channels for the registration of pictures from cameras, Internet connectivity, Unmatched number of interfacing possibilities, Integrated Quality Management functions (IQM), Mathematical processing.

Logotronic recently presented a paper (available from the HMEI website at http://www.hydrometeoindustry.org/attachments/Logotronic_iqm_system-en_US.pdf) to the fourth session WMO/CBS Expert Team on Requirements for Data from AWS held in Geneva in March 2006. One of the responsibilities of this ET is in the developmentment of new Guidelines on QC Procedures for data from AWS. Logotronic has developed the in-built Quality Management System of their new *Geolog* in conformity with the preliminary draft of the Guidelines on Quality Control Procedures for Data from Automatic Weather Stations that the aforementioned ET is currently working on.

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Summary of PWS Development by Dr. Richard Ellis, Campbell Scientific Ltd

The PWS100 Present Weather Sensor is a new laser based sensor capable of determining precipitation and visibility parameters for automatic weather stations including road, marine and airport stations. Due to its advanced measurement technique and fuzzy logic algorithms the PWS100 can determine precipitation type for each individual particle in real-time from accurate size and velocity measurements and the structure of the received signal. Auxiliary measurements of temperature and relative humidity can provide improved particle classification.

The system improves upon current precipitation monitors by using a derivative of Phase Doppler Anemometry techniques to accurately determine particle speed and size. This is unlike other sensors available, which only analyse pulses from scattered light (scatter meters) or the reduction in light intensity (disdrometers) and infer a size and velocity for the particles. The instrument is also capable of distinguishing between liquid droplets and solid polycrystalline hydrometeors from analysis of the signal and can be used to estimate visibility comparable to other forward scatter instruments.

The system can output visibility and precipitation related weather codes such as those detailed in the World Meteorological Organisation (WMO) SYNOP code, METAR code and those used by the US National Weather Service (NWS).

Further details of precipitation can be given in terms of drop size distributions (DSD) to give better indications of precipitation intensity. Drop size and velocity distributions can be used in the analysis of soil erosion, flood prediction or as a calibration for radar instruments in meteorological studies.

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New Developments in Ultrasonic Anemometers from Gill Instruments Ltd

Gill Instruments, based in Lymington, UK, is well known in the market for the manufacture of 3 axis ultrasonic research anemometers. In the last 6 years we have concentrated on the development and sales of new 2 axis wind speed and direction sensors, the WindSonic and WindObserver. These products have proven successful in the market and we have in the last 12 months developed a new range of 3 axis units based on the highly successful WindMaster.

There is an attached data sheet that provides a full technical description on the new WindMaster.

Advantages of new unit:
Stainless Steel construction
32 Hz
Reduced spar profile, reducing air turbulence
Improved Speed of sound accuracy
Improved W (vertical wind) resolution.
Analogue Inputs and outputs without the need for an expensive interface

GILL INSTRUMENTS LTD., www.gill.co.uk
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New Ultrasonic Wind Sensor from Vaisala

Vaisala introduced the new Vaisala WINDCAP® Ultrasonic Wind Sensor WMT50 developed for measuring horizontal wind speed and direction. The WMT50 is designed for numerous

applications where inexpensive wind measuring is needed. The sensor has no moving parts, no field calibration is required, and it is, therefore, virtually maintenance-free. Heating is optionally available in the WMT50.

The triangular design of the WMT50 solves the mechanical shading of transducers on measurement paths. This ensures accurate wind measurement from all horizontal wind directions, without blind angles or corrupted readings. The flexible WMT50 includes several protocols and four configurable serial interfaces: SDI-12, RS-232, RS-485, and RS-422. Also the serial output modes, wind variables (minimum, average, maximum) as well as data averaging and updating intervals are all configurable. Typical applications for the Vaisala WINDCAP® Ultrasonic Wind Sensor WMT50 include meteorology, wind energy, marine, transport, pollution control, and agriculture.

New Vaisala Gauge for Accurate Measurement of All Precipitation Types
This is the latest Vaisala innovation for precipitation measurement. The Vaisala All Weather Precipitation Gauge VRG101 is designed to meet the challenges of measuring a broad range of precipitation, from rain and snow to hail, sleet and freezing rain. The innovative design enables the new device to measure liquid and solid precipitation accurately and in the most severe weather conditions.

The measurement principle is based on the latest high-accuracy, temperature-compensated load cell technology. A funnel element on top of the container ensures that even the lightest rain and snowfall are detected and measured. The state-of-the-art design allows for easy maintenance access and accommodates the adding of antifreeze agents and removal of the collector container. Data loss, sometimes a problem with precipitation gauges that need to be taken to the laboratory for calibration, has been eliminated in the new VRG101, which is equipped with a field-removable electronics unit that renders laboratory visits obsolete. In addition, the strong and simple design extends service intervals and lowers life-cycle costs.

VAISALA OYJ, www.vaisala.com
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New Product release INFINITE NUMBER OF BEAMS by REMTECH
For the first time in the history of wind profiles (either Sodars or Radars) REMTECH is introducing a Sodar that can generate an infinite number of beams.

Benefits:
- shorter averaging period
- better precision using varying tilt angles depending upon radial wind speeds
- real time antenna diagram determination and check up of all transducers
- dramatically improved signal-to-noise ratio and fixed echoes/signal separation

A leaflet on this product is available at the HMEI website www.hydrometeoindustry.org NEW Product section.

REMTECH INC., www.remtechinc.com
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Two new OTT products presented at EMS
These two new products will complete OTT's actual product program for meteorological applications:

- OTT Parsivel, laser based optical Disdrometer and enhanced precipitation identifier.

A leaflet on this product is available at the HMEI website www.hydrometeoindustry.org NEW Product section.

- OTT HDR, GPS controlled transmitter unit for satellite data transmission Meteosat/GOES. A leaflet on this product is available at the HMEI website www.hydrometeoindustry.org NEW Product section.

OTT MESSTECHNIK GMBH & CO. KG. www.ott-hydrometry.com
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News Release LOCKHEED MARTIN COHERENT TECHNOLOGIES, WINDTRACER TERMINAL DOPPLER SOLUTION
New All-Weather Wind Detection System Combines Lidar and Radar to Improve Flight Safety and Runway Management.

A leaflet on this product is available at the HMEI website www.hydrometeoindustry.org NEW Product section.

LOCKHEED MARTIN COHERENT TECHNOLOGIES, INC. www.ctilidar.com
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MEISEI - Planned Technology Changes in Radiosonde Manufacturing
Meisei Electric Co Ltd., has provided HMEI with a summary of its planned technology changes as foreseen, both for the next 10 years and for beyond that period.

This summary is available from HMEI on request.

MEISEI ELECTRIC CO., LTD. www.meisei.co.jp
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InterMet Africa (International Met Systems) New Radiosondes
InterMet Africa has developed new GPS radiosondes, IMS BAT-16GP and IMS BAT-16G, with the cost saving feature of splitting the GPS processing functions between the Radiosonde and the Signal Processing System. The IMS BAT-16GP radiosonde can be used in RDF as well as GPS mode.

The radiosonde itself carries out only minimal basic GPS processing. The more complex GPS processing is done at the Signal Processing System (SPS) decoder, with the result that that part of the costs of GPS processing is only paid for once, in the cost of the SPS.

The disposable radiosondes are therefore less expensive than conventional GPS radiosondes; they are also lighter, with associated savings in balloon and gas costs.

For more information on the IMS BAT-16 range of radiosondes please refer to:
INTERMET AFRICA, www.diel.co.za
Email: infor@diel.co.za
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INTEROPERABILITY IN UPPER AIR SOUNDING SYSTEMS

“Interoperability” in this context has been defined as the ability of an upper-air ground station to employ radiosondes made by multiple manufacturers, including, but not limited to, the manufacturer of the ground station.

From the operators' perspective, the goal of interoperability is to reduce costs while maintaining quality in upper-air soundings. This would be accomplished by introducing greater competition into radiosonde re-supply tenders.

Interoperability also gives operators the ability to select a new sonde if a more technologically advanced device becomes available. This would prevent operators from becoming locked into an obsolete sonde due to a ground station that is incompatible with newer disposables.

An Interoperable ground station, the InterMet IMS 1600 Integrated Upper Air System, was demonstrated in Dar-es-Salaam, Tanzania, 18-30 October 2004, during its installation there, under the auspices of WMO.

Information on this demonstration is available from the HMEI website www.hydrometeoindustry.org under the Technical Information - Intercomparisons links.

Also contact:
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INTERCOMPARISONS

HMEI has been particularly active in facilitating its members' participation in two major WMO Intercomparisons in the last two years. The WMO Laboratory Intercomparison of Rainfall Intensity (RI) Gauges, 15 September 2004 to 14 March 2005 and the WMO Intercomparison of High Quality Radiosonde Systems in Mauritius, February 2005.

The results of Intercomparisons such as these are an excellent indication of the latest information available on currently used, and in some instances new, equipment in their fields. This information could also be pertinent when comparing good quality equipment at reasonable costs for developing countries.

It is worthwhile looking at the results of products tested in the Intercomparisons for an evaluation of what products suit individual consumers needs. As manufacturers use these Intercomparisons to improve their products, it is also worth contacting the manufactures to enquire how their products may have been revised and improved, in updated versions, as a result of an Intercomparison.

WMO Intercomparison information is available from:
http://www.wmo.int/web/www/IMOP/intercomparisons.html

THE HMEI MEMBER PRODUCTS CATALOGUE

New instrumentation and equipment is constantly being developed in many different companies worldwide. Perhaps the most relevant way to find out about new commercial instrument initiatives is to go directly to the manufacturers themselves. The HMEI website www.hydrometeoindustry.org has a Member Products Catalogue with "live" links to Member manufacturers' websites, which enable easy access to these companies from one place. Most companies have a "News" or "New Products" link on their websites and these are the most reliable and up-to date source of information on new technology in the industry.
