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CONSTIPATED PIPELINE? HOW TO “ROOT” OUT THE PROBLEM WITH INFRARED

By Frank Bryson
Bryson Infrared Technologies



THE PROBLEM

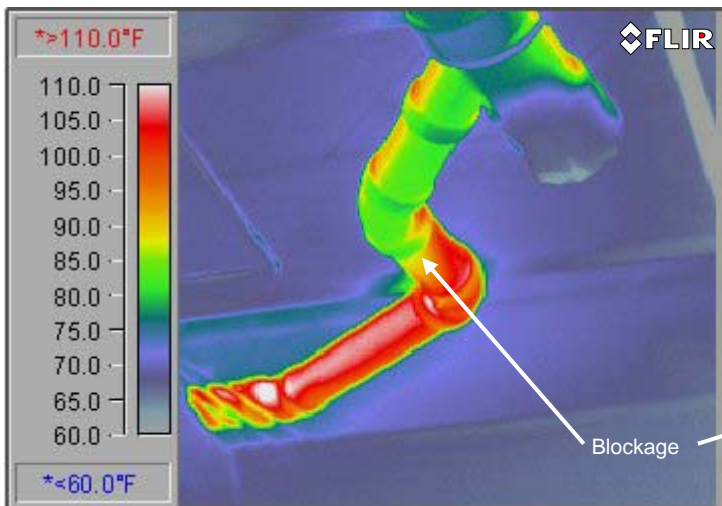
Every homeowner has, at one time or another, encountered this problem. It is a Saturday evening, and someone is washing the supper dishes.. when a frantic cry comes from the kitchen... “Help.. the sink drain is plugged!” It is the worst possible time.. where can you find a plumber on a Saturday evening? And you have company coming for Sunday dinner! It probably will cost a fortune to get a plumber to make a Sunday house call.. if you could even find one who was available.

I was faced with this exact situation one recent Saturday. I am a “home handy-man”, so I thought I should attempt to

solve the problem myself. The first thing was to locate where the blockage was. Was it inside the house, or in the buried drain under the cellar floor, or possibly even outside the house? A quick test using the cellar sink verified that it’s drain was clear and flowing properly. The blockage was therefore somewhere in the house, between where the cellar sink drain joined the main line and the kitchen. Now the problem was how to locate where in the wandering drain line on the cellar ceiling was the blockage. There were several 90° and 45° elbows and lateral fittings, each a potential candidate for trapping solids and causing the blockage. Was there an efficient way to find which fitting was the culprit?

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**YOU ARE CORDIALLY INVITED TO THE THIRD ANNUAL
INFRARED THERMOGRAPHY
APPLICATIONS CONFERENCE
September 29 – October 2, 2002
Orlando, Florida**

The Infrared Training Center (ITC) and FLIR Systems, world leaders in thermography training, thermal imaging and temperature measurement systems, invite you to attend our unique and informative **InfraMation 2002 Applications Conference** – the leading global infrared camera user meeting – in Orlando, **September 29 – October 2**, at the beautiful **Wyndham Orlando Resort**.

InfraMation provides an exciting forum to network with other IR thermographers and technical professionals to exchange applications information and success stories. Most importantly, learn new ways to maximize your investment in IR technology!

Stay current with innovative thermography applications, predictive maintenance trends, cost-saving techniques, and cutting-edge infrared camera and software developments – including the **new ThermaCAM P and E-series systems from FLIR**.

**Register before July 31, 2002 and receive
a value package worth up to \$500!**

Highlights of this exciting 2 ½ day **InfraMation 2002** conference will include:

- Over **30 informative presentations** by actual infrared camera users
- **FREE IR applications and software clinics** – bring your specific work projects, problems and questions for expert consultation. Clinic attendance is limited and you must be a paid **InfraMation 2002** Conference registrant to reserve a spot so register today!
- **Exhibitors Showcase** featuring interactive displays by leading predictive maintenance vendors
- Both informal and formal discussions with fellow thermographers, industry professionals, and ITC instructors.

Last Chance for Early Bird Savings!

InfraMation is designed and produced by the world's leading IR experts to help you get the most out of your infrared program. Whether you're a new or seasoned thermographer, **InfraMation** is the one thermography conference you can't afford to miss!

[To learn more, visit our web site <http://www.inframation.org/index.aspx>](http://www.inframation.org/index.aspx)

Register before July 31, 2002 and take advantage of our special discount package!

FOR QUICK AND EASY INFRAMATION 2002 REGISTRATION

Call toll free: **1-800-254-0632** or,

email: inframation@flir.com, or,

register on line: <https://www.inframation.org/secure/secregistration.aspx>

[Wyndham Orlando Resort](#)



See the presentation list on page 4



Infrared Thermography

Level I certification courses

The Infrared Training Center is holding a series of infrared training courses and would like to invite you to attend!

The Level I course is geared to the new IR camera user and focuses on its use for a variety of applications.

Attendees completing course requirements and a field assignment will receive a Level I Thermography Certification.

COURSE HIGHLIGHTS

- *Introduction to thermal imaging and measurement systems for predictive maintenance applications. No experience in thermography is necessary!*
- *Collect quality data, accurate temperature readings, and account for measurement effects such as distance and emissivity using IR cameras.*
- *Interpret thermograms and make informed decisions using heat transfer concepts to analyze images, and see the latest in report generation and database software.*
- *Avoid costly mistakes — distinguish between hot spots and reflections, direct vs. indirect readings and qualitative vs. quantitative thermography.*

TUITION

A registration fee of \$1550 includes 4-day seminar cost, breakfast/lunch and all course materials.

DETROIT

| | |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| DATE: July 29-Aug. 1, 2002 | ITC Room Rate: \$110 + TAX |
| TIME: 8 A.M. to 5 P.M. | |
| WHERE: Best Western Sterling Inn 34911 Van Dyke Avenue Sterling Heights, MI 48312 Phone: 586-979-1400 | Hotel info: http://www.icfar.com/hoteldetails.asp?ahotelid=10193622 |

DENVER

| | |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| DATE: August 6-9, 2002 | ITC Room Rate: \$99-\$119 + tax |
| TIME: 8 A.M. to 5 P.M. | Airport: DIA - approx. 27 mi. |
| WHERE: Holiday Inn Denver - Downtown 1450 Glenarm Place Denver, CO 80202 Phone: 303-573-1450 | Shuttle service: Super Shuttle \$18 one way, \$32 round trip Leaves every 10 min. from DIA Level 3 |

REGISTRATION

If you have any questions or to register, please contact Laurie Kelley:

(978) 901-8291 or toll free at 1-866 TRAINIR.

1-866 TRAINIR

<http://www.infraredtraining.com/>

INFRAMATION 2002 PRESENTATIONS

- Infrared applications in the petrochemical refinery - Robert Bonin
- Thermographic evaluation of trapped liquid - E.M. Crisman
- Don't let the RAT bite you!
- Mikael Cronholm
- Can your Infrared camera find every electrical problem? - Joe DeMonte
- Thermography in diagnosing and predicting horse injuries - Hesham Fattouh
- Thermography shielding effects of bushing covers on breaker bushings - Jerry Frank
- Keys to a good inspection program, or Progress with the E2 camera - Mark Goff
- How ultrasound and infrared work together to enhance leak inspection
- Mark Goodman
- Integrating infrared and airborne ultrasound - Jim M. Hall
- Predictive/Preventive maintenance—Who needs it? - Richard R. Harrison
- Use of IR thermography as a standard in the QA and QC of masonry construction
- Matt Innocenzi
- Finding termites with thermal Imaging
- Ken James
- Using FEA-based heat transfer analysis to extend the scope of IR - Jack Kleinfeld
- Thermographic surveys involving rubber based cap-sheet membranes
- Kathryn Barker.Knettel
- Oil circuit breaker thermography
- Bob Madding
- The role of building sciences in predictive maintenance programs - Phil McMullan

- Thermography for computer room inspections - Curt A. Nasset
- Solution oriented asset reliability for thermographers - Terry O'Hanlon
- Using infrared thermography on offshore platform equipment - Albert A. Ohliger
- The highs and lows of current-available and temperature relationships
- Nina Olinger
- Infrared inspections of electric substations—the importance of developing a plan
- James "Dan" Roark
- Holistic predictive engineering
- Angus Robertson
- Infra red inspection viewing ports
- Martin Robinson
- Thermal characterization of substation class metal-oxide varistor (MOV) surge arresters - David Rueger
- Nondestructive testing of building envelope systems using infrared thermography
- John Snell
- Infrared applications everywhere!
- Gregory Stockton
- Five uncommon component anomalies - Richard Strmiska
- Troubleshooting paper machine problems through thermal imaging - Robin Thon
- The application of thermography for the on-line quality inspection of materials and processes - Mike Watkins -
- Lessons learned: using low cost, uncooled IR cameras for the rapid liquid level assessment of chemical UXO and storage vessels - Kevin Young◆

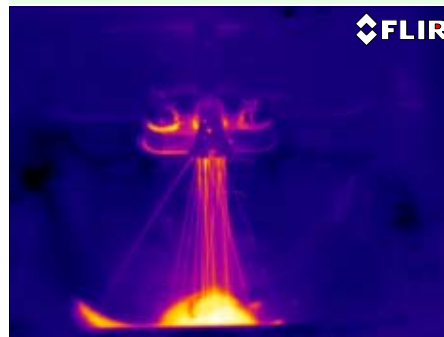
BRAINTEASER OF THE MONTH



Here is this month's brainteaser. First reader to email me with the correct explanation wins \$20 in Infrabucks. Please put "Brainteaser" as the subject of the message.◆

Mailto:
Gary.Orlove@infraredtraining.com

LAST MONTH'S BRAINTEASER



We had a lot of guesses that this was the Space Shuttle but it wasn't! Congratulations to Scott Christman from GE Power Systems in Allentown, PA for his identification of hot water running out of a faucet. ◆

PLUGGED PIPING (CONTD.)

(Continued from page 1)
My first inclination was to start opening access plugs, however after starting to remove the first one and getting deluged with dirty drain water, I decided there must be a better way to approach the problem. After a few minutes consideration I realized I was overlooking something that was so obvious it had escaped me! I am an infrared thermographer, my business is solving problems using infrared thermography. Why couldn't I use IR imaging to locate the blockage without tearing the drain apart?

THE SOLUTION

Once I thought about it, the solution was simple! When I opened the drain plug and gotten soaked, most of the water in the drain pipe had run out. I went to the kitchen sink, and ran hot water down the drain. I then went into the cellar and looked at the drain pipe with my infrared thermal imaging system, starting under the kitchen sink and moving toward the main drain pipe exiting the house. Initially the pipe was warm, until abruptly, at a 45° elbow fitting, there was a sharply defined thermal transition. The elbow created the blockage that held back the hot water, causing the exterior wall of the sink drain line up to that point to become warm, but past the blockage the pipe was cool! Problem located! From there on it was simple to remove the appropriate access plug, rod out the blockage, and clear the line! Yes, I will admit, not many homeowners have an infrared thermal imaging system in their toolbox, but now I have another application to offer my industrial clients!◆

Many thanks to Frank for providing this success story. Frank earns \$100 in Infrabucks for his contribution. You can reach Frank at 978-922-7575 or mailto:BrysonIR@aol.com - Editor

itc U.S.A., BOSTON

16 Esquire Road
N. Billerica, MA 01862, USA

Tel: +1-978-901-8405
Toll free: +1-866-TRAINIR
(866-872-4647)

Fax: +1.978.901-8832

E-mail:

mailto:info_us@infraredtraining.com

itc INTERNATIONAL, SWEDEN

Rinkebyvägen 19
SE-182 11 Danderyd, Sweden

Tel: +46 (0) 8 753 25 00

Fax: +46 (0) 8 753 26 01

E-mail: <mailto:itc@flir.se>

About the Infrared Training Center

The Infrared Training Center offers training and certification in all aspects of infrared thermography use. Our world-class training facilities are located near Boston, Massachusetts, USA and Stockholm, Sweden and have the world's most extensive hands on laboratories for infrared applications. Please join us in exploring the fascinating world of infrared!

Your comments and suggestions about this newsletter are welcomed and encouraged. If you have an interesting application or case study to share, we encourage you to submit it for publication.

Please e-mail

mailto:Gary.Orlove@infraredtraining.com or regular mail to the USA office

"Delivering world-class training and knowledge about thermography"



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Upcoming Classes - Americas

Remember we also teach customer site training courses at your convenience. Please contact us for more information.

July 2002

- 15-19 – Level I – Boston, MA
- 15-18 – Level I – Portland, OR
- 15-19 – Level I – Venezuela
- 22-25 – Level I – Nashville, TN
- 29-8/1 – Level I – Detroit, MI

August 2002

- 5-9 – Level I – Boston, MA
- 6-9 – Level I – Chicago, IL
- 6-9 – Level I – Denver, CO
- 12-15 – Level II – Chicago, IL
- 13-16 – Level I – San Francisco, CA
- 26-29 - Level I - Honolulu, HI

September 2002

- 9-13 – Level I – Boston, MA
- 9-13 – Level I – Argentina
- 10-13 - Level I - Edmonton, Canada
- 16-19 – Level II – Edmonton, Canada
- 16-19 - Level II - Prince George, BC
- 17-19 – R&D – Santa Clara, CA
- 17-20 – Level I – Raleigh, NC
- 18 – ThermaCAM Reporter Software - Boston, MA
- 23-26 – Level I – Toronto, Canada
- 23-27 – Level II – Boston, MA
- **29-Oct 2 - InfrAMation Conference - Orlando**

October 2002

- 7-11 – Level I – Chile
- 14-18 – Level I – Boston, MA
- 14-17 – Level II – San Diego, CA
- 14-18 – Level I – Mexico
- 21-24 - Level I - Vancouver, BC
- 22-24 – R&D – Boston, MA

- 22-25 - Level I - Anchorage, AK
- 28-11/1 – Level I – Venezuela

Upcoming Classes - International

July 2002

- 1-5 - Level I - Italy
- 1-5 - Level I - South Africa (ABB)

August 2002

- No Courses

September 2002

- 2-6 - Level I - Singapore
- 9-13 - Level II
- 9-13 - Level I - Malaysia
- 16-20 - Level I - UK

October 2002

- 7-11 - Level I - Asia
- 14-18 - Level I - Asia
- 28-Nov 1 - Level I - South Africa

Upcoming Classes - Germany

July 2002

- 9-11 - R&D
- 22-24 - Operator CM
- 22-27 - Level I EN 473

August 2002

- No Courses

September 2002

- 16-18 - Operator CM
- 16-21 - Level I EN 473

October 2002

- 8-10 - R&D
- 21-23 - Operator CM
- 21-26 - Level I EN 473

Rent an infrared camera from **FLIR Systems** to locate electrical and mechanical problems, schedule repairs, and avoid costly plant shutdowns. Whether you have a temporary testing/inspection requirement or need to evaluate an IR camera before purchasing, renting from **FLIR** can help you solve problems.

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<http://www.infraredcamerarentals.flir.com>

FLIR SYSTEMS

Upcoming Classes - France

July 2002

- No courses

August 2002

- No courses

September 2002

- 30-October 2

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