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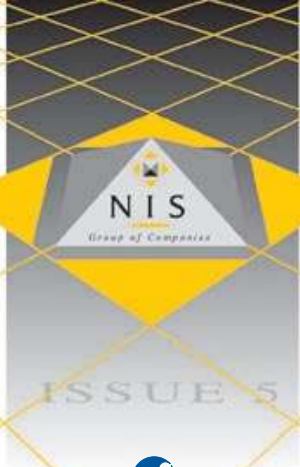
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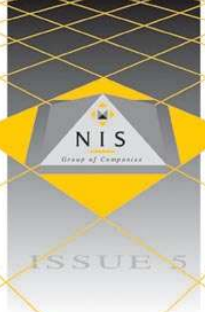
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Transitions®



Invotec's New Vision for Transitions Optical

NIS Invotec has started work on a grant assisted Research & Development project (partially funded by the Irish Government) for Transitions Optical Limited based in Tuam, Galway. Transitions are the leading manufacturer of plastic photochromic lenses, - spectacle lenses that react to changes in light intensity.

Transitions will receive support for providing a focus on R&D manufacturing process developments and new product introductions. By creating a centre of excellence in Tuam, it is envisaged that the Irish site can provide process R&D for Transitions Optical operations, and can assist in driving best practice global manufacturing strategies.

The Enterprise Ireland R&D Management Initiative provides the ideal framework to help develop a best practice R&D capability in Ireland. The project is planned to last approximately nine months and will be split into four distinct phases.

Invotec has spent the last twelve months providing similar consultancy support to Cahill Printers in Dublin, where they have been driving the development of existing management procedures and in-house R&D capability.

Invotec is one of only a small group of British consultancy firms to have been awarded accreditation by Enterprise Ireland.

Capping Black Market Bottled Gas

The black market refilling of bottles by unauthorised operators is a growing problem in Ireland. Calor Gas, a major supplier of bottled gas in Ireland, is also concerned that the black market bottles are potentially unsafe and that the consumer has some difficulty in identifying the genuine product.

They invited Invotec to carry out a design study for the development of a bottle cap which indicated, clearly, whether or not it had been tampered with, thus bringing the status of the bottle to the consumer's attention. Currently the cap is shrink-wrapped onto the bottle and can be difficult to remove. More often than not,

it arrives back at Calor's depots with the shrink wrap still intact, creating a production log jam and a high degree of cap and seal wastage.

Invotec has undertaken a research programme into available methodologies used in similar applications and several initial concepts have been drawn up. A start-up meeting for the development of prototypes for a new cap design has also taken place and the decision taken to create a single rapid prototype model using stereo lithography. This will make a soft tool capable of producing up to twentyfive finished bottle caps in a polymer - replicating the finished product.



ISO Fermenter Completed for Medeva

NIS has recently completed a contract for the supply of an ISO fermenter to Medeva Pharmaceutical who are based at Speke near Liverpool. Covering design, construction, installation and commissioning, the contract included the validation of documentation, pipework upgrades and control instrumentation for the ISO vessel.

The design objective was to provide a fermenter capable of providing an operational and functionally sterile environment for cell growth. Consisting of multiple draw and feeds it utilises micro-carrier technology and incorporates an agitated vessel fitted with a draught tube of approximately 100 litres working volume.

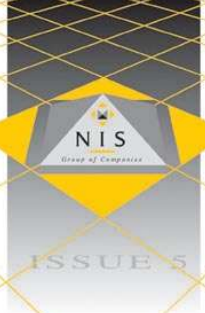
The vessel is jacketed to facilitate temperature control of the contents.

An important module within the overall design was the control system. This monitors temperature, pH, dissolved oxygen pressure and agitator rate. Control of the fermenter temperature is by means of a heat transfer media circulating through the vessel jacket which is fitted with temperature sensors.

All pipework is manufactured from ANSI 316L grade stainless steel.

NIS will provide project validation documentation for the manufacturing process and full installation of system.





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Glass Breaker for Nuclear Vitrification Plant

The functional testing of a new melter glass breaker has been successfully completed by NIS on behalf of BNFL Engineering Ltd.

It consists of a water hydraulic powerpack which delivers a force of up to 100 tonnes to three hydraulic cylinders. These are used to crush redundant vitrification line glass melters in order to remove the glass residues. Two electrically driven jack hammers attached to the structure assist with the removal process.

Completed within five months, it is the result of a fast-track project design and manufacture contract.



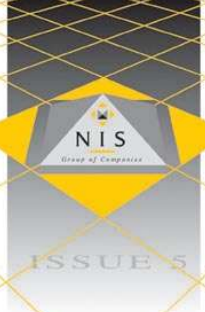
Phosphor Technologies Expand Applications

Phosphor Technologies (PTL), an NIS associate company, is dedicated exclusively to the development and manufacture of high quality inorganic phosphors.

They are involved in a wide range of projects including UV Lamps, X-ray applications, cathode ray tubes (for domestic televisions and computers), 'after glow' materials used in escape route marking - and even artificial teeth!

More recently, PTL have been involved in special inks with phosphors incorporated into them for use in security printing on bank notes, share certificates, passports and other important documents for identification purposes.

The PTL team are highly skilled and creative phosphor chemists with a combined experience of over 30 years and work closely with organisations from all over the world.



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Tenneco Walker Commission NIS Automation Expertise



NIS recently completed one of two automation contracts for Tenneco Walker, the Burnley based car component specialist. The first project was the design and manufacture of an automated press loading system for the production of instrument housings supplied to Toyota for their Corolla and Avensis models.

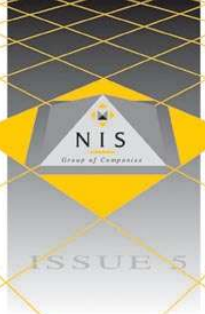
It features two Motoman XRC Robots, mounted on a sliding track, which load a four stage Colishaw 360 tonne press with components. The autocell can process up to 12 different components and has a cycle time of 11 seconds.

Because Tenneco Walker operate a JIT system, two tool changes per shift had to be accommodated. To assist this, the design allowed for the robots to slide automatically out of

the way to enable forklift access to the tool set. The robot gripper uses a combination of magnetic and pneumatic grips capable of holding two components simultaneously.

One interesting aspect of this contract was the willingness of Tenneco Walker to transfer an existing 360 tonne press to NIS. Here it was fitted with a Smartpak which enabled NIS to monitor the precise position of the platens and to ensure that the completed system was operationally proven prior to final installation and commissioning of the total package.

The second contract is for design and manufacture of an automated exhaust pipe manipulator, due for commissioning later in the year.



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High Tech Wok!



Trying to mass produce pre-prepared meals which compare favourably with traditional home cooking or those obtained in a restaurant, presents the food manufacturer with a complex set of problems. However accurate the ingredients are, the fact is

that replicating certain characteristics is not always possible using conventional techniques and equipment. It was for this reason that Petrie was approached by Northern Foods to help them expand their Chinese food range sold by a large high street retailer. To do this it was necessary to develop an 'industrial wok' which delivers heat to food at a very high rate.

The purpose of a wok is to rapidly cook and sear the outer surface of meat or vegetables without over cooking the inside.

The problem of conventional systems is that the rate of heat transfer to the pan is too slow to match the rate of heat taken up by the food

instead of searing the surface the contents are cooked through as in stewing.

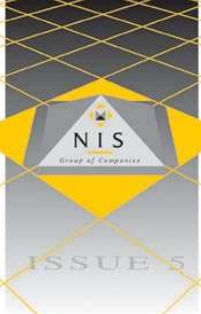
Petrie's novel solution to this problem has been to use induction heating, a method usually associated with metal melting and metal heat treatment. This technique can deliver very high power densities into ferromagnetic materials. By designing a food compatible vessel with the right ferromagnetic properties mounted on a specially designed induction coil, a revolutionary new cooking process has been developed. In essence, this new development has made it possible to reproduce, on an industrial scale, the quintessential characteristics associated with true wok cooking.

High Tech Wok!

In parallel with this work Boucherot, our associated company, has developed a totally new induction heating power supply. This is a 20kW, 20kHz unit about the size of a PC. Not only does it replace a conventional power supply that is about the size of an average wardrobe, it is also a fraction of the price.

Petrie's customer witnessed the prototype induction wok in operation in the Petrie test centre and has since taken delivery of it at their development kitchen. We can now look forward to a new range of ready meals which should be indistinguishable from those prepared by Ken Hom!





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Petrie Technologies Teams up with Philips on 'Project Cobra'

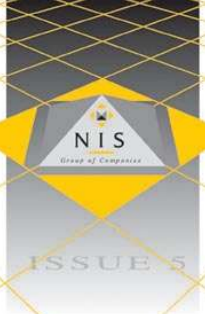
Petrie Technologies is currently working with Philips on 'Project Cobra' for Sims Portex (the medical equipment division of Smiths Industries). Petrie has been awarded a contract to supply RF equipment to Philips of Eindhoven who are acting as project managers to supply machinery to the Sims Portex factory in Hythe.

The contract is for the design and manufacture of machines for the continuous production of tracheal tubes used in the application of anaesthetics and the control of gas flow to the lungs of patients undergoing or recovering from surgical operations.

Petrie is supplying 6 RF systems, two of which set the tubes to a radius which will be suitable for insertion into a patient's throat. The other four form the 'Murphy Eye' which is a specifically shaped hole in the wall of the (curved) tube that will align the patient's nasal passage. Many different tube diameters are necessary - from small babies to adults - and these have been accounted for in the equipment's design.

Current labour intensive manufacturing processes will be replaced by the new machine, which consists of many small machines with individual operators.





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Contact Lens Production Automated

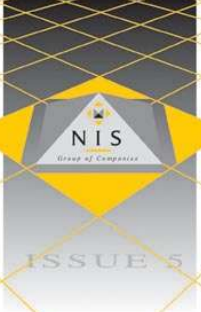
In order to meet the fast growing market for contact lenses, Ocular Sciences Ltd, an American owned lens manufacturer considered automating the production of contact lenses, hitherto a predominately labour intensive process.

O.S.L then approached NIS and Petrie Technologies to help turn their theoretical ideas into a practical reality. Following development and a series of proving trials, a number of systems have been ordered for installation into Ocular Sciences' plant worldwide.

The automated system incorporates wet end and mechanical handling systems designed by

NIS and special high throughput ovens designed by Petrie Technologies. Once in operation, it will enable lenses to be produced in high volume, placing Ocular Sciences at the forefront of lens manufacturing competitiveness.





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Apprentice Awards

Our congratulations go to Anthony Salisbury on his success at the BNFL Fuel Business Group Apprentice Prize Awards, which were hosted at the BNFL Training Skills Centre, Springfields.

For the second year in succession an NIS apprentice has joined the prize winners at the annual apprentice parents' day. Mr Mike Saunders, head of UK Fuel Operations presented Anthony with his award. Anthony is currently training with Jim Thornhill's team and we wish him every success in the future.



Mike Saunders presents Anthony Salisbury with the apprentice award.

Appointments and Promotions



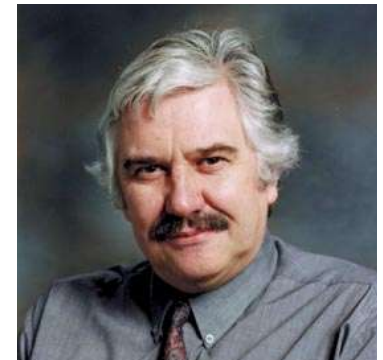
Steve Dimmock joined NIS Limited in October 1999 as Senior Project Manager.

Steve was specifically recruited to look after Industrial and Automation projects. His main client is UPONOR.



Ray Shaw joined NIS Limited in November 1999 as Sales Manager, having spent a number of years in a similar industry.

Ray is responsible for sales in the Industrial and Automation sectors.



David Beard re-joined NIS Limited in November 1999, in the role of Proposals Engineer, concentrating mainly on Industrial and Automation projects.

David has a mechanical background in industrial automation projects, in particular robotic application.