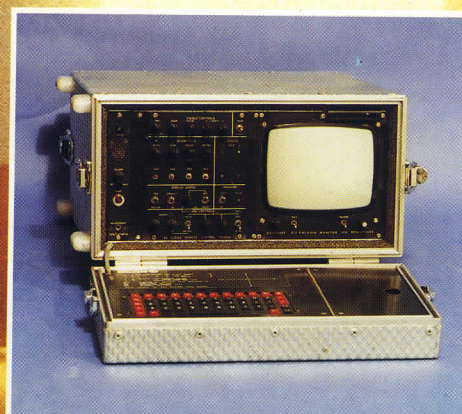
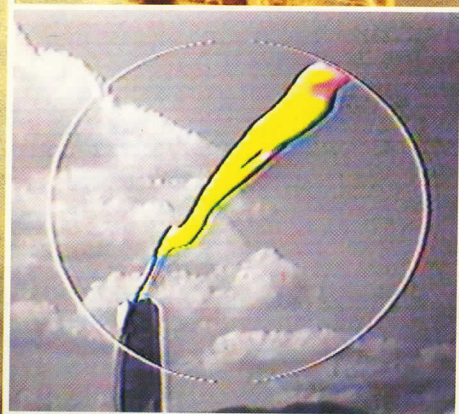
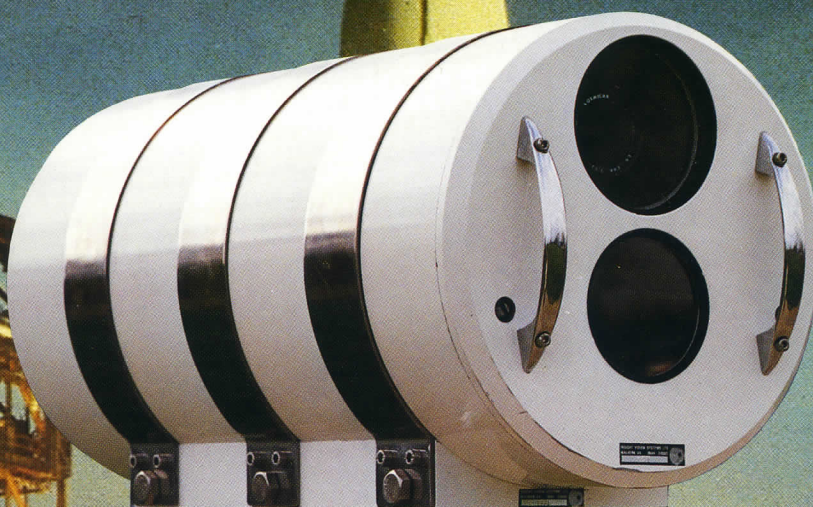


INSIGHT

80 SERIES

HYDROGEN FIRE
IMAGING SYSTEM

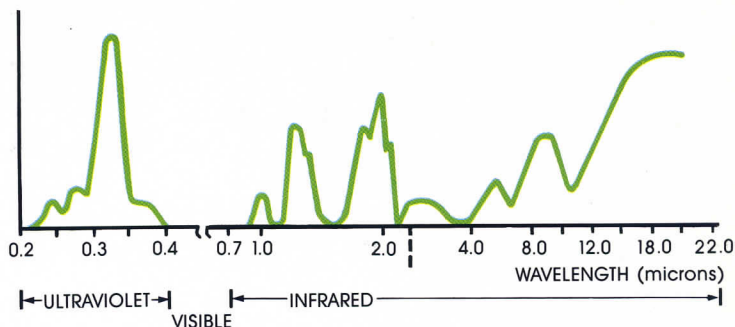


HYDROGEN FIRES

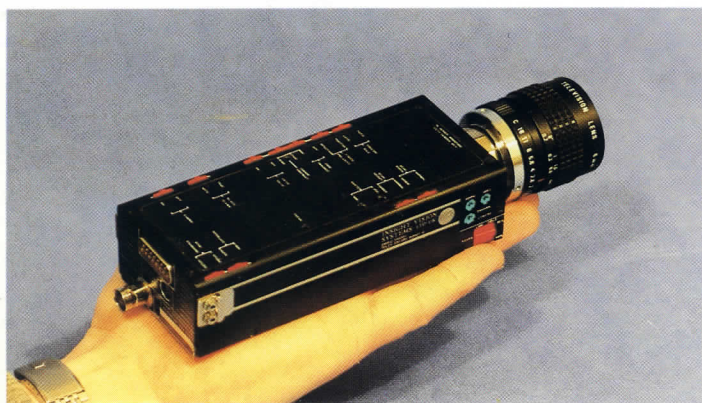
Hydrogen fires emit very little radiation in the visible spectrum. During normal daylight they are invisible to the naked eye. Only a faint heat shimmer can be detected. This can lead to dangerous situations and even loss of life.

For many years various organizations have searched for an effective means of 'seeing' these fires but no commercially available equipment has resulted.

Insight Vision Systems have researched the problem and found high energy emissions in the infrared. These are due to hot water vapor.



The strong emission from 6 to 12 microns has been utilized. This is an optimum taking into account solar radiation, background radiation and atmospheric transmission.



A PRACTICAL APPROACH

Insight Vision Systems have taken existing products in their 80 Series Thermal Imaging range and have developed new products to configure a practical fire detection system.

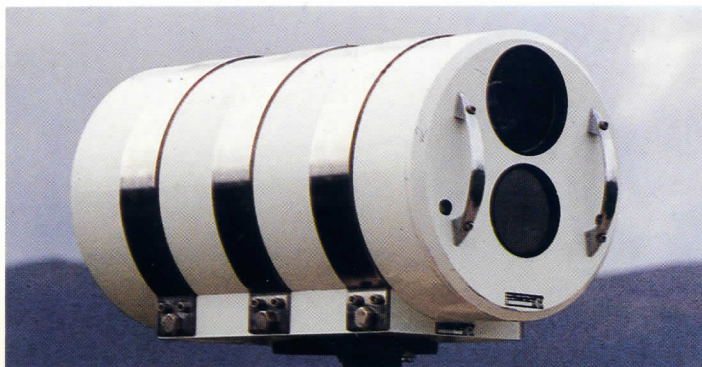
The principle adopted is to present the user with a high quality black and white TV image. A thermal image is boresighted with this but is set up so that the normal thermal image is 'below video black'. If a fire occurs its large signal punches through into the visible image.

Various lenses to cover different fields of view can be accommodated.

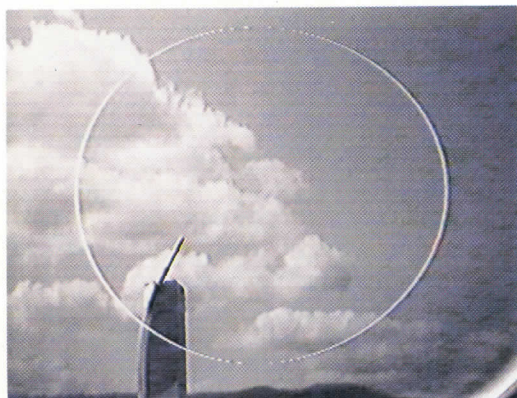
This equipment is located within a specially developed housing for use in hazardous areas.

Insight Vision Systems have addressed the issue of full remote control capabilities. In this system all critical controls can be operated remotely. Compatibility with existing TV installations has taken high priority.

In addition to use in the fire detection role it can be operated as a normal thermal imager measuring temperature and supplying extra monitoring of hazardous areas.



NORMAL BLACK & WHITE IMAGE

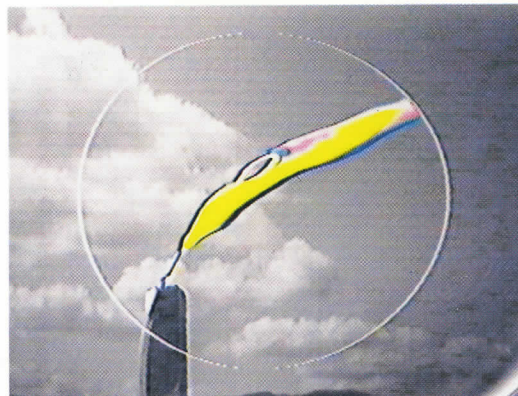


THE RESULTS

Even at close range the hydrogen flame is invisible to conventional T.V. cameras and the naked eye.

The flame is clearly seen by the overlayed colorized thermal imager.

BLACK & WHITE TV IMAGE WITH THERMAL OVERLAYED IN COLOUR



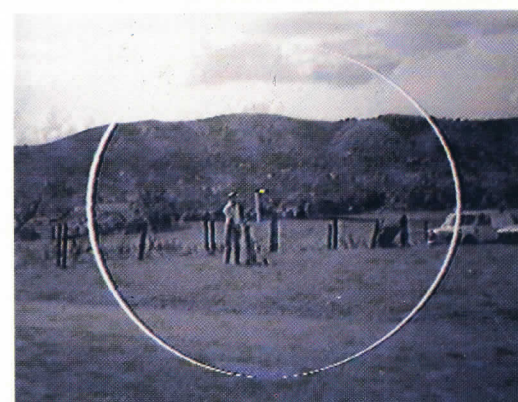
The same flame at 30ft. Even where the flame crosses onto the white background, it can still clearly be seen due to the color 'keying' overlay and black halo.



At 100ft the color is still visible when the thermal camera is in use.



When the same sized flame is at 250ft the color is no longer visible but can still be identified by the white dot and its black halo.



THE ENVIRONMENT

Because there is much hydrogen used as fuel in rocketry, the system has been incorporated into a special housing capable of withstanding the launch of a large space vehicle from close quarters.

Attention has been paid to vibration, shock and

acoustic noise to well beyond military specification levels. In addition flame flash testing at 2000°F. ensures survival in the extreme conditions found during space vehicle launches.

High ambient temperature specification has been covered to allow operation in tropical regions.

INSIGHT 80 SERIES HYDROGEN FIRE IMAGING CAMERA SYSTEM

BRIEF TECHNICAL SPECIFICATION

THERMAL IMAGING CAMERA MODULE

Operation	Chopped mode with digital flicker reduction or pan mode (switchable)
Output Signal	1 volt into 75Ω 625/50Hz or 525/60Hz
Weight	1.9kg (4.2lb) Incl. tube: excl. lens and colorizer
Power Consumption	<6 watts
Size	203mm x 110mm x 110mm (8" x 4.3" x 4.3")

TUBE

STANDARD HIGH SENSITIVITY (HARD VACUUM)

Faceplate	8–14μm Germanium
Resolution	250 TV lines per picture height
Sensitivity	Typically 0.1°C (f0.7 lens)
Life	Better than 5,000 hours

COLORIZER BOARD

Operation	Eight colors PAL or NTSC encoded O/P and RGB O/P
Power Consumption	<2 watt
Weight	0.1 kg (0.2lb)

LENSES

GERMANIUM

18mm f0.7 (60° angle of view)	wt 0.1kg (0.2lb)
35mm f0.7 (32° angle of view)	wt 0.8kg (1.8lb)
50mm f0.7 (18° angle of view)	wt 0.6kg (1.1 lb)

All above lenses with servo iris

ENVIRONMENT HOUSING 4

Size	240mm dia x 510mm (9.5" dia x 20") (incl. handles)
Weight	18kg (40 lb)
Incorporates	Anti Vibration Mounting & Purge Systems

MINIATURE CCTV CAMERA

Resolution	600 TV lines per picture height
Tube	2/3" Newvicon
Weight	0.4kg (0.9lb) incl tube
Power Consumption	<2 watts

CLIP & HANDLE

Size	170mm x 110mm x 40mm (6.7" x 4.3" x 1.3")
Weight	0.2kg (0.4lb)

BUS INTERFACE

Size	62mm x 28mm x 38mm (2.4" x 1.1" x 1.5")
Weight	0.1kg (0.1 lb)

SERVO ZOOM LENS

Lens*	12.5–75mm f1.8
Size	75mm dia x 92mm (3" dia x 3.6")
Weight	0.3kg (0.7lb)

*6mm Wide Angle lens used with 18mm lens on thermal camera

SYSTEM SPECIFICATION

DETECTION

250mm x 50mm (10" x 2") fire in excess of 100m (350ft).
Operation of visual camera 1 lux to high sunlight.

ENVIRONMENTAL

Vibration	28g RMS Vertical 20g RMS Horizontal
Temperature	–10°C to +55°C (14°F to 131°F)
Flash	1100°C (2000°F) for 10 Secs
Salt Spray	20% Solution for 48Hrs at 35°C (95°F)
Acoustic Noise	Mil 810 D
Pressurization	4216kg/m ² (6 P.S.I.) with less than 703kg/m ² (1 P.S.I.) loss in 72Hrs

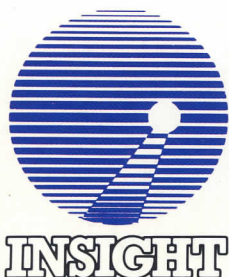
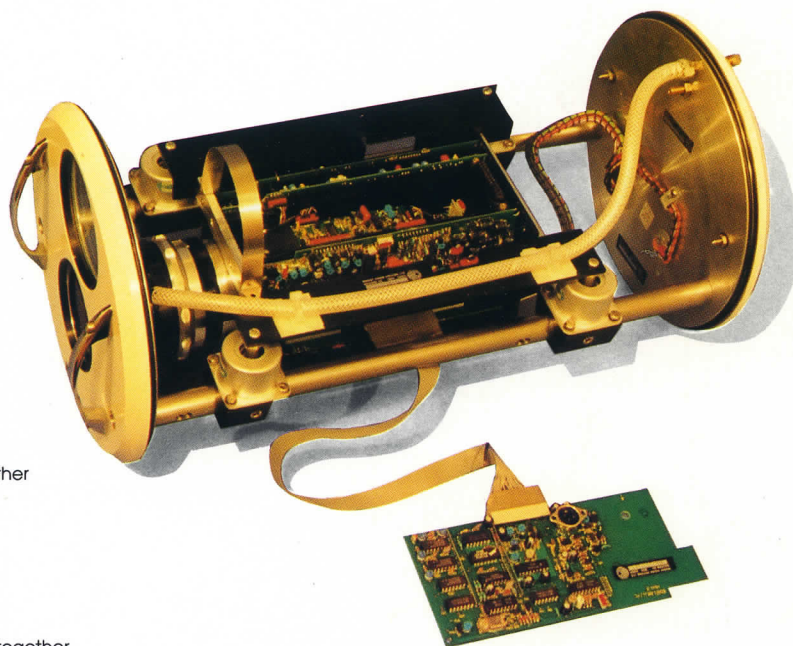
INSTALLATION

The system is retrofitable into existing TV systems. It uses no cooling or other exotic technologies and can be treated as a normal TV camera.

Care in design has ensured ease of service to the sub system level.

SERVICE & TRAINING

A comprehensive range of test and alignment equipment is available together with a training course in the use and maintenance of the equipment.



INSIGHT VISION SYSTEMS

INSIGHT VISION SYSTEMS LTD.
Unit 1, Merebrook Ind. Units,
Hanley Road, Malvern,
Worcestershire WR13 6NP U.K.
Telephone: (0684) 310001
Telex: 334480 INSIGT G
Fax: (0684) 310510

INSIGHT VISION SYSTEMS INC.
Williamsburg Square,
111 Warren Road, Suite 13B
Cockeysville MD21030 U.S.A.
Telephone: (301) 628 0002
Telex: 898111
Fax: (301) 628 0004