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IRt/c Mission

Increase Your Profitability

Why consider non-contact temperature detection and control in your production process?

- Reduce losses by inspecting *every* product for correct temperature or thermal signature.
- Improve product quality by optimizing the production process based on *actual* product temperature and thermal signature.
- Increase production throughput with *no capital expenditure* by increasing speeds, using precise knowledge of actual product temperature and thermal signature.

All of the above add up to increases in profitability for the plant, which is the mission of the IRt/c.

For OEM applications, *the profit-enhancing is enjoyed by your customers*, thus making you their supplier of choice due to your contribution to their profitability.

The following Profit-Enhancing Applications are examples where users have increased their plant profitability successfully. Details of the technical approach to using IRt/c's in the applications are given in the Tech Notes section.

Application (Tech Note #)	Discussion	Profit-Enhancement		
		Reduce Costs	Improve Quality	Increase Throughput
Asphalt (51)	Temperature monitoring is a common requirement, but the thermocouples normally used break frequently due to the harsh abrasiveness of the material, and must constantly be replaced at high cost and interruption of production. IRt/c's improve profitability by eliminating replacement and lost production costs.	●		●
Coatings: Plastic (4, 24, 40)	Coating metal objects with teflon, polycarbonate, and the like is highly temperature sensitive for scrap rates and quality. IRt/c's improve profitability by tight control of actual temperature to reduce scrap, and 100% inspection to improve quality.	●	●	
Dough (43)	Measuring the temperature of bread and pastry dough while mixing is difficult at best with conventional contact t/c probes, due to breakage and contamination of the food. However, the temperature is quite important since too high a temperature will cause too much rise, causing holes in the baked product, and too low a temperature will not allow the dough to rise sufficiently, thus resulting in a baked product that is flat. IRt/c improves profitability by monitoring temperature without contact, thus completely eliminating breakage and contamination, and control mixing speed motors to maintain proper dough quality and throughput.	●	●	●
Drying: Paper, Wood, Textiles, Film (24, 62, 67, 71, 81, 83, 86, 93)	One of the most common manufacturing steps in many industries, drying process control is essential to maintain plant profitability. The IRt/c provides detailed and reliable information on the surface moisture content in order to determine "dry-out point" as well as other parameters to reduce scrap, increase quality, and increase throughput.	●	●	●
Electric Power (47)	Highly loaded electric power conductors, especially switching and transforming equipment, are capacity limited by the temperature rise characteristics caused by their resistive losses, IRt/c improves profitability by providing this temperature rise information to power routing controls, thus optimizing equipment capacity and increasing throughput.			●
Flame Detection (10, 73)	Flammable materials handling may require flame detection devices to alert or shut down the process in the event of a fire. The intrinsically safe IRt/c can provide a cost effective method of monitoring many locations, reducing cost and inconvenience of false alarms.	●		

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Furnaces: Induction (44)	An induction field makes temperature measurement and control difficult by contact methods, but is simple and cost effective with IRt/c's. Profitability is enhanced by reduced scrap, improved quality for customers, and increased throughput for the same furnaces.	●	●	●
Furnaces: Thermowells (58)	Thermocouples and thermowells in many furnaces require frequent and costly replacement due to their immersion in high temperature environments. IRt/c's improve plant profitability by eliminating t/c replacement costs, and the associated downtime.	●		
Furnaces: Vacuum (6, 8, 78)	Vacuum makes temperature control by contact methods very expensive. Non-contact IRt/c provides a simple inexpensive solution, saving thousands of dollars per installation.	●		
Glass (48)	Temperature is a primary control variable but is impossible to measure by contact means, and plants must use either ambient temperature as an indirect approximation, or an infrared device to measure the glass directly. IRt/c's enhance profitability by improving the quality of control compared to ambient sensors, or by providing many times the monitoring points of conventional infrared for the same investment.		●	●
Hazardous Materials (10, 42, 73)	Handling, processing, or storage of certain materials involves an element of risk of fire, chemical damage, or explosion. IRt/c's provide a cost effective method of monitoring many points in the handling or storage of the materials.	●		
Ice Skating Rinks (contact factory)	Quality of skating is strongly dependent on the surface temperature of the ice, but is impossible to control without infrared method. IRt/c is used to monitor the ice surface from high above the ice, and provides profit enhancing by improving the quality of the skating surface for your customers, and minimizing refrigeration cost.	●	●	
Laminating Machines (contact factory)	Laminating processes, strongly dependent on temperature of the materials, require constant adjustment to maintain quality. Non-contact IRt/c measurements provide the machine with the ability to adjust itself, even when materials are changed. Profit is enhanced by reduced scrap, improved quality for the customers, and increased throughput speeds.	●	●	●

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Machining (50)	Tolerances are substantially impaired by uncertainty due to the dimensional changes which occur with temperature, and is especially important as the tool wears - significantly more frictional energy imparted to the part. IRt/c's enhance profitability by providing part temperature data to the machine-tool's computer to compensate, or to the coolant temperature control to maintain part tolerance, thus reducing scrap and improving throughput.	●		●
Medical Equipment (5)	Processes in clinical diagnostics involving blood samples and other fluids that must be heated to 98.6°F (37°C). Since sterility and absolute prevention of contamination are paramount, measuring and controlling fluid temperatures is difficult. Accurate thermistors or thermocouples in the disposable fluid handling components are far too expensive, and contact devices risk contamination and inaccuracies. Non-contact IRt/c reduces cost of disposable elements, and provides high accuracy control of fluid temperature.	●	●	
Metals (65, 87)	Temperature monitoring requires specialized infrared methods that conventional IR devices can provide only at prohibitively high cost and low reliability, thus depriving many processes involving metals with a method of monitoring and controlling temperature. IRt/c's are practical, reliable, and cost effective for these applications, thus providing the profit enhancements of improved quality for customers and improved throughput from fixed capital equipment.		●	●
OEM Interface (72, 85, 86)	OEM applications are cost and set-up sensitive, and customers value highly trouble-free use of the system manufactured. The low cost, reliability and high repeatability of IRt/c's, combined with standard inexpensive t/c interfaces makes it possible to provide your customer with high quality non-contact automatic temperature control, that improves your customer's quality and enhances your profitability by selling more and higher quality systems.		●	●

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Application (Tech Note #)	Discussion	Profit-Enhancement		
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Packaging: Product Temperature (46)	Products being packaged after processing must be at the correct temperature. IRt/c's can measure and control the actual product or package temperature without contact, thus enhancing profitability by reduced scrap and grater throughput.	●		●
Packaging: Using Hot Melt Adhesive (18, SnakeEye Section)	Charred hot melt, non-meltable contaminants, and mechanical failure are unavoidable occasional events in high volume packaging, which if not detected, produces poor quality products and introduces potential legal liability. IRt/c and SnakeEye sensors inspect every product for correct adhesive presence, by thermal signature. Profits are enhanced by reduced scrap and higher customer/marketing value.	●		●
Paint: Curing (4, 62, 67, 86)	IRt/c can directly measure paint surface temperature during cure, regardless of speed, color, type, etc. Presently a standard method in many industries. Provides all three methods of profit enhancement: reduces rework costs, improves quality for customers, and increases thoroughput by employing shorter cure times at higher heat flux densities.	●	●	●
Plastic: Extrusion (40, 62, 80)	Extrusion temperature is critical for quality, but cannot be measured with conventional means. IRt/c improves quality and optimizes throughput by providing accurate temperature information.		●	●
Plastic: Injection Molding (9, 62)	Sometimes serious problem in high volume plastic injection molding machinery is a molded part that does not clear the mold, resulting in long down time to clean up or make repairs. IRt/c scans the mold face for uncleared parts.	●		
Plastic: Vacuum and Thermal Forming (22, 62)	Radiant heaters soften plastics to be formed, but variations in heater, material, and environmental conditions produce significant variations in the final product. Direct measurement and control of the plastic temperature increases profitability by reducing scrap, improving consistency of quality, and increasing throughput rates for same capital equipment.	●	●	●

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Printing (45, 62, 67, 71)	Temperature is critical at every printing step, from ink viscosity on the platen to the final drying and cooling of the printed sheets. The small physical size, high reliability, outstanding repeatability, and low cost of IRt/c's provides an opportunity to enhance profitability at each step of the printing process: reduced scrap during start-up and press adjustments; higher quality printing and increased throughputs from tighter control; and the ability to use waterless inks for high quality and reduced environmental waste.	●	●	●
Soldering: Preheat for Wave (23)	Circuit board temperature variations cause soldering quality variations that limits throughput speed of wave soldering machines. Direct measurement and control of board temperature with IRt/c's enhances profitability by improved soldering quality and increased throughput speeds.		●	●
Tires: Production (88)	The vulcanizing step in tire production requires a certain time at temperature, and if the "green" tire temperature is known, the vulcanizing time can be optimized to account for cold or warm green tires. Conventional IR devices can only measure surface temperature, which is considerably different from internal temperature of the rubber. An innovative new IRt/c has been developed that employs a heat balance technique to actually measure the temperature inside the tire without contact. With this new IRt/c, tire plant profitability is enhanced by increasing throughput with the same capital equipment.			●
Tires: Racing (13)	Tire temperature patterns during racing provide valuable information on the set-up and performance of the suspension for competitive teams. Uneven loading caused by out-of-tune suspension will cause variations in tread temperatures, that are in turn used to tune the suspension for			●
Webs (21, 24, 28, 45, 67, 71, 81, 83, 84, 86, 93)	Web heating and cooling are important steps in determining scrap, quality, and throughput rate; and most of the time are not controlled accurately, especially for variations across the web. IRt/c's are used both singly and in arrays to provide the machine control system to optimize heat/cool action based on the actual web temperature. Profit enhancement follows directly from the scrap reduction, improved quality, and increased throughput.	●	●	●

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