

Name This Space???

ThermoHaake News

International Newsletter

Issue 1

Introduction

Welcome to the inaugural international newsletter from Thermo Haake. This newsletter has been created to provide customers and interested parties with news and information covering applied rheology, new instruments, tips and tricks and application articles. The newsletter will be published 3 to 4 times per year and distributed electronically.

The concept to inform our international customers directly has been supported by our agents and distributors worldwide - we hope you agree also. The coming issues will cover local and country specific topics incorporating installations, seminars and trouble shooting across a wide range of rheological applications.

We all look forward to the newsletter developing with the input and support from our agents, distributors and customers alike. We trust that the newsletter will provide an insight into Thermo Haake and the support network provided worldwide.

The goal is to disseminate valuable and practical information in the field of applied rheology, provide application support and facilitate information exchange in a timely manner.

Newsletter Naming Competition Name This Space???

What's in a name? Well when it comes to a newsletter it can be quite a lot. We want the 'brand' of the newsletter to be strong and meaningful for our readers ... so we are asking for your contributions. To enter the "Name This Space ????" competition and become eligible for the for a prize if your name suggestion is voted as the winner, send your suggestions by 31st January 2001 to info@rheologysolutions.com

The best five names will be selected and published in the next newsletter - Issue 2.

A final vote by all the readers will take place to pick the winning name. The winner and the new name for the newsletter will be published in Issue 3.

Subscribe? Unsubscribe? Comments & Feedback?

If you would like to subscribe and receive your own copy of the newsletter or unsubscribe, just send an email with the subject as subscribe or unsubscribe to info@rheologysolutions.com

Contributions are welcome and should be addressed to:
info@rheologysolutions.com

Editors Note: There is no guarantee that comments or feedback will be published. However all communications received will be answered direct.

Exhibitions - Conferences - Meetings?

Visit the website www.haake.de/news.htm for information about when and where you can see Thermo Haake.

People - Distributors - News from Around the Globe

Asia Pacific Region Continues to Benefit from the Application Expertise of Dr Seungrok Kim, Thermo Haake Regional Manager.

Since July 1998, Dr Seungrok Kim has headed the Thermo Haake Regional Office in Seoul, Korea and worked within the region to support the customers and agents alike with the provision of valuable

In This Issue

Application Articles & New Papers covering

- Paints
- Mayonnaise
- Processibility of PIM Feedstock
- Viscosity of Novel Polymers

New Products

- Micro Viscometer needs <0.5 cm³ sample
- Melt Flow Indexer with semi automatic features

Software Enhancements

- Intelligent Rheology Functions within RheoWin
- Meltfixer 2000 Software incorporates Wizard

Product Highlight

- What the customer are voting as their QC Viscometer of Choice & Why- The ViscoTester VT6/7 (Conforms to ISO & ASTM standards)
- Fully integrated visualisation software a feature with the Micro Rheology Compounder - MiniLab

Polymer Contract Testing

More Information

Further information on all items in this newsletter is available either as a link to the Thermo Haake website and or by sending an email to info@rheologysolutions.com and quote the item number/s listed or provide the article/item name.

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information. Dr Kim has achieved excellent results and great respect - a track record to be proud of.

Dr Kim is available for local support, and provides services such as seminars (**don't miss the chance to attend his seminars if they are in your area - his seminars are informative and practical**), problem-solving strategies and application advice. Additional, he is happy to assist with product support and testing methodology.

Background. Dr Kim obtained his Ph.D. in Applied Chemistry from the Centre for Applied Colloid & BioColloid Science (Swinburne University of Technology) in Melbourne Australia in 1994. Following his Ph.D. candidature, he accepted a position as a post-doctoral fellow for 2½ years in the area of rheology and polymers. He continued his research work as a postdoctoral research fellow for both the Rheology and Material Processing Centre and the Polymer Technology Centre at the Royal Melbourne Institute of Technology (R.M.I.T). He then worked as a senior research fellow at Kwangwoon University in Seoul and has also worked as a lecturer at the Yeonsei and Samyook Universities in Korea.

Dr Kim has contributed a significant number of research articles to renowned international journals. Dr Kim's input to Thermo Haake has been sought after with regard to a wide range of rheology- and polymer-related scientific and technological problems. These have spanned the areas of synthetic polymers, polymer composites, biopolymers, adhesives, pharmaceutical drugs and colloidal suspensions.

To contact Dr. Kim, email jippy@nuri.net

Thermo Haake provides application support throughout the world. If you would like to discuss your specific application and where Thermo Haake can offer technical and product support contact your local distributor or email:
info@rheologyolutions.com

Rheology in the 3rd World?

by Dr. Hans-Michael Petri,
hmpetri@attglobal.net
Thermo Haake, South America.

When Brazil, Argentina, Venezuela or any other South American country is mentioned, most of the people probably think first of football, wonderful beaches, high crime rates and complicated economical situation - the "third world".

Few people would imagine that in those countries first quality research exists, even under sometimes difficult conditions. Rheology is - like in Europe or in the United States - an increasingly important research field in South America.

In some areas, the South American researchers are top of their field - see for example the patented "Orimulsion", a water - oil emulsion which was developed in Venezuela (INTEVEP) and reduces significantly the transportation costs of heavy oils, or the advances in drilling fluids for very deep drillings achieved at CENPES/Petrobras, Brazil. In both national institutes the researchers are working with Thermo Haake viscometers and rheometers.

Brazil has a strong national polymer industry also, and it is advancing rapidly and increasing productivity levels and product quality - with the help from universities, like São Carlos, Rio de Janeiro or Porto Alegre, who have R&D projects in polymer processing with them, and, of course, by investing in QC and process control equipment and instruments. We are proud to say that these companies and universities are working with Thermo Haake torque rheometers.

The food industry is the stronghold in Argentina, a country, which actually is going through a heavy crisis. Rheology has become a central theme of interest during the last years, and Thermo Haake is the preferred trade mark of rheologists.

Yes, there is rheology in the "third world" - and many international scientists, who know the situation in both regions, say, that the Europeans and North Americans will have to take care of not being overtaken by the South American underdogs in the near future - with the help of Thermo Haake!

Thermo Haake News

- Yes, we are now called Thermo Haake, which recognises our parent company of the last four years
- The business units are now even stronger and better equipped to support our worldwide customer base with a fully integrated support structure. This includes marketing, product development, application laboratories and product specialists
- New products, product extensions and enhancements, new generation software with added features places the HAAKE products at the forefront of cutting edge of technology

www.haake.de/news.htm

Rheology Business Unit Update & News

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Application Articles & Papers

Rheology of Dispersions (paint like fluids)

Many paints behave like dispersions or suspensions as seen in other products and substances. Their mechanical behaviour expressed as viscosity and elasticity depends on:

- Temperature
- Deformation, deformation rate
- Time

To fully characterise a fluid the influence of these parameters has to be known in order to predict the response under different applications. Paints are rheologically complicated fluids, which need to be characterised using several methods. One test can provide only one answer and information for one application at the most.

This paper 'Rheology of Dispersions' shows the strengths and limitations of using rheometry as a tool to carry out product development with clear outcomes and measurements. Individual tests derived from there can be installed as quality control tests. The general rheological behaviour of dispersions is presented and put into terms that relate to the application such as sprayability or leveling. Measurement procedures for sagging, leveling, sedimentation, brushability and the yield point determination are discussed and demonstrated on selected samples.

*For a copy of the complete paper
quote Item no. 10*

*For viscometer/rheometer brochures
quote Item no. 11*

*Or visit the our website at
www.haake.de/v-lit.htm*

Easy Rheological Measurements For Example: Mayonnaise

In industry and in research, rheological investigations are important to determine and then optimise the quality or

quantitative differences of products. In the food industry comparison of viscosity and yield points is key, and for cosmetics the spreadability of creams and lotions onto the skin as well as the general storage stability and processing properties is important and provides essential data.

Important product properties of mayonnaise for consumers and producers are the yield point, thixotropy and storage stability. This paper provides a comparison of the rheological properties of three types of mayonnaise with different fat content. The evaluation is carried out using the Thermo Haake developed RheoWizard software function and the RheoStress 1 - Controlled Stress Rheometer.

*For a copy of the complete paper
quote Item no. 12*

*For Series 1 (RV1, RS1, RW1)
rheometers brochures quote Item no.
13 Or visit the*

*Thermo Haake website at
www.haake.de/series1.htm*

A comprehensive library of application notes is available from the Thermo Haake website. The index of application notes is available by visiting www.haake.de/v-ber.htm. If your particular area of interest or application is not covered then send an email to info@rheologysolutions.com with an overview of your application and we will search our library and advise you of any relevant papers and reports.

UV Curing Test Cell ... New Accessory



The UV cell is made out of aluminum with a quartz glass plate on top. The UV light source is plugged in from the side and held with screws at the adapter base plate.

The UV cell is suitable for use with the Series 1, the newly launched RS300 R&D rheometer Series 100/150 rheometers. When ordering, the rheometer model has to be specified.

Test results using the UV cell show that one can clearly differentiate the light intensities by the slope and the delay before the viscosity increases in a test.

*For details on the UV Curing Cell quote
Item no. 14*

New Product MicroVisco 2

Many new applications exist for a viscometer that uses very small sample volumes of <math><0.5\text{ cm}^3</math> and has a viscosity range of 0.2 - 1000 mPas

*For a copy of the MicroVisco 2 data
sheet quote Item no. 15*

*For further information on the
MicroVisco 2 visit
www.haake.de/microvis.htm*



Rheology Business Unit Update & News

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Updates for RheoWin - New Intelligent Software

Two exciting new features are available in RheoWin version 2.7. These new features provide added functions that allow faster ways to characterise unknown or new samples or establish new applications. Here's a brief overview ...

RheoWizard - allows the operator to build a new job through the normal job manager within RheoWin ... from RheoWin open RheoWizard and the 'wizard' will take the operator through the procedure - step by step for a total of 5 steps. On completion of the job RheoWizard will provide results and recommendations for improving the test.

RheoWizard is operational only with RheoWin and can be used with the VT500/550 Series, RS50/75/100/150 plus the new RS300 and the Series 1 range.

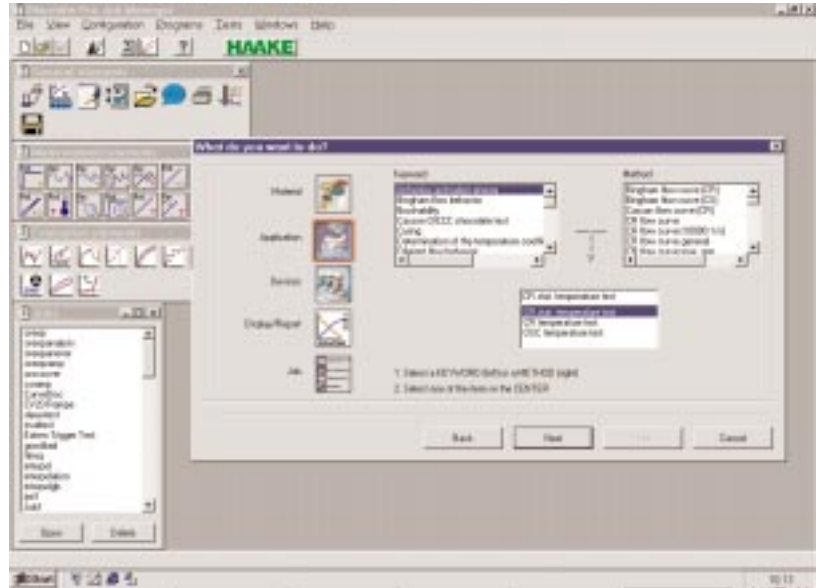
SnapShot - allows unknown samples to be characterised by activating the SnapShot-icon. The rheometer in use is then selected plus the sensors, the substance name or identification is typed in and the test can be started. SnapShot has a set procedure that automatically performs several measurements at a given temperature and evaluates the results.

SnapShot uses a CS ramp for the determination of yield point, a frequency sweep for monitoring elasticity and the calculation of the relaxation time and uses a hysteresis flow curve for the characterisation of thixotropy.

SnapShot is operational only with RheoWin and can be used with the new RS300 and the Series 1 range.

RheoWizard & SnapShot are available free until 31 December 2000 to current RheoWin licensed users.

Make sure you secure your copy now - in 2001 these features will be options. But for now they are available free!



Above: Screen from SnapShot. For RheoWin information quote Item no. 16 For Further Information on RheoWizard and SnapShot visit www.haake.de/rehoffice.htm To download RheoWin 2.7 demo software go to www.haake.de/soft/rheowin.htm

Product Highlight

ViscoTester 6 & 7 - Now the Users Viscometer of Choice

Our customers have independently compared the ViscoTester 6/7 with other viscometers, and they have agreed that there are five things that are important in their decision making - these are price, accuracy, design, ease of use and optional extras. The customers have agreed that in all of these areas the VT6/7 is their product of choice for purchase. The key features according to our customers are:

- Complies to ISO 255 and ASTM 115 / 789 / 1076
- Full 2 year warranty on parts and service
- Strong sturdy design
- Clear and easy to read display screen
- Very easy to use
- Viscosity results are held on display screen even after the test is stopped
- Viscometer warns of under or over range condition
- Supplied complete with case + accessories
- RS232 interface and optional software
- Temperature sensor
- Very high precision



Accuracy:	+/- 1% full scale
Reproducibility:	+/- 0.2%
Version L:	3 - 2 000 000 mPas in 76 ranges (19 speeds with 4 spindles) for low to medium viscosity test fluids
Version R:	20 - 13 000 000 mPas in 114 ranges (19 speeds with 6 spindles) for medium to higher viscosity test fluids

For further information on the ViscoTester 6/7 quote Item no. 16 or go on line to www.haake.de/vt6-7.htm

Application Articles & Papers

New Application ...

Determining Formulation & Predicting Processability of Powder Injection Moulding ("PIM") Feedstock

Powder Injection Moulding (PIM) has become a popular and efficient way of producing small metal or ceramic products. PIM yields products of much greater shape and complexity compared to traditional methods, and requires virtually no machining afterwards. The procedure consists of mixing a small amount of polymer, known as a binder, with metal or ceramic powder. This "feedstock" is then fed into an injection moulding machine to produce a part of defined geometry. Of all the steps in the entire process, the formulation of the feedstock is perhaps the most important. The five steps that should be controlled to produce a quality feedstock are:

1. powder characteristics
2. binder composition
3. powder : binder ratios
4. mixing technique
5. pelletisation method

A laboratory that is equipped to determine the correct values or methods to produce quality feedstock would include a torque rheometer with batch mixer, a twin screw extruder, pelletiser and capillary rheometer.

The application note discusses each of these five factors incorporating the specific equipment required to complete the step and provide the results or outcome necessary.

For a full copy of this application note quote Item no. 17

Further details on the recommended instruments is available for

Lab scale torque rheometer with batch mixer quote Item no. 18

Twin screw extruder quote Item no. 19

Pelletisers quote Item no. 20

Capillary rheometer quote Item no. 21

Viscosity Measurement of Novel Polymers and Additives Using A Conical Micro Twin-Screw Compounder ...

by Dr Seungrok Kim, Thermo Haake Regional Manager - Asia Pacific

To contact Dr Kim email jippy@nuri.net

For a copy of this paper quote Item no. 22

Or visit www.haake.de/minihome.htm

A comprehensive library of laboratory reports is available from the Thermo Haake website. The index of laboratory reports is available by visiting www.haake.de/labber.htm

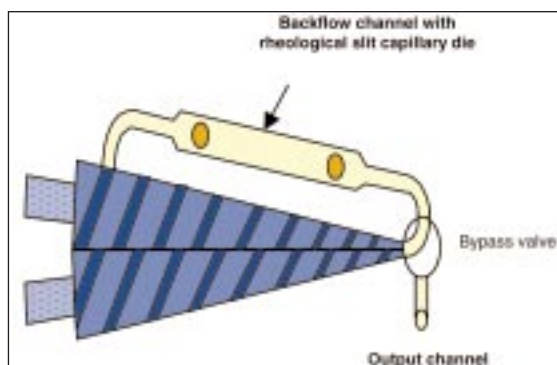
If your particular area of interest or application is not covered then send an email to info@rheologysolutions.com with an overview of your application and we will search our library and advise you of any relevant papers and or reports.

Product Highlight

MiniLab - Micro Rheology Compounder

Now incorporating expanded software functions and features.

The micro compounder is based on the proven conical twin-screw technology with the advantages of a short defined swell time. Scaled down to micro-size the MiniLab is perfect for material science and development work.



- Viscosity measurement is implemented in the backflow channel
- Automatic bypass operation for circulation/extrusion
- Inert gas flush of the feeding area and barrel at the push of a button
- Pneumatic feeding
- Digital graphical data display on a large scale back-lit LCD
- Manual control using a keypad monitoring panel or
- Computer control utilising visualisation software

Application

- Micro-sample required < 8g
- Development of new polymers
- Testing of expensive materials
- Material & rheological studies
- Sample preparation for further testing
- Sample preparation in combination with DSM laboratory injection moulding machine

For a copy of the MiniLab data sheet quote Item no. 23

More Information

Further information on all items in this newsletter is available either as a link to the Thermo Haake website and or by sending an email to info@rheologysolutions.com and quote the item number/s listed or provide the article/item name.

New Product - Meltfixer ST

The Meltfixer ST is a semi-automatic instrument with automatic loading and unloading of the weight on the test sample. The measurement is performed with the built-in microprocessor or PC.

The new Meltfixer ST software is self explanatory and easy to use and includes all the functions necessary for controlling a Melt Flow Indexer and as well as evaluating the data.

The new windows software package features include

- Automatic guidance + auto-fill function
- Graphic & numeric evaluation
- Optional MFR/MVR display
- Control of up to 4 Meltfixers from 1 PC
- Built-in Dr. Melt Help-Wizard



For the technical data sheet on the Meltfixer ST quote Item no. 24

For existing Meltfixer users, additional information is also available and covers Meltfixer 2000 Installation Guidelines. When you start the software for the first time, a wizard will guide you through the installation.



For a copy of the Meltfixer 2000 Installation Guide quote Item no. 25

For details on the Meltfixer Family quote Item no. 26

A fully equipped Polymer Testing Laboratory...

is now established and operational at Thermo Haake.

Contract testing is now available for:

pVT testing

- Density as a function of temperature and pressure
- Isobaric and isothermal tests
- Approximation of the measured data for direct use in Moldflow - and Cadmold programs

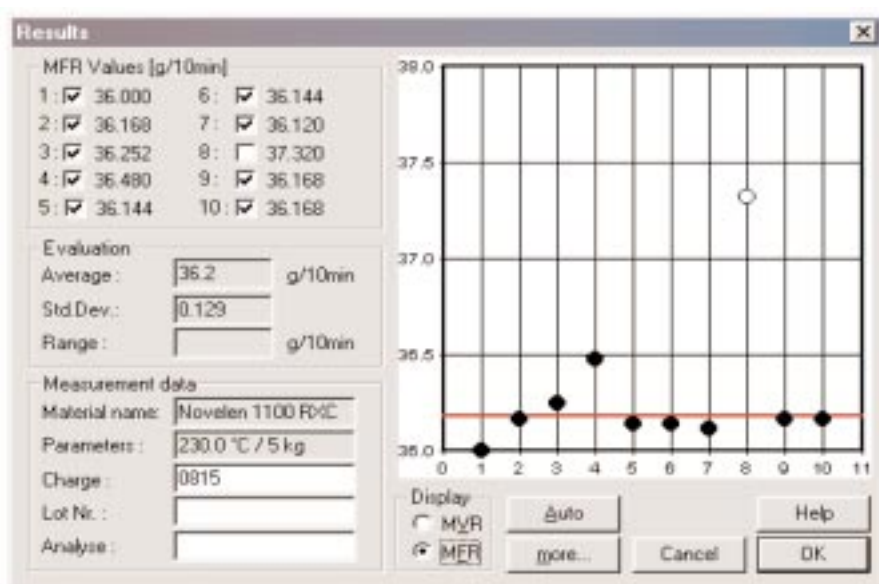
Thermal conductivity testing

- Thermal conductivity as a function of temperature and pressure
- Viscosity testing on a high pressure capillary rheometer providing viscosity as a function of shear rate and temperature

Melt flow index testing

- Melt flow rate and melt volume rate tests according to ASTM and ISO standards

For details about contract testing quote Item no. 27



Features of the Meltfixer ST include:

- User friendly design
- Quick die release
- Manual operation via display & control unit
- Designed for 24 hour use
- Turnable lifting device ensure cleaning
- No weights above the cylinder during cleaning
- Free view and access into the measurement cylinder

