

# Vaisala Group 2001



# Vaisala in brief

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Vaisala sensors, instruments and systems are used the world over by organizations that need to measure the environment with great accuracy and consistency.

Vaisala develops, manufactures and markets products and services for environmental and industrial measurement. The purpose of these measurements is to provide a basis for a better quality of life, cost savings, protection of the environment, improved safety and better performance.

Vaisala focuses on market segments where we can be the world leader, the preferred supplier. We put a high priority on customer satisfaction and product leadership. Vaisala secures its competitive advantage through economies of scale and scope.

Vaisala's objective is to be the most respected, most comprehensive and most successful environmental measurement company in the world.

Vaisala has more than 1,100 employees and achieved net sales of EUR 183.5 million in 2001. Vaisala serves customers throughout the world. In 2001, exports accounted for 96 % of net sales. Vaisala's A-series shares are quoted on the Helsinki Exchanges (HEX). Vaisala delivers electronic measurement instruments and systems to meteorological institutes, meteorological research organizations, land and water resource management agencies, airport authorities, road authorities, defense forces and industrial companies. Vaisala operates globally, serving customers in more than 100 countries through international offices and a worldwide distributor network.

Vaisala's competitiveness is a result of product leadership in environmental measurement and related industrial applications. We are the global market leader in our core businesses – upper air weather observation, airport and road weather observation – and the world's leading provider of equipment for measuring relative humidity and barometric pressure in industrial applications. As a science-driven company, Vaisala's product leadership is the result of dynamic product development, close cooperation with customers and a high degree of specialization. We invest substantially in research and development. We nurture close relationships with some of the world's leading research institutes. This ensures that Vaisala will continue to be the pacesetter in environmental measurement technology for years to come.

Vaisala's business is conducted by four divisions: the Upper Air Division, the Surface Weather Division, the Remote Sensing Division and the Sensor Systems Division.

### Upper Air Division

The Upper Air Division develops, manufactures and markets instruments

and systems for observing the weather in the upper atmosphere. The division's main products are radiosonde and dropsonde instruments and related ground equipment for collecting and processing the information gathered by the radiosondes. The division's core customers are meteorological institutes, meteorological research organizations and defense forces.

### Surface Weather Division

The Surface Weather Division develops, manufactures and markets meteorological sensors and systems that are used by its customers to observe weather conditions near and on the Earth's surface. The division's main products are automatic weather stations, road and aviation weather systems, and meteorology sensors and displays. Its



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core customers are meteorological institutes, aviation authorities, road authorities, defense forces, land and water resource management agencies and industrial companies.

### **Remote Sensing Division**

The Remote Sensing Division develops, manufactures and markets a family of wind profilers and lightning detection systems that make extensive use of remote sensing technology. Remote sensing is an increasingly important area in meteorological, climatological, hydrological and air quality research. The division's core customers are meteorological institutes and research organizations, airport authorities and defense forces.

### Sensor Systems Division

The Sensor Systems Division develops, manufactures and markets electronic measurement instruments for the measurement of relative humidity, dewpoint, material moisture, barometric pressure, carbon dioxide and ammonia. The division's products are used to control production processes and equipment performance, to maintain safety, and to measure human and product environments in industry, meteorology and metrology.

**Upper air** is a term without precise definition, used mainly in synoptic meteorology to signify the region from the base of the free atmosphere to the upper limit of routine balloon sounding. **Surface weather** can be defined as "the state of the earth's surface at a particular time, as defined by the various meteorological elements". Remote sensing is the collecting and recording of data from a distant point, e.g. radar and satellite-based observations of the atmosphere as opposed to on-site (in-situ) sensing. A sensor is an element sensitive to light, temperature, radiation level, or the like, that transmits a signal to a measuring or control instrument.

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This Vaisala Group 2001 brochure and the Vaisala Financial Statements 2001 together form the Vaisala Annual Report 2001. To order the Vaisala Financial Statements 2001, please contact Vaisala Corporate Communications at +358 9 8949 2744 or info@vaisala.com.

### Events in 2001

### Development of net sales (M€)



Profit before extraordinary items, provisions and taxes (M€)

40



Net sales by market



Net sales by division



2001		2000
183.5		179.5
176.3		176.7
30.6		33.7
82.9		78.2
22.9		28.2
1125		1043
	183.5 176.3 30.6 82.9 22.9	183.5   176.3   30.6   82.9   22.9

## New technology for measuring ammonia

Vaisala launched an ammonia detector onto the global market in December. The detector, based on Vaisala's polymer thin-film technology, will improve the safety of both people and storerooms where there is a risk of ammonia leaks. The ammonia detector is expected to gain Vaisala an entry into this growing market.

# Automatic weather stations to Poland

In December, the Vaisala Group received a major contract to supply fifty Automatic Weather Stations to the Polish National Meteorological Services. Deliveries under the contract, which is valued at EUR 1.2 million, will take place in 2002.

# Strengthened position in carbon dioxide measurement

Vaisala formed partnerships with two large building automation companies. The agreements cover the distribution of Vaisala's carbon dioxide transmitters through the global distribution networks of the partners. Vaisala expects strong growth in Demand Controlled Ventilation (DCV) in the next few years.

### Vaisala introduced accredited calibrations

Vaisala expanded its services by introducing accredited calibrations for selected humidity, temperature and pressure transmitters. The accredited calibrations, which were launched in October, offer customers certified reliability of the measurement results, with traceability to international standards.

### A new division was founded

Vaisala established a new division, the Remote Sensing Division, in September. The new division develops, manufactures and markets weather observation equipment and systems which are based on the remote sensing principle. Its products include lightning detection systems and wind profilers. They are used in nowcasting and mesoscale forecasting, which will be a growing area of meteorological services in the next ten years.



# Turkish airports equipped with meteorological systems

In September, the Vaisala Group signed a contract with the General Directorate of State Meteorological Services of Turkey to supply automatic airport weather observation systems. Under the contract, Vaisala will deliver Automated Weather Observing Systems (AWOS) to ten airports, including the Ataturk International Airport in Istanbul and the Ankara Esenboga Airport. Valued at EUR 2.9 million, the deliveries under the contract will be carried out through 2002.

# Acquisition of the meteorological systems unit from Radian International LLC of USA

Vaisala Group acquired the Meteorological Systems Unit of Radian International LLC of USA in June. The unit, located in Boulder, Colorado, the USA is a worldwide market leader in wind profilers. Its sales were approximately EUR 5 million annually.

## Twenty Vaisala weather stations donated to schools

The Vaisala Group donated 20 weather stations to secondary and senior second-

ary schools in May. By doing this, Vaisala wished to contribute to the creation of a better learning environment for natural science subjects, while at the same time encouraging young people to get more interested in mathematics and the sciences.

### **Review by the President and CEO**

### Strategy

Vaisala's core business is environmental measurement, especially weather measurement, and corresponding industrial applications in which we are striving for global market leadership. Through substantial investment in R&D and close co-operation with our customers, we are developing products that lead the way in the market.

In our business, we aim to spread high-cost investments in technology or distribution channels, for example, as widely as possible. This brings economies of scale, which are vital to profitability. We place special emphasis on continuous development of our core capabilities. Cooperation with universities and research institutes is a significant means to this end. We also network actively with specialists in fields complementing our own expertise.

Our goals are an average annual growth rate of 15% and the maintenance of good profitability. We will primarily expand our product offering to our present customers, with the main expansion occurring through organic growth. We will complement our product range through corporate acquisitions in the field of environmental measurement. New businesses will also be related to this field.

### Business in 2001

All our main market areas in North America, Europe and Asia suffered recession at the same time - something that has not occurred in more than 10 years. Exchange rates did not, however, produce any great surprises. Due to the world economy, the year 2001 was clearly more difficult for Vaisala than the previous ones. The growth of our business was slender and profitability was weakened to some extent, but still remained at a good level. Net sales rose to EUR 183.5 million, which represented an increase of 2.2% on the previous year. This was mainly the result of acquisitions in 2000 and 2001. Profit before extraordinary items, provisions and taxes, was EUR 30.6 million, representing 16.7% of net sales. New orders received during the year amounted to EUR 176.3 million. The order book at the end of the year was EUR 57.8 million.

The development of our four divisions suffered due to the global stagnation. However, we were able to sustain our market position, and even to strengthen it in some fields.

The Surface Weather Division continued on the path of growth. One contributing factor was the acquisition of Impulsphysik GmbH of Germany, which took place in late 2000. Automation of surface weather observations was especially active in Poland, Romania, Brazil and Turkey. Deliveries of automatic weather stations to the U.S. Air Force increased, representing a new field for Vaisala.

The Upper Air Division maintained its strong position as market leader. Major orders were received especially from the meteorological institutes of the USA, Canada and UK. Full automation of upper air observation stations, for which we are the only suppliers in the world, continued to increase steadily.

The Sensor Systems Division maintained its position as the world market leader in relative humidity and barometric pressure measurement. However, due to the recession, the demand evened out in all market areas. In late 2001, an ammonia detector was launched. Thinfilm measurement technology has been developed on the basis of experience in humidity measurement. Thanks to active development work, new product launches from various product lines are scheduled for 2002.

In August 2001, we complemented our selection of meteorological products by acquiring the wind profiler business of Radian International. In September, a new division, the Remote Sensing Division, was founded. It focuses on radio frequency remote sensing of weather phenomena. At the end of the year, the division incorporated thunderstorm localization and wind profiler products. Our objective is to further expand the product range in the future. The division received an order from China, including the supply of a network of thunderstorm localization stations. Moreover, a long-standing cooperation contract was concluded with the National Oceanic and Atmospheric Administration (NOAA), on the development of remote sensing.

Operationally, Vaisala functions as one global company. Our processes, principles and tools are uniform all over the world. To facilitate this, we invested in unified IT systems during the year under review.

Vaisala's business is conducted by four divisions: the Upper Air Division, the Surface Weather Division, the Remote Sensing Division and the Sensor Systems Division. Each of these divisions consists of several strategic business units, which in turn have their own specific competitive strategy requiring a set of special capabilities. To develop the business means developing competence at the same time. We have created a competence management system that helps us to further develop and utilize the company's knowledge and skills.

### Outlook for 2002

At the start of 2002, the global economy is in recession and no change is visible on the horizon. This gives us cause for moderation. Thanks to our continuous development and clear focus, our competitiveness is good. For this reason, I believe that our market position will be further strengthened and growth will continue, as set out in our objectives, when global economic growth recovers.

### Thanks

I would like to extend my heartfelt thanks to our customers, partners and owners for our successful cooperation in 2001. Special thanks go to Vaisala's personnel, whose professional skill, commitment, cooperativeness and drive have once again produced good results, even under challenging circumstances.



Pekka Ketonen President and CEO

### **Meteorological Observation**

Meteorologists need a continuous stream of high-quality meteorological data to measure and explain the state of the atmosphere in order to produce accurate weather forecasts and timely weather warning bulletins. Vaisala products give them constant and reliable access to weather observation data of the highest quality.

# A constant supply of accurate meteorological data

Vaisala radiosondes accurately measure upper-air temperature, humidity and pressure in the upper atmosphere. Every day at hundreds of synoptic weather stations around the world, Vaisala radiosondes are launched at internationally agreed times to gather upper-air meteorological data.

On the ground, the radiosonde signals are received by equipment that automatically computes wind speed and direction with the aid of global navigation networks. The ground equipment also processes the data, forming weather messages that are sent on to international weather networks.

# Hurricane and typhoon hunting

The combination of the Vaisala AVAPS system and RD93 Dropsonde is the

latest in hurricane hunting technology. Installed on various types of aircraft, it offers the meteorological community a complete solution for accurate in situ measurement of the atmosphere.

# Meeting the need for automation on land

Many countries are seeking new ways to automate their synoptic weather observation activities. The Vaisala AUTOSONDE System is meeting this need on land in inaccessible regions. AUTOSONDE automates upper-air soundings from start to finish: it launches radiosondes, receives their signals, processes the meteorological data into weather messages, and forwards the messages to the national weather network.

When surface weather has to be measured in hard-to-reach areas, the Vaisala MILOS 520 is the ideal automated surface weather station.

# Meeting the need for automation over sea

To meet the need for automated weather observation over the oceans, the semiautomatic Vaisala ASAP Station has been installed on a number of merchant vessels participating in the Automated Shipboard Aerological Program (ASAP). The upper-air meteorological data Meteorology is the study of the atmosphere and its phenomena. Synoptic meteorology is the study of atmospheric conditions over a large geographic area using charts on which synoptic observations are plotted for the purpose of weather analysis and forecasting.



To forecast the weather, national weather services the world over launch Vaisala radiosondes every day to collect synoptic upper-air data.

gathered by these vessels is critical to improving our understanding of global weather patterns.

### Lightning protection

Many areas of the world regularly experience electrical storms. In these areas, a growing number of aviation authorities, power companies and other organizations are calling on Vaisala's Total Lightning Localization and Thunderstorm Forecasting System, SAFIR, for thunderstorm nowcasting and dynamic lightning protection.





The World Meteorological Organization (WMO) has performed a number of international, objective comparisons of radiosonde performance. Although the results are always open to interpretation, it is commonly acknowledged that the Vaisala RS80 and RS90 radiosonde families set the benchmarks for accuracy and reliability in upper-air weather observation.

### **Aviation Weather Observation**

**Rumway visual range (RVR)** is defined as the maximum distance along a runway at which the runway lights are visible to a pilot after touchdown. RVR values are often used in operational decisionmaking.

Aviation authorities are governed by international regulations and recommendations. Stringent safety standards are in place for every aspect of civil aviation, including weather observing facilities. Vaisala provides aviation authorities with one of the cornerstones of passenger safety: accurate automated weather observing systems.

### The most trusted AWOS

The MIDAS IV Automated Weather Observing System (AWOS) covers every size and category of airport – from the smallest airfield or heliport to the largest international airport.

MIDAS IV gives airport meteorologists and air traffic controllers a sophisticated integration of three areas: excellent sensor technology for accurate weather



*Vaisala is the world's leading provider of airport weather observing systems.* 



The Vaisala Aviation Weather Reporter AW11 is the ideal automatic weather station for unmanned airstrips, small airports and heliports.

observation; reliable meteorological data handling and management; a well-considered presentation of realtime meteorological data. MIDAS IV conforms to all applicable International Civil Aviation Organization (ICAO) regulations and World Meteorological Organization (WMO) recommendations.

# Runway ice detection and prediction

To avoid costly air traffic delays in winter, airport maintenance organizations need to keep runways and taxiways clear of ice and snow. The Vaisala ROSA Road Weather Station, Road/Runway Surface Sensor (DRS511), IceCast System and Thermal Mapping service give them everything needed to prevent pavement icing by treating the airport proactively with anti-icing chemicals.

### A range of optical sensors

For runway visual range (RVR) measurement, Vaisala offers the very accurate, field-proven MITRAS Transmissometer and the new forward scatter FS11 Visibility Sensor. The fully automatic, self-monitoring Vaisala CT25K Laser Ceilometer is the world's de facto standard for measuring cloud height/layers and vertical visibility. Finally, the Vaisala FD12P Weather Sensor is used at many airports for present weather identification and visibility measurement.





In recent years, the forward scatter type of visibility sensor has been gaining ground for runway visual range (RVR) applications. Vaisala's new FS11 Visibility Sensor is a forward scatter sensor that meets the specifications set for visibility measurement in civil aviation.

### **Tactical Weather Observation**

Defense forces around the world use Vaisala weather observation systems in a wide range of tactical operations – in all weather and every climate.

# Tactical upper-air weather observation

Upper-air wind speed and direction, pressure, temperature and humidity can have a great effect on artillery operations. For tactical support, a typical Vaisala upper-air weather observation system will consist of a Sounding Workstation (DigiCORA III), a Vaisala



*The Vaisala Radiotheodolite (RT20) is a passive and independent system.* 

Radiotheodolite antenna and radiosondes. This system is independent, passive and portable.

In most cases, just two operators are needed to deploy the system and launch radiosondes. The DigiCORA III Sounding System automates the sounding process from beginning to end. The raw weather data sent by the radiosonde is received and processed automatically, to generate weather messages in standard meteorological formats.

### TACMET - basic and enhanced

The Vaisala Tactical Meteorological Observation System (TACMET) is very compact, easy to deploy, and built to last. In its basic configuration, TACMET has sensors that measure wind speed and direction, barometric pressure, air temperature, relative humidity and precipitation.

TACMET is also available in an enhanced version for air force units. The enhanced TACMET has sensors that measure the essential parameters for mobile air force units: cloud height and cover, visibility, present weather and lightning activity.

### An "independent" tactical weather

observation system does not rely on an outside navigation system, such as a satellite network, for calculating wind direction and speed.

*A "passive" tactical weather* system does not emit radio energy.

such as that emitted by radar systems, which can be tracked back to their source.



Naval operations depend on shipboard radar systems to monitor the environment around vessels at sea. Under certain weather conditions, the shipboard radar may not provide reliable information. The Vaisala RK91 Low Altitude Rocketsonde is used to gather the atmospheric pressure, temperature and humidity data needed to understand the behavior of radar and microwave communication signals.





In tactical applications, accurate data on meteorological conditions is needed. A typical Vaisala upper-air tactical weather observation system will comprise a Radiotheodolite, radiosondes and the DigiCORA III Sounding System.

### **Traffic Weather Observation**



The Vaisala Rail Weather System helps railway operators, maintainers and train operating companies to run their service more efficiently in the face of bad weather.

When bad weather strikes, the degree to which society depends on its roads, railways and airports can be seen by all. Road authorities, railway operators and airport maintenance organizations must be prepared. They need a constant flow of accurate weather information to keep their roads, railways and runways safe.

Vaisala provides them with specialized weather observation systems and winter maintenance consulting services. Our customers are achieving notable successes in improving safety, cutting costs and reducing the impact of winter road maintenance on the environment.

### The Vaisala IceCast System

When hazardous road, runway or railway conditions are detected as they develop,

anti-icing and other maintenance operations can be improved radically. The Vaisala IceCast System gives road authorities accurate real-time weather information, necessary to make the correct maintenance management decisions and minimize the effects of adverse weather. A typical IceCast configuration will comprise Vaisala ROSA Road Weather Stations and IceCast automated data collection and display software.

### Road Weather Stations at the roadside

With Vaisala Road Weather Stations at the roadside, our customers know when and where surface weather conditions are changing. They can therefore plan road/runway maintenance proactively, improving the effectiveness of their antiicing activities and cutting operational costs. When interfaced with Vaisala ROSAs, the IceCast system brings together road/runway surface measurements and meteorological information to deliver early warning of hazardous surface conditions.

### Right in the road

In the road environment Vaisala surface sensors are installed in the wheel tracks, the most critical area of vehicle contact **"Black ice"** is one of the more treacherous road surface conditions a driver can encounter, especially at night when it is almost impossible to spot. It is actually a thin, transparent coating of ice that can form when roadside snowbanks thaw and refreeze, or when freezing drizzle or rain splatters when it hits the road surface.

with the road. When connected to a Vaisala ROSA Road Weather Station, the Vaisala DRS511 Road/Runway Surface Sensor reports the presence of ice (black ice included), measures surface and ground temperature, calculates the quantity of de-icing chemical and depression of freezing point, and directly measures water layer thickness using patented optical technology.

### Better winter road maintenance

Vaisala offers two main types of maintenance consulting services, Thermal Mapping and Route Optimization. Thermal Mapping is a method of quantifying temperature differences across a road network.

Route Optimization brings together Thermal Mapping and other meteorological information, taking the operational realities of the road authority into account. Selective treatment routes are designed with the customer, resulting in an average reduction of 30% in the number of treatment routes.



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Using Thermal Maps, road authorities can plan anti-icing maintenance strategies which cover only those roads – and road sections – that are most likely to freeze in winter.

### Meteorological and Climatological Research

When it comes to climate change and the weather, we are all in it together. Much of the global effort to study and sustain our living planet focuses on the Earth's atmosphere: its composition, the physics and chemistry of clouds, tropical meteorology processes, and the forecasting of extreme weather and its socio-economic effects. Much research is also devoted to improving the accuracy, range and scope of dayto-day weather forecasting.

Success depends to a large degree on expanding the coverage of weather observation networks, and on the quality of weather data. This is where Vaisala plays an important role.

### In the front line

Vaisala products give weather researchers access to weather data of the highest quality.

The high-quality pressure, temperature and humidity measurements provided by Vaisala radiosondes are used in the front line of research on weather and climate change. Vaisala ozonesondes have long been used to gather vertical profiles of atmospheric ozone, and measure pressure,



The Vaisala LAP<sup>®</sup>-3000 Lower Atmosphere Profiler is a Doppler radar. When combined with a Radio Acoustic Sounding System (RASS) it provides vertical profiles of borizontal wind speed and direction, and vertical wind velocity to an altitude of 3 km.

temperature and humidity. The Vaisala Radioactivity Sonde samples radioactivity accurately and provides conventional upper-air measurements. This is an important ability for those researching how radioactivity disperses and decays in the atmosphere.

The Vaisala AVAPS system and RD93 Dropsonde are familiar to researchers manning the special aircraft used to "hunt" hurricanes over the Gulf of Mexico and America's Atlantic seaboard. The RD93 is used routinely off the west coast of the USA to improve the forecasting of winter storms. *Climatology* is the study of the mean physical state of the atmosphere together with its statistical variations in both space and time, as reflected in the behavior of weather over a period of many years.

### In the boundary layer

The boundary layer is the layer of the atmosphere in which almost all interactions between the atmosphere and humans take place.

The Vaisala Tethersonde<sup>®</sup> Meteorological Tower (TMT) System is used by organizations researching the atmosphere's planetary boundary layer. The TMT System gives them detailed profiles of the boundary layer, composed of temperature, humidity, pressure, wind speed and direction measurements. These profiles are indispensable in meteorological, air pollution, acoustic, agricultural and forestry research.

The behavior of wind and temperature is central to the study of air pollution and the development of mesoscale forecasting and urban airshed modeling techniques. The Vaisala LAP<sup>®</sup>-3000 Lower Atmosphere Profiler with Radio Acoustic Sounding System (RASS) provides critical profile data for scientists studying these and other areas.





The Vaisala LD-40 "Tropopauser" is a long-range ceilometer for cloud detection up to bigh cirrus and atmospheric profiling. It offers reliable cloud detection under all kinds of precipitation.

### Land and Water Resource Management

Society depends on the skills of its water resource management agencies to measure the amount and control the behavior of bodies of water. Vaisala meets their need for monitoring water and precipitation levels with hydrology networks incorporating advanced satellite communications. Vaisala's automated hydrometeorology stations provide a complete set of accurate sensors for use in flood and tsunami warning, and water management among other applications.

# Importance of modern telemetry

Water resource management agencies rely on modern telemetry to manage hydrological data and respond to emergencies such as flooding. As the



Flood alert warnings require accurate weather data.



*Fire weather data is critical in fighting forest fires.* 

Vaisala hydrometeorology stations measure the rising water levels, they automatically transmit data to emergency response units via satellite, telephone and/or real-time VHF/UHF radio.

# Forest fires create their own weather systems

Land resource management agencies are responsible for forest and open land management and conservation. Meteorological information is vital to them, particularly in preventing the spread of wildfires, because forest *Hydrology*, one of the core disciplines of hydrometeorology, is the science that deals with the waters above and below the land surfaces of the Earth, their occurrence, circulation and distribution, their biological, chemical and physical properties, and their reaction with their environment.

fires create their own weather systems. These agencies use Vaisala automatic weather stations (AWSs) to measure and monitor the conditions that fuel forest fires. Fire control personnel receive voice broadcasts of fire weather data in real-time, allowing them to anticipate the movement of fires and make the right fire control decisions.

### GOES to the customer's PC

In areas of the world serviced by the Geostationary Orbiting Environmental Satellite (GOES), land and water resource management agencies are installing Vaisala Direct Readout Ground Stations (DRGSs). With Vaisala DRGSs, they receive hydrometeorological data from the GOES directly to their office PCs for a total network solution.





Certain water resource management agencies need real-time hydrometeorological data to monitor the hydrologic control structures of locks, dams, gate operated structures and reservoirs. The Vaisala RAWS Automated Weather System offers flexible meteorological data collection and allows the integration of different meteorological sensors depending on the application.

### **Relative Humidity Measurement**

### Relative humidity (RH) is

defined as the ratio of the partial water vapor pressure to the water vapor saturation pressure at the temperature of the air or gas. When saturated, the relative bumidity of the air is 100 %.



Continuous monitoring of moisture in a paper machine's lubrication system helps prevent breakdowns and unscheduled downtime.

Humidity has significant effects on our environment. Humidity measurement gives us an opportunity to control these effects.

# Optimized humidity for the wellbeing of people

The significance of indoor air quality to our health is now well-established. People work best and feel most comfortable at certain humidities and temperatures – and if these become excessively high or low, they feel discomfort. Mold and fungi, on the other hand, thrive at high humidities. Therefore, mold growth may become a problem in construction materials where high humidities and insufficient ventilation occur.

# Aiming for high quality and energy savings

As most materials are hygroscopic, their water content always tries to reach equilibrium with the surrounding relative humidity. Thus each material has its own ideal storage humidity which should be maintained. Too dry or too humid conditions can destroy the material.

In many production processes the correct measurement and adjustment of humidity is extremely important for sustaining the high quality of products and the correct level of energy consumption. The right humidity makes it possible to optimize energy consumption and improve end product quality as well as product yield.

Vaisala has been a pioneer in the development of relative humidity sensors ever since 1973, when the world's first capacitive thin-film humidity sensor HUMICAP<sup>®</sup> was launched. Products based on HUMICAP<sup>®</sup> Sensors are used in industrial, building automation, meteorological and agricultural applications.

### New developments

The HMT360 Intrinsically Safe Humidity and Temperature Transmitter was granted the ATEX100a approval, a new



Art collections are best preserved in a humidity-controlled environment.

European standard for electrical equipment intended for use in potentially explosive environments. The standard will be exclusively applied in the European Union as of July 1, 2003. Correspondingly, the transmitter was granted FM approval in the United States and TIIS approval in Japan. The SAA approval in Australia is pending.

Vaisala also introduced accredited calibrations for customers requiring certified reliability from their humidity, temperature, or pressure measurement instrument.





Vaisala's humidity transmitters have been designed for use in demanding industrial applications, where humidity control is important. The HMT360 Series Intrinsically Safe Humidity Transmitters are suitable for explosive environments such as some car painting lines.

### **Dewpoint Measurement**

**Dewpoint** temperature is the temperature at which condensation begins, or at which the relative humidity would be 100% if the air were cooled.

A glass of cold water provides a practical example of dewpoint temperature. Since the glass conducts heat fairly well, it cools to almost the same temperature as the water. If the temperature of the glass is below the dewpoint temperature of the surrounding air, the air around the glass will become saturated with water vapor and the excess water will condense on the surface of the glass. These small water droplets are called dew.

# When dry conditions are important

Dewpoint is measured in processes where the formation of dew can be a problem. Dewpoint measurement is a preferred method for measuring humidity in dry conditions, because



Dew forms when the air is saturated with water vapor.

in this case the measurable changes in the dewpoint temperature are too small to be measured accurately with normal relative humidity technologies. In addition, dewpoint temperature does not change if the temperature of the gas changes. These features have contributed to the popularity of dewpoint measurement in industrial processes such as metal treatment, plastic drying and compressed air systems.

### Proven sensor technology

In 1997, Vaisala introduced the DRYCAP<sup>®</sup> Sensor – a new type of dewpoint sensor technology combining the proven characteristics of polymer sensors with a far wider operating range. DRYCAP<sup>®</sup> products can be used for humidity measurement in very dry environments and in temperatures of up to 350 °C where humidity levels are typically low.

### New products

In 2001, Vaisala introduced the DM70 Hand-held Dewpoint Meter. With this hand-held meter Vaisala expands its dewpoint product range from



Plastic drying before molding is a common application for dewpoint measurement. Excess moisture in the molding process can cause imperfections in the end products.

fixed process transmitters to portable applications. Typical applications of the DM70 are, for example, spot measurements in compressed air lines, plastic dryers and other dry gas applications. The DM70 can also be used as a tool for reading the output of Vaisala's fixed dewpoint transmitters.





Dew formation should be avoided in compressed air pipelines. Moisture can disturb the process in many ways and cause the equipment to deteriorate. The DM70 Hand-beld Dewpoint Meter can be used to spot-check the dryness of compressed air at several locations in the compressed air pipeline.

### **Barometric Pressure Measurement**

**Barometric pressure** is defined as atmospheric pressure, i.e. the force exerted on a surface of unit area due to the weight of the air column above. Barometric pressure varies normally between 950 - 1050 hPa at sea level.



Accredited calibrations offer customers certified reliability of the measurement results.

### Forecasting the weather

Barometric pressure is one of the most important parameters in weather observation, as the movement of pressure fronts indicates the movement of weather fronts. Weather stations almost always include a barometer, be they manned or unmanned. Barometers are also used in data buoys and ships at sea.

Hydrological and ground water applications need information on barometric surface pressure to take into account the effect of the hydrostatic pressure of air in different areas.

### Better performance through barometric pressure measurement

Barometric pressure influences other physical and industrial processes as well. For example, the wavelength of light in a laser interferometer system changes with the refractive index of air, which is actually a function of air pressure. Engine performance is also affected by air intake pressure.

Aircraft altitude can be calculated from atmospheric air pressure with aircraft altimeters adjusted according to air pressure readings reported by airports. The accuracy of the Global Positioning System (GPS) is affected by atmospheric air pressure. System accuracy may be enhanced by barometric pressure information at the GPS receiver antenna level.

Vaisala barometers use the BARO-CAP<sup>®</sup> Pressure Sensor developed in-house for barometric pressure measurement applications. We offer a wide range of barometers and supporting products for different measurement needs in both meteorological and industrial applications.



Vaisala's products can be incorporated into data buoys to report barometric pressure at sea. The data may be transferred via satellites.

# Accredited calibrations for certified accuracy

In 2001, Vaisala expanded its calibration services by offering accredited calibrations for selected pressure transmitters. Accredited calibrations offer customers certified reliability of the measurement results, with traceability to international standards.





Barometric pressure is one of the most important parameters in weather observation. Vaisala's barometric pressure products such as the PTB220 Series Digital Barometers offer the customer high accuracy and stability in pressure measurement.

### **Carbon Dioxide Measurement**



Carbon dioxide can be used as a fertilizer to promote plant growth in greenhouses. Vaisala's GMT220 Carbon Dioxide Transmitter makes sure the CO<sub>2</sub> concentration is at the right level.

People not only adapt to different environments, but also create entirely new ones – as in greenhouses, botanical gardens or office buildings. Good indoor air quality is essential for our wellbeing. A high  $CO_2$  level is usually a sign of poor ventilation and odors or other pollutants in the indoor air.

# Good air quality and energy savings

By controlling ventilation according to  $CO_2$  levels, the indoor air can be kept fresh with no waste of energy. In offices, schools, lounges and other buildings where the need for ventilation varies widely during the day, carbon dioxide-based Demand Controlled Ventilation can be used to save energy and ensure a healthy indoor environment.

### Safe carbon dioxide levels

Carbon dioxide can be a safety hazard. When  $CO_2$  concentrations rise, people start to feel tired and listless. Very high concentrations can lead to unconsciousness or even death. Applications where carbon dioxide can rise to dangerous levels include the carbonated drinks and brewing industries, frozen food industries where dry ice is used, cold storage facilities, cargo ships and, of course, industrial plants where  $CO_2$  or dry ice is produced or handled.

### CO<sub>2</sub> enhances plant growth

On the positive side, carbon dioxide enhances plant growth and raises crop productivity and quality. Therefore, precise control of the  $CO_2$  concentrations in greenhouses, for example, leads to better growth and improved productivity.

Vaisala's CARBOCAP® technology

**Carbon dioxide (CO<sub>2</sub>)** is one of the most common gases in our atmosphere. It is formed during the breathing of humans and animals, in fermentation and decomposition processes and during the burning of fossil fuels.

is ideal for measuring carbon dioxide. Transmitters based on this technology offer reliable and stable performance with little or no maintenance.

### New products

In 2001 Vaisala introduced the new GM70 Hand-held  $CO_2$  Meter for spotcheck measurements. It is the latest product in the family of hand-held instruments, which also includes the DM70 Hand-held Dewpoint Meter. The GM70 is aimed at several carbon dioxide spot-check applications including greenhouses, laboratories, demandcontrolled ventilation and industrial health investigations. The meter is also ideal for the field-check of other carbon dioxide transmitters.





Ventilation is especially demanding in buildings that are occasionally packed with people and empty at other times. Carbon dioxide is a good indicator of indoor air quality. The GM70 Hand-held  $CO_2$  Meter is suitable for demanding spot measurements.

### Ammonia Measurement

Ammonia (NH<sub>3</sub>) occurs in gaseous form under normal atmospheric conditions. It is produced both industrially and in biological processes. Ammonia is a bazardous chemical.

# Ammonia leak detection for safety

Ammonia has been used for refrigeration throughout the last century in a variety of industrial applications such as cold stores, ice cream plants, breweries, ice rinks, etc. Ammonia is considered to be one of the environmentally-friendly refrigerants, since it does not deplete the ozone layer nor contribute to global warming. However, because it is a hazardous chemical, ammonia must be monitored and the alarm must be given if there are leaks in the system. Typical symptoms of ammonia exposure are irritation of the eyes, throat and respiratory organs. With a reliable ammonia sensor, ammonia-based refrigeration systems provide safe, efficient and environmentally-friendly cooling.



The AMMONICAP<sup>®</sup> Sensor is specific to ammonia. False alarms caused by other odors are not a concern.

Another application where ammonia is commonly measured is air quality monitoring in livestock husbandry (e.g. cattle, pig and poultry farming).

### No false alarms

In 2001, Vaisala entered the ammonia sensing market with advanced AMMO-NICAP<sup>®</sup> technology. The polymer thin film AMMONICAP<sup>®</sup> Sensor has a long lifetime and operates over a wide temperature and humidity range. In addition, the sensor recovers well from exposure to ammonia. The sensor is highly specific to ammonia, which reduces costly false alarms. In addition, the sensor recovers well from exposure to ammonia. The sensor addition, the sensor recovers well from exposure to ammonia. The sensor also operates without oxygen, which makes it ideal for use in controlled atmospheres such as fruit storage facilities.

### New products

Based on the new AMMONICAP<sup>®</sup> technology, Vaisala launched a family of ammonia detectors. The AMT100 Series Ammonia Detectors provide continuous monitoring of ammonia gas leaks in unmanned compressor rooms and refrigerated stores. The AMT100



Ammonia is a common refrigerant at ice-rinks.

series consist of two models; the basic ammonia detector AMT101 and AMT102 fitted with additional alarm relays. The detectors provide a reliable method for ammonia leak detection both indoors and outdoors.





Photo courtesy of Huurre Group, Finland

The AMT100 Series Ammonia Detectors are designed to meet the need for detecting ammonia leaks in cold stores.

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### Personnel and Competence Development



We put special emphasis on teamwork and its development, e.g. team self-assessment and interaction skill training.

As in previous years, we actively developed our core competencies in 2001. This was expressed in our strategy work and business unit-specific development programs. We also defined Group-wide Human Resources (HR) principles based on our corporate values. The development of Vaisala Group's HR processes continued throughout the year in accordance with the personnel strategy.

### Personnel

At the end of 2001 Vaisala had 1125 employees, which represented a growth of 82 people from the previous year. In Finland, we recruited 58 people. We offered summer jobs or internships to more than 60 students. More than half of our personnel have technical qualifications, while the next most common field of education is science. Some 20 percent have commercial qualifications. The high educational level of our employees is reflected in the fact that almost half have a university degree including many at the doctoral level. 75 percent are white collar employees, while 33 percent are women. The average age of our personnel is 39 years.

# Competence system as the basis for continuous learning

The definition of core competencies was further developed and integrated with the annual strategy process. On the basis of the Group-wide competence system, we defined business unit-specific competence models that take the special needs each business into account. Thus, Vaisala's core competencies were refined at both the strategic level and the team/individual level.

### In-house development programs

We encouraged continuous learning on the job through a number of internal business development programs. The most extensive of these related to the development of the sales and delivery process for weather observation products.

In the fall of 2001 the fourth Vaisala Business Learning Program was started, while the Project Manager Training Programs also continued throughout the year. The Supervisor Training Program at the Helsinki office was mainly directed at new supervisors. Teamwork was also actively and systematically developed in the production unit. The focus was on interpersonal skills and on implementation of the Team Barometer self-assessment method, designed to improve internal team operations.

A Meteorology Professional Development (PD) Program, designed to support our application expertise, was started in March 2001. Employees have actively taken part in training programs enhancing professional competence and product and application knowledge.



# Incentive schemes further developed

The development of performancebased incentive schemes and the related key figures continued. Efforts were directed at developing both Group-level systems and systems for smaller target groups.

### Findings of the personnel survey

In the Group-wide personnel survey we studied our operations under four indexes: work satisfaction, quality of operations in the work community, learning and development and Vaisala's employer image. In all domains, there was positive development compared to the previous year. On the basis of the feedback received, development measures were directed at the quality of operations and leadership.

### Positive employer image

We invested in positive employer image by participating in several recruitment





### Area of education



General programs 20% Commercial, Social Science 19% Technology, Science 58% Other professional 3%





Intense R&D activities characterize Vaisala.

events during the year and by cooperating with educational institutes. Among others, these measures have improved our ranking in several employer image surveys.

### IT systems development

Active development of IT systems continued. The Platform One project, which covers enterprise resource planning, product data management and reporting for global processes, continued as planned in 2001 and was introduced in production in several locations. This project will bring global uniformity to our operating processes and the related IT systems. Moreover, it will improve the transparency of our delivery chain globally and provide a platform for system extension.

External and internal communications were enhanced by an internet/ intranet system whose development continued throughout the year. A new web site based on a new content production and publishing system was introduced in August 2001. Vaisala's environmental measurement products and systems have great potential for positively affecting the environment. For example, Vaisala's ice warning and prediction systems enable customers to reduce their use of de-icing chemicals on roads and runways, with positive consequences for ground water resources.

# Tightening environmental legislation in the European Union

The member countries of the European Union (EU) are tightening their environmental legislation for electrical and electronic equipment manufactured and sold for the EU market. The EU is currently preparing three new environmental directives related to all new electrical and electronic equipment:

- WEEE Directive on Waste Electrical and Electronic Equipment
- RoHS Directive on the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment
- EEE Directive on Electrical and Electronic Equipment

When these directives come into force and are integrated into national legislation, producers will be responsible for financing the costs of the collection, treatment, recovery and environmentally sound disposal of equipment manufactured and sold. Hazardous substances will be forbidden in new electrical and electronic equipment. Heavy metals (lead) and some flame retardants, presently used in electronic assemblies, component boards, plastic boxes and plastic housings, will be eliminated in future designs. In practice, Life Cycle Analyses and Design for Environment principles must be applied in product designs.

Vaisala is committed to sustainable development and to taking environmental questions into consideration in both its own operations and the products and services it offers to customers.

# Competitive environmental performance

Vaisala's aim is to prepare for the requirements of new environmental directives, laws and regulations covering our business in good time. Our aim is to introduce environmentally sound new products, which also meet the requirements of the new EU directives for electrical and electronic equipment. We cooperate with component and subassembly suppliers and subcontractors to facilitate their contribution to the mutual effort to comply with the requirements of the new directives.

Vaisala is currently creating a basic environmental management system that complies with ISO 14001. This work is scheduled for completion by the end of 2002. When complete, the system will allow us to analyze, measure and reduce the company's environmental impact, including the pollution and waste produced by our own processes, products and packaging materials. Our use of packaging materials is already reported annually to the Environmental Register of Packaging PYR Ltd.

Vaisala's products conform to international regulations and directives. The company complies with EU directives in force on machines, electromagnetic compatibility (EMC) and low voltage, international radio frequency regulations, air traffic safety regulations and regulations on packaging materials waste management and recycling.



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### Financial Reporting

This Vaisala Group 2001 brochure and Financial Statements 2001 are also available in Finnish.

Vaisala Oyj will publish three Interim Reports in Finnish and in English in 2002:

Interim Repo	rt 1.1 31.3.2002
	May 3, 2002
Interim Repo	rt 1.1 30.6.2002
	July 31, 2002
Interim Repo	rt 1.1 31.9.2002
	October 30, 2002

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The Annual Report, Interim Reports and all stock exchange releases will also be published at Vaisala's website, www.vaisala.com.



441 046 Printed matter

### **Board of Directors**















Chairman Raimo Voipio, b. 1955 M.Sc. (Eng.)

Vice Chairman Yrjö Neuvo, b. 1943 Ph.D (EE) Executive Vice President, Nokia Group

Member Pekka Hautojärvi, b. 1944 Professor Helsinki University of Technology, Laboratory of Physics

Member Matti Ilmari, b. 1942 D.Sc (h.c.) Group Senior Vice President, ABB

Member Mikko Voipio, b. 1960 M.Sc. (Eng.)

Member Gerhard Wendt, b. 1934 Ph.D

President and CEO, Vaisala Group Pekka Ketonen, b. 1948 M.Sc. (Eng.)

Secretary, Jussi Mykkänen, Licentiate of Technology, MBA Research Director, Vaisala Group

### **Corporate Management Group**



Chairman Pekka Ketonen President and CEO



Steven Chansky Regional Manager, US, Canada, Mexico



Walt Dabberdt Director, Strategic Research







Olli Karikorpi Director, Finance

Vesa Laisi

Director.

Weather Observation

Sales and Marketing (until April 2, 2002)

Jussi Mykkänen

Director,

Research



Kenneth Forss Director, Sensor Systems Division







Nina Andersin, Secretary to

Corporate Management

Secretary

Hannu Tuominen

Director, Surface Weather Division



Tiina Hansson Director, Corporate Communications



Marja Happonen Director, Human Resources



Martti Husu. since 4/2001 Director, Remote Sensing Division







Jussi Kallunki Director, IS Development

Jan Hörhammer Director,

Upper Air Division

(as of April 1, 2002 Director, Weather Observation Sales and Marketing)

# Administration





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# Financial Statements 2001



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This Financial Statements 2001 brochure and the Vaisala Group 2001 together form the Vaisala Annual Report 2001. To order the Vaisala Group 2001, please contact Vaisala Corporate Communications at, tel. +358 9 8949 2744 or info@vaisala.com.



### Board of Directors' Report 2001

#### Net sales and order book

The Vaisala Group's net sales grew by 2.2% to EUR 183.5 million in the review period, compared to EUR 179.5 million in the previous fiscal year. The weak development of the world economy was reflected in demand in all the divisions and in all the main market areas. The Group managed to maintain or increase its market shares in all the main markets. Operations outside Finland generated 96.2% of the Group's net sales. The order book stood at EUR 57.8 (57.3) million at the end of the review period. The value of new orders received during the year was EUR 176.3 (176.7) million.

### Income statement and balance sheet

The operating profit for the fiscal year before extraordinary items, provisions and taxes amounted to EUR 30.6 (33.7) million, representing 16.7% (18.7%) of the net sales. Apart from the effects of recession, the net income was weakened by investments made during the last few years in the development of the Group's business activities, such as acquisitions and investments in information systems. Goodwill depreciation due to acquisitions totaled EUR 3.8 (3.7) million. Return on investments was 22.9% (28.2%) and earnings per share reached EUR 1.21 (1.34). Direct taxes for the fiscal year totaled EUR 9.9 (10.7) million. The solvency ratio during the fiscal year was 82.9% (78.2%). Research and product development expenditure during the fiscal year totaled EUR 18.9 (17.2) million, representing 10.3% (9.6%) of net sales.

#### Capital expenditure

Gross capital expenditure totaled EUR 12.1 (14.7) million in the review period. In June, Vaisala acquired the United States based Radian International LCC's Meteorological Systems Unit. The Unit is located at Boulder, Colorado, in the United States. The Unit is

the world market leader in wind profilers and its annual sales amounted to about EUR 5 million.

Other investments were mainly focused on business premises and information systems, and machinery and equipment for production and R&D.

#### Share performance (€)

During y	ear 2001		
Highest	Lowest	31.12.2001	31.12.2000
36.25	23.80	27.30	29.50

#### **Business performance**

Vaisala has four divisions specializing in environmental measurements: the Upper Air Division, the Surface Weather Division, the Remote Sensing Division and the Sensor Systems Division.

#### **Upper Air Division**

The Upper Air Division develops, manufactures and markets instruments and systems for observing the weather in the upper atmosphere. The division's main products are radiosonde and dropsonde instruments and related ground equipment for collecting and processing the information gathered by the radiosondes. The division's core customers are meteorological institutes, meteorological research organizations and defense forces.

The Division's net sales totaled EUR 69.6 million, compared to EUR 72.0 in the previous fiscal year. The Division's operating profit remained good.

During the review period the Division received numerous orders for radiosondes from its long-term customers such as the United States National Weather Service and the Meteorological Offices of Canada and the United Kingdom. Many customers have signed contracts for the supply of radiosondes over several years. The Division also supplied a number of fully automatic AUTOSONDE Sounding Stations in 2001. The DigiCORA III Sounding System that was introduced in 2000 has replaced the earlier versions of this system. Also, the demand for the radiotheodolite designed for the weather measurement requirements of defense forces has continued during the review period.

#### Surface Weather Division

The Surface Weather Division develops, manufactures and markets meteorological sensors and systems that are used by its customers to observe weather conditions near and on the Earth's surface. The division's main products are automatic weather stations, road and aviation weather systems, and meteorology sensors and displays. Its core customers are meteorological institutes, aviation authorities, road authorities, defense forces, land and water resource management agencies and industrial companies.

The Division's net sales in 2001 totaled EUR 65.0 million, compared to EUR 62.8 million in the previous fiscal year. The Surface Weather Division increased its market share during the review period and it is a world market leader in the following surface weather observation applications: aviation and road traffic weather systems and tactical and synoptic weather observations.

During the review period the Division signed a number of significant contracts including the supply of ten (10) automated aviation weather observing systems to Turkey, the supply of an automated weather system to the Helsinki-Vantaa Airport and the supply of surface weather stations to Poland, Romania and Brazil.

The Division continued with its significant investment program in research and product development. This produced numerous new versions of the system products, automatic weather stations and equipment, including a ceilometer with an extended measurement range and a visibility meter for runway visual range measurement.

#### Development of net sales (M€)



### Profit before extraordinary items, provisions and taxes (M€)



#### Order book Dec. 31 (M€)



#### Remote Sensing Division

The Remote Sensing Division founded in September 2001 develops, manufactures and markets wind profilers and thunderstorm localization systems that represent the technologies acquired by the Group through acquisitions (Dimensions in 2000, Radian in 2001). Vaisala established the Remote Sensing Division in order to strengthen and to utilize the Group's expertise in the field of remote atmospheric measurement technology.

Remote sensing is a growing area in aviation, meteorology, climatology, hydrology and air quality research. The Division's customer groups include meteorological and climatological research institutes, authorities monitoring air quality, civil aviation authorities and suppliers of electricity.

The Division's net sales totaled EUR 3.8 million.

#### Sensor Systems Division

The Sensor Systems Division develops, manufactures and markets electronic measurement instruments for the measurement of relative humidity, dewpoint, material moisture, barometric pressure, carbon dioxide and ammonia. The Division's products are used to control production processes and equipment performance, to maintain safety and to measure human and product environments in industry, meteorology and metrology.

The Division's net sales totaled EUR 45.1 million, compared to EUR 44.7 million in the previous fiscal year. The operating profit remained good.

The Division entered the ammonia sensing market by launching a new ammonia detector. The detector, based on Vaisala's polymer thin-film technology, creates safer conditions in storerooms and other places where there is a risk of ammonia leaks. The ammonia detector is expected to help Vaisala gain entry to this growing market. The Division also launched hand-held meters for both dewpoint and carbon dioxide measurement in spot-check applications.

After Sales expanded its calibration services by offering accredited calibrations for selected humidity, temperature and pressure transmitters. Accredited calibrations offer customers certified reliability of the measurement results, with traceability to international standards.

Vaisala strengthened its position in carbon dioxide measurement by concluding agreements with two large building automation companies. The agreements cover the distribution of Vaisala's carbon dioxide transmitters through the global distribution networks of the partners. Vaisala expects strong growth in Demand Controlled Ventilation (DCV) in the next few years.

#### Personnel

During the review period the Vaisala Group employed an average of 1115 (1016) people, 740 (687) of whom worked in the parent company and 375 (329) in the subsidiaries. At the end of the fiscal year the number of personnel employed by the Group was 1125 (1043), 734 (676) of whom worked in the parent company and 391 (367) in the subsidiaries.

#### Salaries

During the review period, the parent company paid salaries totaling EUR 316 (359) thousand to the members of the Board of Directors and to the President & CEO, and EUR 24,444 (25,476) thousand to the rest of the personnel. Salaries paid to the Group Management totaled EUR 1,325 (1,335) thousand and salaries to the rest of the Group personnel EUR 45,174 (42,727) thousand.

### Board of directors, president & CEO and auditors

The Annual General Meeting held on 15 March 2001 re-elected Yrjö Neuvo, Ph.D. (EE), Executive Vice President and Chief Technical Officer, and Gerhard Wendt, Ph.D., to the Board of Directors. The other members of the Board of Directors are: Raimo Voipio, M.Sc. (Eng.), who also acts as Chairman of the Board of Directors, Matti Ilmari, D.Sc. (h.c.), Professor Pekka Hautojärvi and Mikko Voipio, M.Sc. (Eng.). The President & CEO is Pekka Ketonen, M.Sc. (Eng.). The Group's auditors are SVH PricewaterhouseCoopers Oy, Authorized Public Accountants, and Jukka Ala-Mello, APA.

#### Other events

In April 2001, a total of 28,000 and in July a total of 7,000 Series A shares were subscribed for with Series A warrants attached to Vaisala's 1997 Bond Loan.

The shareholding of the Finnish Academy of Science and Letters in Vaisala Oyj fell below 10%.

After the merger between the Sampo-Leonia Oyj insurance company and Mandatum Bank Plc, the group's ownership in Vaisala Oyj's share capital - over which control is held by Sampo-Leonia Oyj in the position of parent company - exceeded 5% during the review period.

The share of the Vaisala Oyj share capital held by Keskinäinen Eläkevakuutusyhtiö Ilmarinen exceeded 5% during the review period.

Vaisala Oyj's new Series A shares (9,775 in all), which were converted from non-listed Series K shares to listed Series A shares, were entered in the Trade Register on 14 November 2001.

#### Dividend

The Board of Directors will propose to the Annual General Meeting to be held on March 14, 2002 that a dividend of EUR 0.55 per share be paid for the fiscal year 2001. According to the proposal, a total of EUR 9,491,350 will be spent on dividends, representing 45% of the operating profit for the fiscal year.

#### Outlook

The developments in the world economy during the first half of 2002 are creating uncertainty regarding the growth of business activities. Vaisala's competitiveness in the global market is good. We shall increase our business activities in the area of environmental measurements by expanding our product range and by increasing our market shares. Profitability in 2002 will remain good. Viewed in the long term, we are still on target and keeping up the 15% growth rate.

Vantaa, February 14, 2002 Board of Directors

#### Orders received (M€)



Net sales by market Asia, Japan and Australia 21.4% Africa, South and Central America 7% Europe 34.1% North America 37.5%

#### Net sales by division



Sensor Systems Division 24.6% Remote Sensing Division 2.1% Upper Air Division 37.9% Surface Weather Division 35.4%

### **Income Statements**

	Group			Parent Company		
(M€)	Note	2001	2000	2001	2000	
Net sales	(2)	183.5	179.5	128.3	121.7	
Increase (+) or decrease (-) in finished goods		0.1	0.4	1.2	0.5	
Manufacture for own use (+)		0.6	0.2	0.5	0.2	
Other operating income	(3)	0.2	0.3	0.0	0.1	
Costs						
Materials and services	(4)	50.1	49.5	43.6	37.6	
Personnel costs	(5)	56.0	55.0	30.1	33.1	
Depreciation and write-downs	(9)	9.3	8.8	4.4	3.8	
Other operating income		39.2	36.1	23.0	23.3	
		154.7	149.4	101.2	97.8	
Operating profit		29.7	31.0	28.8	24.7	
Financial income and expenses	(6)	0.9	2.6	5.2	6.9	
Profit before extraordinary items		30.6	33.7	34.0	31.6	
Extraordinary items	(7)	-	-	-	-	
Profit before provisions and taxes		30.6	33.7	34.0	31.6	
Provisions		-	-	0.7	0.3	
Direct taxes	(8)	9.9	10.7	9.2	8.2	
Minority interest		-0.2	-	-	-	
Net profit for the financial year		20.9	23.0	25.5	23.6	

### **Balance Sheets**

	Grou	up	Parent Company	
Assets (M€) Note	2001	2000	2001	2000
Non-current assets (9)				
Intangible assets				
Intangible rights	3.2	3.3	4.7	2.3
Goodwill	6.9	8.6	-	
Consolidated goodwill	3.4	4.3	-	
Other long-term expenditure	0.5	0.1	0.2	0.1
	13.9	16.3	4.9	2.4
Tangible assets (9)				
Land	1.3	1.1	1.3	1.1
Buildings	16.5	13.7	16.5	13.7
Machinery and equipment	12.3	9.1	9.0	6.3
Other tangible assets	0.3	0.1	0.0	0.0
Advance payments and construction in progress	1.9	5.0	1.8	5.0
	32.3	29.0	28.7	26.2
Investments (9, 10)				
Shares and holdings	0.1	0.1	11.8	8.7
Other investments	0.8	0.7	0.1	0.1
Receivables from subsidiaries	-	-	9.5	10.3
	0.9	0.8	21.4	19.1
Current assets				
Inventories				
Materials and consumables	10.7	9.0	7.2	6.3
Work in progress	4.4	3.4	1.7	0.4
Finished goods	6.3	6.4	2.4	2.5
	21.4	18.8	11.4	9.2
Receivables				
Trade receivables	43.7	37.8	31.9	20.7
Loan receivables	0.4	0.0	2.5	2.6
Other receivables	2.2	3.4	0.0	1.6
Prepaid expenses and accrued income	3.9	3.0	4.0	3.0
Deferred tax assets (11)	6.8	1.7	0.5	0.8
Convertion up don liquid agosto	56.9	45.8	38.9	28.7
Securities under liquid assets	0.0	0.2		
Other securities	0.9	0.2	-	-
Cash and bank balances	44.6	54.4	32.4	42.9
Assets, total	170.9	165.3	137.7	128.4

	Group			Parent Company	
Shareholders' Equity and Liabilities (M€)	Note	2001	2000	2001	2000
Shareholders' Equity	(12)				
Share capital	· · ·	7.3	7.2	7.3	7.2
Share issue		_	-	_	-
Reserve fund		5.1	4.7	5.0	4.6
Profit from previous years		104.6	92.4	77.1	65.1
Profit for the financial year		20.9	23.0	25.5	23.6
		137.9	127.4	114.9	100.6
Minority interest		0.2	-	-	-
Provisions					
Accumulated depreciation difference Voluntary provisions	(12)	-	-	4.2	4.9
Other voluntary provisions	(12)				
Other voluntary provisions	(12)	0.0	0.0	4.2	4.9
Obligatory provisions	(13)	1.8	2.8	1.6	2.8
Liabilities					
Non-current					
Loans from financial institutions	(14)	-	-	-	-
Other non-current liabilities	(14)	2.1	2.6	2.0	2.2
Current		2.1	2.6	2.0	2.2
Advances received		4.3	2.4	1.2	0.7
Trade payables		8.6	8.7	7.0	6.9
Other current liabilities		1.9	5.9	1.4	0.9
Accrued expenses and deferred income	(15)	1.9	15.6	5.3	8.8
Accured expenses and delened income		29.0	32.6	15.0	18.0
Shareholders' equity and liabilities, total		170.9	165.3	137.7	128.4

### **Cash Flow Statements**

	G	roup	Parent Company	
(M€)	2001	2000	2001	2000
Cash flow from operating activities				
Cash flow from operating activities	182.6	173.8	118.8	121.8
Other income from business operations	0.1	0.0	0.0	0.0
Expenses from business operations	-155.1	-134.5	-103.4	-92.5
Cash flow from business operations before	179.1	151.9	105.1	,
financial items and taxes	27.7	39.3	15.4	29.3
Financial income and expenses from business operations	1.1	3.8	3.4	2.1
Dividend received from business operations	0.0	0.0	3.6	4.0
Direct tax paid	-13.9	-17.3	-9.4	-11.0
Cash flow before extrardinary items	14.8	25.8	13.0	24.4
Cash flow from business operations (A)	14.8	25.8	13.0	24.4
Cash flow from investing activities				
Investments in tangible and intangible assets	-11.5	-14.6	-9.5	-8.2
Proceeds from sale of fixed assets	0.1	0.3	0.0	0.1
Loans granted	-0.4	0.0	-0.9	-1.3
Other investments	-0.1	-0.4	-3.1	-5.1
Repayments on loan receivables	0.0	0.0	1.8	0.4
Proceeds from sale of other investments	0.0	0.0	0.0	0.0
Cash flow from investing activities ( B )	-11.9	-14.7	-11.7	-14.2
Cash flow from financing activities				
Equity issue	0.4	0.8	0.4	0.8
Repayment of short-term loans	0.0	0.0	0.0	0.0
Withdrawal of long-term loans	0.0	1.0	0.0	1.0
Repayment of long-term loans	-0.8	-0.5	-0.6	-0.5
Dividend paid and other distribution of profit	-11.6	-7.2	-11.6	-7.2
Cash flow from financing activities (C)	-12.0	-6.0	-11.8	-6.0
Change in liquid funds (A + B + C)				
increase (+)/ decrease (-)	-9.1	5.1	-10.5	4.3
Liquid funds at beginning of financial year	54.6	49.4	42.9	38.6
Liquid funds at end of financial year	45.5	54.6	32.4	42.9

### Notes to the Financial Statements

#### 1. Accounting principles

#### Scope of consolidation

The consolidated financial statements include the accounts of Vaisala Oyj and those companies in which it holds, directly or indirectly through subsidiaries, over 50% of the voting rights. The companies acquired or established during the financial period have been consolidated from the date of acquisition or formation.

#### Principles of consolidation

The consolidated accounts have been drawn up using the purchase method. The difference between the cost of acquired shares and the value of the equity of the acquired subsidiaries is primarily allocated to the fair values of acquired assets and liabilities in the consolidated balance sheet. The remaining difference is carried as goodwill on consolidation and amortized over its estimated useful life, ordinarily over a period of five years.

Intragroup transactions, unrealized margins of intragroup deliveries, intragroup receivables and debts, and the Group's internal distribution of profit have been eliminated. The balance sheets of foreign Group companies have been translated into euros using the official average exchange rates quoted by the European Central Bank at the balance sheet date. The income statements have been translated using the average rates during the financial year. All translation differences arising from the consolidation of foreign shareholdings are recorded as a separate item under non-restricted equity.

#### Non-current assets

The balance sheet values of fixed assets are stated at historical cost, less accumulated depreciation and amortization, with the exception of the office and factory premises at Vantaa, which were revalued in previous years by a total of EUR 5.7 million. Despite of the revaluations, the asset value is significantly less than the market value of the office and factory premises. The cost of self-constructed assets also includes overhead costs attributable to construction work. Interest is not capitalized on fixed assets. Depreciation and amortization is calculated on a straightline basis over the expected useful lives of the assets, except for land, which is not depreciated. Estimated useful lives for various assets are:

Intangible rights	3 – 5 years
Goodwill and Group Goodwill	5 – 10 years
Buildings and structures	5 – 40 years
Machinery and equipment	3 – 10 years
Other tangible assets	5 – 15 years

#### Inventories

The cost of inventories comprises all costs of purchase. Finished goods produced include also fixed and variable production overheads. Inventories are valued using the average cost method.

#### Foreign currency items

Transactions in foreign currencies are recorded at the rates of exchange prevailing at the date of transaction. Receivables and payables in foreign currency are valued at the exchange rates quoted by the European Central Bank at the balance sheet date. All foreign exchange gains and losses, including foreign exchange gains and losses on trade accounts receivable and payable, are recorded as financial income and expenses.

#### Pension costs

Pension costs are recorded according to the local regulations. The additional pension coverage of parent company personnel is arranged by the Vaisala Pension Fund (closed on 1.1.1983). The pension liability of the fund is fully covered.

#### Research and development costs

Except for investments in machinery and equipment, which are amortized on a straight line basis over a period of five years, research and development costs are expensed in the financial period in which they occurred.

#### **Obligatory provisions**

Obligatory provisions in the balance sheet include those items which the company is committed to cover either through agreements or otherwise, but which are not yet realized. Changes to obligatory provisions are included in the income statement.

### Extraordinary income and expenses

Extraordinary income and expenses include items incurred outside the normal course of business operations.

#### Income taxes

Income taxes consist of current and deferred tax. Current taxes in the income statement include estimated taxes payable or refundable on tax returns for the financial year and adjustments to tax accruals related to previous years. The deferred taxes in the income statement represent the net change in deferred tax liabilities and assets during the year.

	Group		Parent Company		
(t€)	2001	2000	2001	2000	
2. Net sales by market area					
Finland	7 052	6 795	7 052	6 795	
Other Europe	55 431	51 415	43 190	40 782	
North America	68 840	69 001	33 011	29 496	
Asia and Australia	39 316	42 298	32 112	34 639	
Africa, South and Central America	12 890	10 025	12 890	10 025	
Total	183 529	179 533	128 255	121 737	
3. Other operating income					
Rents and leases	-	-	-	-	
Gains on disposal of fixed assets	68	262	30	56	
Other income from operations	102	42	9	8	
Total	170	304	39	64	
4. Materials and services					
Purchases during the financial year	49 634	47 801	42 246	37 982	
Increase in inventories (-) or decrease (+)	-2 223	-513	-958	-1 284	
External services	2 734	2 243	2 282	-1 204 916	
Total	50 145	49 532	43 570	37 614	
5. Personnel					
Personnel costs					
	46 499	44.062	24760	25 026	
Wages and salaries		44 062	24 760	25 836	
Pension costs	4 717	5 695	3 492	4 394	
Other personnel costs	4 817	5 217	1 886	2 857	
Total	56 033	54 973	30 138	33 087	
Personnel on average during the year (persons)					
In Finland	728	674	728	674	
Outside Finland	387	342	12	13	
Total	1 115	1 016	740	687	
Personnel Dec. 31					
In Finland	722	663	722	663	
Outside Finland	403	380	12	13	
Total	1 125	1 043	734	676	
Cash loans, securities or contingent liabilities					
were not granted to the President or to the members					
of the Board of Directors.					
6. Financial income and expenses					
Dividend income					
From Group companies	-	-	3 615	3 988	
From others	28	20	28	20	
Interest income on long-term investment					
From Group companies	_	_	785	1 025	
Other interest and financial income			109	1 029	
From Group companies	_	_	97	89	
From others	2 023	2 083	1 588	1 672	
Interest and other financial expenses	2 023	2 005	1 )00	1 0/2	
	400	570	270	506	
From others	-408	-572	-379	-526	
Foreign exchange gains and losses			207	1 1	
From Group companies		-	307	1 155	
From others	-747	1 076	-829	-560	
Total	896	2 608	5 212	6 863	
7. Extraordinary items	-	-	-	-	
-					

	G	Pare	Parent Company	
(t€)	2001	2000	2001	2000
8. Income taxes				
Taxes for the financial year	14 805	12 353	8 767	8 327
Taxes from previous years	27	-	27	-
Taxes paid at source abroad	65	61	65	61
Deferred tax liability	-4 976	-1 729	361	-154
Total	9 921	10 686	9 220	8 235

#### 9. Fixed assets and other long-term investments

Group				Other	
orosh	Intangible		Consolidated	long-term	
Intangible assets	rights	Goodwill	goodwill	expenditure	Total
Acquisition cost Jan. 1	9 855	12 835	5 344	942	28 976
Translation difference	-	714	13	29	756
Increases	4 089	-	442	303	4 833
Decreases	-3 888	-191	-454	-257	-4 790
Transfers between items	-1 605	1 771	-	185	350
Acquisition cost Dec. 31	8 450	15 128	5 344	1 202	30 125
Accumulated depreciation and					
write-downs Jan. 1	6 582	4 211	1 068	823	12 684
Translation difference	-	229	13	19	260
Accumulated depreciation					
of decreases and transfers	-2 337	899	-	-225	-1 663
Depreciation for the financial year	1 055	2 885	874	93	4 907
Accumulated depreciation Dec. 31	5 300	8 224	1 954	709	16 188
Balance sheet value Dec. 31	3 150	6 904	3 390	493	13 937
Write-off period for the goodwill and con	solidated goodw	ill is 5 years			

white-on period for	the goodwin and	consolidated goodwill	is ) years

Group				Other	Advance payments	
	Land and		Machinery and	tangible	and construction	
Intangible assets	waters	Buildings	equipment	assets	in progress	Total
Acquisition cost Jan. 1	1 037	15 091	34 511	410	5 024	56 072
Translation difference	-	-	347	-	-	347
Increases	156	3 344	7 359	129	6 720	17 708
Decreases	-	-	-7 753	-	-9 874	-17 627
Transfers between items	-	31	141	216	-	388
Acquisition cost Dec. 12	1 193	18 465	34 605	754	1 870	56 888
Accumulated depreciation and						
write-downs Jan. 1	-	6 994	25 443	321	-	32 759
Translation difference	-	-	288	-	-	288
Accumulated depreciation o	f					
decreases and transfers	-	23	-7 091	-94	-	-7 162
Depreciation for the financia	al year -	575	3 617	198	-	4 390
Accumulated depreciation De	<b>c. 31</b> 0	7 592	22 258	425	0	30 275
Revaluation	84	5 618	-	-	-	5 702
Balance sheet value Dec. 31	1 277	16 491	12 347	329	1 870	32 315

Undepreciated acquisition cost of machinery and equipment on Dec. 31, 2001 was EUR 9 million.

#### Group

	Shares and	Other longterm	
Investments	holdings	expenditure	Total
Acquisition cost Jan. 1	83	692	774
Translation difference	-2	7	5
Increases	-	117	117
Decreases	-	-2	-2
Balance sheet value Dec. 31	81	814	895

#### Parent company

Balance sheet value Dec. 31	4 704	228	4 932
Accumulated depreciation Dec. 31	5 172	252	5 424
Depreciation for the financial year	1 457	11	1 467
Accumulated depreciation of decreases and transfers	-1 946	-246	-2 192
Accumulated depreciation and write-downs Jan. 1	5 662	488	6 149
Acquisition cost Dec. 12	9 877	480	10 356
Transfers between items	-	-	-
Decreases	-1 946	-246	-2 192
Increases	3 841	147	3 988
Acquisition cost Jan. 1	7 982	579	8 560
Intangible assets	rights	expenditure	Total
	Intangible	Other long-term	

#### Parent Company

				Other	Advance payments	
	Land and		Machinery and	tangible	and construction	
Tangible assets	waters	Buildings	equipment	assets	in progress	Total
Acquisition cost Jan. 1	1 037	15 091	24 230	27	4 987	45 373
Increases	156	3 344	5 132	-	6 720	15 352
Decreases	-	-	-7 557	-	-9 859	-17 416
Transfers between items	-	-	-	-	-	-
Acquisition cost Dec. 12	1 193	18 434	21 805	27	1 849	43 309
Accumulated depreciation and						
write-downs Jan. 1	-	6 994	17 929	-	-	24 923
Accumulated depreciation of						
decreases and transfers	-	-	-7 548	-	-	-7 548
Depreciation for the financial year	-	575	2 407	-	-	2 982
Accumulated depreciation Dec. 31	L 0	7 569	12 787	0	0	20 356
Revaluation	84	5 618	-	-	-	5 702
Balance sheet value Dec. 31	1 277	16 483	9 018	27	1 849	28 654

Undepreciated acquisition cost of machinery and equipment on Dec. 31, 2001 was EUR 8.2 million.

#### Parent company

<b>.</b> .	Subsidiary	Other shares Long	-term receivables		
Investments	shares	and holdings from Group companies		Total	
Acquisition cost Jan. 1	8 724	54	10 317	19 096	
Increase	3 579	-	3 868	7 447	
Decrease	-454	-	-4 654	-5 108	
Balance sheet value Dec. 31	11 849	54	9 531	21 435	

#### 10. Group companies

0. Group companies	Group	Parent company
	holding %	holding %
Vaisala Limited, Birmingham, Great Britain	100%	100%
Vaisala TMI Limited, Birmingham, Great Britain	100%	0%
Vaisala Pty Ltd., Hawthorn, Australia	100%	100%
Vaisala GmbH, Hamburg, Germany	100%	100%
Vaisala KK, Tokyo, Japan	100%	100%
Vaisala Holding Inc., Woburn, USA	100%	100%
Vaisala Inc., Woburn, USA	100%	0%
Tycho Technology Inc., Woburn, USA	100%	0%
Vaisala S.A., Argentina	100%	100%
Vaisala S.A., Saint-Quentin-En-Yvelines, France	100%	100%
Vaisala Impulsphysik GmbH, Schenefeld, Germany	100%	100%
Vaisala Meteorologigal Systems Inc., Boulder, USA	85%	0%
All subsidiaries have been included in the consolidated financial statements.		

	Group			Parent Company	
(t€)	2001	2000	2001	2000	
11. Deferred tax assets and liabilities					
Deferred tax assets					
Consolidation	1 220	759	-	-	
Timing differences	6 934	2 443	480	841	
	8 154	3 202	480	841	
Deferred tax liabilities					
Provisions	1 218	1 411	-	-	
Timing differences	119	118	-	-	
	1 337	1 529	0	0	
Deferred tax assets/liabilities, net	6 817	1 672	480	841	

The deferred tax liability arising from revaluation has not been taken into account. If realized, the tax effect of revaluation would be EUR 1 653.6 thousand at the current tax rate.

#### 12. Shareholders' equity

The parent company's shares are divided into series, with 3,415,785 Series K shares (20 votes/share) and 13,841,251 Series A shares (1 vote/share). In accordance with the Company Articles, Series K shares can be converted into Series A shares through a procedure defined in detail in the Company Articles.

Share capital	5 001	5 770	5 001	5 770
Series A Jan. 1 Annulling of shares 9.3.2000	5 801	5 772 1	5 801	5 772
Converted from series K to A	- 4	1	- 4	1
Share issue	16	29	16	29
Series A Dec. 31	5 822	5 801	5 822	5 801
-		-	-	-
Series K Jan.1 Converted from series K to A	1 440 -4	1 440	1 440 -4	1 440
Share capital Dec. 31	7 257	7 242	7 257	7 242
Share capital Dec. 91	1 4)1	/ 242	1 2)1	/ 212
Share premium fund Jan. 1	4 599	3 750	4 599	3 750
Share issues	389	849	389	849
Share premium fund Dec. 31	4 988	4 599	4 988	4 599
Reserve fund Jan. 1	124	128	_	-
Translation difference	-6	-4	-	-
Reserve fund Dec. 31	118	124	0	0
Profit from previous years Jan. 1	115 391	98 666	88 719	72 312
Dividends paid	-11 586	-7 215	-11 586	-7 215
Translation difference	792	973	-	-
Profit from previous years Dec. 31	104 597	92 424	77 133	65 097
Profit for the financial year	20 890	22 967	25 481	23 622
Total equity	137 850	127 357	114 859	100 560
Distributable equity				
Accumulated profit funds Dec. 31	104 597	92 424	77 133	65 097
Profit for the financial year	20 890	22 967	25 481	23 622
Accumulated provisions included in				
accumulated profit	-2 983	-3 455	-	-
Distributable profit funds Dec. 31	122 504	111 936	102 614	88 719
Accumulated provisions				
Accumulated depreciation difference				
Intangible rights	269	255	269	255
Buildings	3 336	3 551	3 336	3 551
Machinery and equipment	596	1 061	596	1 061
Total accumulated depreciation difference	4 201	4 867	4 201	4 867
Other voluntary provisions	-	-		
Deferred tax liability on accumulated provisions	-1 218	-1 411		
Accumulated provisions included in profit funds	2 983	3 455		

	Grou	ւթ	Parent Company	
(t€)	2001	2000	2001	2000
13. Obligatory provisions				
Quality expense reserve	838	807	838	807
Pension reserve	421	420	421	420
Other obligatory provisions	520	1 564	321	1 554
Total obligatory provisions	1 779	2 791	1 579	2 782
14. Non-current liabilities				
Liabilities maturing within five years				
or more				
Other non-current liabilities	619	488	619	488
15. Accrued expenses and deferred income				
Wages, salaries and wage-related liabilities	7 131	11 363	4 110	7 708
Tax liabilities	1 963	980	360	936
Other accrued expenses and deferred income	5 163	3 272	869	195
Total accrued expenses and deferred income	14 256	15 614	5 339	8 839
16. Receivables and liabilities from other companies				
in the Vaisala Group				
Non-current loan receivables			9 531	10 317
Current loan receivables			2 497	2 550
Trade receivables			13 942	7 693
Prepaid expenses and accrued income			412	413
Total receivables			26 382	20 973
Trade payables			735	466
Accrued expenses and deferred income			338	-
Total liabilities			1 072	466
17. Contingent liabilities and pledges given				
For own loans/commitments				
Guarantees	6 360	12 479	4 889	10 974
For Group companies				
Guarantees	-	-	6 348	6 289
Other own liabilities				
Pledges given	35	419	35	92
Leasing liabilities				
Payable during the financial year	3 320	2 409	968	796
Payable later	3 818	2 906	960	741
	7 137	5 315	1 928	1 537
Total contingent liabilities and pledges given	13 532	18 213	13 199	18 892
Derivative contracts				
Capital of off-balance sheet contracts made to hedge				
against exchange rate and interest risks				
Currency forwards	14 745	24 670	14 745	24 670
Total capital	14 745	24 670	14 745	24 670

### Distribution of Profits and Auditor's Report

#### Proposals of the Board of Directors to the Annual General Meeting

The Board of Directors proposes that the accounts for the financial year January 1, 2001 to December 31,2001 be adopted by the Annual General Meeting in the form presented by the Board.

The Group's distributable funds total EUR 122,504 thousand and the parent company's distributable funds EUR 102,614,282.70.

The Board of Directors proposes that a dividend of EUR 0.55 per share, corresponding to a total of EUR 9,491,350 be paid for the financial year January 1, 2001 to December 31, 2001.

Vantaa, February 14, 2002

Raimo Voipio Chairman Pekka Hautojärvi

Matti Ilmari

Yrjö Neuvo

Mikko Voipio

Gerhard Wendt

Pekka Ketonen President and CEO

#### To the shareholders of Vaisala Oyj

We have audited the accounting, financial statements and corporate governance of Vaisala Oyj for the financial year January 1 to December 31, 2001. The financial statements prepared by the Board of Directors and the Chief Executive Officer include a report on operations and an income statement, a balance sheet and notes to the accounts for both the Group and the parent company. Based on our audit, we express the following opinion on these financial statements and on corporate governance.

We have conducted the audit in accordance with Finnish Standards on Auditing. Those standards require that we perform the audit to obtain reasonable assurance on whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used, as well as evaluating the overall financial statement presentation. The purpose of the audit of corporate governance is to ensure that the members of the Board of Directors and the Chief Executive Officer have legally complied with the provisions of the Companies Act.

In our opinion, the financial statements have been prepared in accordance with the Accounting Act and other rules and regulations relevant to the preparation of financial statements, and give a true and fair view of Vaisala Oyj's and the Group's results and financial position. The financial statements can be approved and the members of the Board of Directors and the Chief Executive Officer of the parent company can be discharged from liability for the financial year audited by us. The proposal by the Board of Directors concerning the disposal of the distributable funds is in compliance with the Companies Act.

Vantaa, February 14, 2002

SVH Pricewaterhouse Coopers Oy Authorized Public Accountants

Mikko Nieminen Authorized Public Accountant Jukka Ala-Mello Authorized Public Accountant

### Shares and Shareholders, December 31, 2001

#### Share capital and shares

Vaisala has 17,257,000 shares. Of the total number of shares there are 3,415,785 Series K shares and 13,841,215 Series A shares. The book equivalent value of shares is 0.42 euro (not exact). Series K shares carry twenty (20) votes each at shareholders' meetings and Series A shares one (1) vote each. Both series entitle their holders to the same amount of dividend. During the financial year 35,000 Series A shares were registered by 8,750 warrants. Vaisala has applied the insider rules of the Helsinki Exchanges from 1st of April 2000.

#### Warrants

Vaisala has two stock option schemes. From the year 1997 scheme there are total of 78,750 warrants left. Each warrant entitles to subsribe four new Series A shares. The share subscription price is EUR 14.34 per share reduced by per share amount of dividends and the related avoir fiscal paid out after the 17th of March, 1997. Subscription price on 31.12.2001 was EUR 11.54 per share. Share subscription can take place gradually between 1.12.1999 - 31.3.2003, the period for all warrants shall terminate on 31.3.2003. The 2000 option scheme entitles to subsribe a total of 896,000 Series A shares. Each warrant entitles its holder to subscribe for one A-share at the share subscription price of EUR 24.55 per share deducted by the amount of the cash dividend distributed after 1st of May, 2000. The subscription price on 31.12.2001 was EUR 23.88 per share. The subscription period will begin 1.12.2002 and 1.12.2004. The share subscription period will end for all warrants on 31 January 2006. The exercise of all warrants may result in a holding of 6.6% of all shares and 1.5% of all votes. The total book equivalent value of shares subscribed with warrants is EUR 508,620.

#### Management holdings

Vaisala Oyj's Board of Directors held and controlled 1,355,276 shares on December 31, 2001, accounting for 16.7% of total votes. The exercise of warrants may result in a holding of 0.7% of all shares and 0.1% of all votes.

#### Authorizations

At the end of 2001, the Board had no authorization to raise the share capital or issue convertible or warrant bonds. No authorization was granted to redeem the company's own shares.

#### Largest shareholders, December 31, 2001

	%	%	%	%
	of votes	of Series K Shares	of Series A Shares	of total Shares
Finnish Academy of Science and Letters	22.0	25.7	3.6	8.0
Tekele Oy	12.3	13.3	7.4	8.6
Mikko Voipio	7.7	8.8	2.3	3.6
Anja Caspers	7.1	8.2	1.4	2.8
Raimo Voipio	5.8	6.6	1.8	2.8
Tauno Voipio	4.2	4.6	2.1	2.6
Henki-Sampo Insurance Company	4.1	4.0	4.3	4.2
Inkeri Voipio	2.7	0.0	15.8	12.7
Jaakko Väisälä estate	1.6	1.8	1.1	1.3
Ilmarinen Mutual Pension Insurance Company	1.3	0.0	7.5	6.0
Minna Väisälä	1.3	1.5	0.1	0.4
Tuulikki Laasonen	1.2	1.5	0.0	0.3
Varma Sampo Mutual Pension Insurance Company	0.9	0.0	5.6	4.5
Nominee registered	3.0	0.0	17.7	14.2

#### Ownership structure by owner type, December 31, 2001

	Number of	%	%	%	%
	owners	of votes	of Series K shares	of Series A Shares	of total Shares
Companies	180	12.8	13.3	10.4	11.0
Financial and insurance institutions*	28	8.0	4.0	27.8	23.1
Municipalities	11	2.4	0.0	14.5	11.6
Non-profit organizations	46	22.1	25.7	4.5	8.7
Private individuals	2 882	47.5	48.8	41.3	42.8
Outside Finland	13	7.1	8.2	1.5	2.9
Not transferred to the book-entry system		0.0	0.0	0.1	0.1
Total	3 160	100.0	100.0	100.0	100.0
* including nominee registered					

#### Ownership structure by shareholding, December 31, 2001

		%	%	%	of owner	rs of %	of owners of	%
Number of shares	Owners	of owners	of votes	total share	es K Sh	ares K Shar	es A shares	of A shares
1-100	968	30.6	0.1	0.	4	0 0	).0 970	0.4
101-1000	1 809	57.3	0.8	3.	.6	15 0	0.3 1 805	4.4
1001-10000	289	9.2	2.0	4.			3.1 290	6.1
10001-100000	74	2.3	20.2	16.	.7	27 25	63 63	14.7
100001-	20	0.6	76.9	74.	.5	7 71	1.3 17	74.4
Not transferred to the	book-entry s	system	0.0	0.	.1	(	0.0	0.1
Total	3 160	100.0	100.0	100.	.0	71 100	).0 3 145	100.0
Shares in Figures								
Shares in rigares				2001	2000	1999	1998	1997
Earnings/share (EPS)	)		€	1.21	1.34	1.26	1.00	1.20
Earnings/share (EPS)	), calculated	l taking						
into account the dilu	ition impact	ī. –						
of the bond with wa	rrants		€	1.19	1.32	1.24	0.99	1.18
Shareholders' equity,	/share		€	7.99	7.40	6.40	5.19	4.58
Dividend/share			€	*0.55	0.67	0.42	0.34	0.34
Dividend/earnings			%	**45.4	50.4	33.4	33.5	28.1
Effective dividend yi	eld		%	***2.0	2.3	2.2	1.9	1.7
Price/earnings (P/E)				22.6	22.1	15.4	17.6	16.1
A-share trading								
highest			€	36.25	31.50	20.00	21.28	19.76
lowest			€	23.80	18.50	15.50	14.30	12.40
weighted ave	erage		€	29.85	26.82	17.42	18.08	15.64
at balance sh	eet date		€	27.30	29.50	19.37	17.66	19.34
Market capitalization	ı at							
balance sheet date **		Ν	/1€	471.12	508.05	332.32	302.89	331.75
A-shares traded								
traded		ţ	ocs 3	3 860 888	4 048 077	1 035 372	2 384 780	3 320 952
% of entire se	eries	<u>^</u>	%	27.9	29.3	7.5	17.4	24.2
Adjusted number of	shares	I	17	7 242 655	17 194 211	17 152 000	17 152 000	17 152 000
A-shares		Ī	ocs 13	3 818 354	13 768 651	13 726 440	13 721 640	13 721 600
K-shares		Ī	ocs 3	3 424 301	3 425 560	3 425 560	3 430 360	3 430 400
Number of shares at	Dec. 31	Ī	17	7 257 000	17 222 000	17 152 000	17 152 000	17 152 000

\* Proposal by the Board of Directors \*\* Calculated according to the proposal by the Board of Directors \*\*\* Value of A and K shares is here calculated to be equal





### Five Years in Figures

#### Consolidated income statement

(t€)	12/2001	12/2000	12/1999	12/1998	12/1997
Net sales	183 529	179 533	145 354	114 633	114 372
Other operating income	170	396	197	449	631
Costs	144 655	140 103	109 113	86 548	79 692
Planned depreciation	9 297	8 782	5 940	5 347	5 054
Operating profit	29 747	31 044	30 497	23 187	30 258
Net financing income/expenses	896	2 608	1 313	891	696
Profit before extraordinary items, provisions and tax	es 30 643	33 653	31 810	24 077	30 954
Extraordinary income and expenses	-	-	1 034	-	-
Profit before provisions and taxes	30 643	33 653	32 844	24 077	30 954
Change in provisions	-	-	-	704	1 677
Direct taxes	-9 921	-10 686	-10 228	-7 048	-10 874
Minority interest	168	-	-	-	-
Net profit for the year	20 890	22 967	22 616	17 732	21 757

#### Consolidated balance sheet

(t€)	Dec. 31, 2001	Dec. 31, 2000	Dec. 31, 1999	Dec. 31, 1998	Dec. 31, 1997
Assets					
Fixed assets and other long-term investments	47 147	46 082	39 046	26 196	27 339
Inventories	21 382	18 848	14 983	10 581	10 889
Financial assets	102 353	100 407	88 061	73 073	65 213
	170 882	165 336	142 089	109 850	103 441
Shareholders' equity and liabilities					
Shareholders' equity	137 850	127 357	109 848	84 751	73 797
Minority interest	170	-	-	-	-
Provisions	-	-	-	6 005	6 707
Liabilities, total	32 862	37 980	32 241	19 094	22 937
Interest bearing	2 556	3 516	2 333	2 275	2 190
Non-interest bearing	30 307	34 463	29 908	16 819	20 748
Balance sheet total	170 882	165 336	142 089	109 850	103 441

### **Financial Ratios**

		2001	2000	1999	1998	1997
Net sales	M€	183.53	179.54	145.35	114.64	114.37
exports and international operations	%	96.2	96.2	96.0	94.0	96.0
Operating profit	M€	29.75	31.04	30.49	23.19	30.26
% of net sales	%	16.2	17.3	21.0	20.2	26.5
Profit before extraordinary items,						
provisions and taxes	M€	30.64	33.65	31.81	24.08	30.95
% of net sales	%	16.7	18.7	21.9	21.0	27.1
Profit before provisions and taxes	M€	30.64	33.65	32.84	24.08	30.95
% of net sales	%	16.7	18.7	22.6	21.0	27.1
Return on equity (ROE)	%	15.6	19.4	21.7	20.5	29.6
Return on investment (ROI)	%	22.9	28.2	31.4	27.7	41.8
Solvency ratio	%	82.9	78.2	78.6	82.1	77.6
Current ratio		4.3	3.7	3.7	4.9	3.6
Gross capital expenditure	M€	12.14	14.74	18.87	4.59	4.05
% of net sales	%	6.6	8.2	13.0	4.0	3.5
R&D expenditure on machinery and equipment	M€	1.13	0.76	0.50	1.01	0.67
and equipment	1010	1.15	0.70	0.90	1.01	0.07
R&D expenditure	М€	18.94	17.24	14.46	12.95	11.27
% of net sales	%	10.3	9.6	10.0	11.3	9.9
Order book on Dec 31	М€	57.80	57.25	53.99	39.69	37.17
Average personnel		1 115	1 016	895	797	751

### Calculation of Financial Ratios

Return on equity, ROE %	=	Profit before extraordinary items, provisions and taxes less taxesx 100Shareholders' equity plus minority interest (average)
Return on investment, ROI %	=	Profit before extraordinary items, provisions and taxes plus interest and finacial expenses x 100 Balance sheet total less non-interest bearing liabilities (average)
Solvency ratio, %	=	Shareholders' equity plus minority interest       x 100         Balance sheet total less advance payments       x 100
Current ratio	=	Current assets Current liabilities
Earnings / share, €	=	Profit before extraordinary items, provisions and taxes less taxes +/- minority interest Average number of shares, adjusted
Equity / share, €	=	Shareholders' equity Number of shares at balance sheet date, adjusted
Dividend / share, €	=	Dividend Number of shares at balance sheet date, adjusted
Dividend / earnings, %	=	Dividend x 100 Profit before extraordinary items, provisions and taxes less taxes +/- minority interest
Effective dividend yield, %	=	Dividend / share x 100 Share price at balance sheet date
Price / earnings, €	=	Share price at balance sheet date Earnings / share
Market capitalisation, M€	=	Share price at balance sheet date times number of shares

### Information for Shareholders

#### Annual General Meeting

The Annual General Meeting of Vaisala Oyj's shareholders will be held at the company's head office, Vanha Nurmijärventie 21, Vantaa, on Thursday 14 March, beginning at 5 pm. Shareholders who are registered in the share register maintained by the Finnish Central Securities Depository Ltd. by no later than 4 March 2002 may attend the AGM. Shareholders whose shares have not been transferred to the book-entry securities system may also attend the AGM provided that such shareholders were registered in the company's share register before 21 October 1994. In such cases, shareholders must, at the AGM, present their share certificates or some other evidence that their shareholding rights have not been transferred to the book-entry securities system.

Shareholders wishing to attend the AGM must notify the company no later than 4 pm on Friday 8 March 2002. Notification may be made either by letter addressed to Vaisala Oyj, Nina Andersin, P.O.Box 26, Finland, or by telefax + 358 9 8949 2206, or by e-mail nina.andersin@vaisala.com, or by telephone on weekdays between 12 am and 4 pm Finnish time, phone +358 9 8949 2201. Letters authorising a proxy to vote on behalf of a shareholder should be sent to the company before expiry of the notification deadline.

#### Payment of dividend

The Board of Directors will propose to the Annual General Meeting that a dividend of EUR 0.55 per share be paid on the 2001 financial year. The record date for dividend payment is 19 March 2002 and, subject to approval of the Board's proposal, the dividend will be paid on 26 March 2002. Shareholders cannot be paid a dividend until they have transferred their shares to the book-entry securities system.

#### Financial reviews in 2002

Vaisala will publish a three-month Interim Report on 3 May, a six-month Interim Report on 31 July and a nine-month Interim Report on 30 October 2002.

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