

SUMMARY

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You need an intrinsically safe camera. What should you be looking for? Well, obviously it must be ATEX certified - but what else? In this article we discuss five key factors to look for:

- **Image review capability**
Review images for focus, scene accuracy and light levels. Check your photographs in the field.
- **Manufacturer-designed rechargeable battery packs**
Convenient, cost-effective and ensuring operation within the ATEX certification.
- **Ability to use macro lenses**
For close ups, a camera's in-built macro mode may not be up to the task.
- **Hazardous environment usability**
Use a camera designed for hazardous environments and operable with PPE such as protective gloves.
- **High resolution and good on-board memory capacity**
High resolution for better image quality, a large memory to store more photos and videos.

The Centurion XPG 2GB with clear 2.4" LCD display for image review (see below).

Easy to use, even when wearing bulky protective gloves (note the prominent and well-spaced power and shutter buttons) - see "4. Choose a digital camera that operates in the environment you work in".



1. Choose a camera that allows image review

Make sure your digital camera allows image review in the field.

An LCD screen allows you to review your image for focus, scene accuracy, light levels and much more!

Don't end up costing your company more money by selecting an instrument which requires repeat work.

- Does your digital camera have an LCD screen or only a viewfinder?
- Can you be sure your image is in focus without returning to the office?

Imagine this scenario: you have spent the whole day documenting and photographing a facility. A job well done? Er, no. When you return to your office you find that half of the images you have taken are out of focus. You have staked your reputation on getting the job done, but your images are unusable. The reason? Your camera has a viewfinder but no LCD display. You were unable to check the images at the time.

Make sure your digital camera allows image review to ensure the best results, first time and every time.

2. Use reliable, manufacturer-designed battery packs - not expensive non-rechargeables

If your camera uses non-rechargeable batteries (primary cells), the continued cost of ownership is considerably higher.

Be sure the digital camera you select has rechargeable battery packs manufactured and certified by the camera manufacturer.

- Intrinsically safe devices can only use batteries recommended by their manufacturer.
- What happens if the batteries specified by the manufacturer are discontinued?

Intrinsically safe (I.S.) devices are generally lighter and more compact than explosion proof systems, which is often an advantage. However I.S. devices can have a major flaw – the batteries specified in the user manual must be used with the device. Failure to do so renders the I.S. device potentially unsafe and negates its ATEX certification. To save development costs, some manufacturers specify a series of third party batteries for their devices; however, if these batteries are no longer available your I.S. device cannot be used without invalidating the certification.

If your I.S. digital camera specifies a **primary cell**, such as the Duracell® MN1500, for example, new MN1500 batteries must be purchased each time the previous set is depleted - a “primary cell” is a non-rechargeable battery. This increases the continued cost of ownership of the digital camera. And can you be sure how long Duracell® will continue to manufacture MN1500 AA primary cells? If your I.S. digital camera certification requires a third party battery, then that battery must be used and no other. And just because an I.S. digital camera uses AA batteries doesn’t mean it can use *any* AA battery...

You buy a digital camera to perform a task over its lifespan, which may be measured in several years. So reduce your ongoing cost of ownership by selecting a camera that uses reliable, rechargeable battery packs manufactured and certified by the camera manufacturer.



The Centurion XPG 2GB with battery pack and charger



3. A picture is worth a thousand words - but only if it's in focus

Your digital camera is a significant purchase and one that should be able to operate in a variety of scenarios.

Ensure that your digital camera is capable of taking close-up equipment shots at distances of 50mm in addition to wide area shots of your plant.

Interchangeable lenses increase the scope of work of your camera.

- Do you need to take images of, for example, rating plates or other machinery detail at distances less than 150mm?
- Have you ever had to retake a close-up image because it was out of focus?

Close-up imaging is a requirement of the industrial digital camera user and most digital cameras are equipped with a **macro mode** to achieve this. However, with automatic focussing, the camera may ignore the object you want to photograph and focus on other areas in its field of view instead. To achieve a sharp focus with macro mode you will certainly need an LCD display, good light conditions and lots of patience.

A far better solution for quality close-up photographs, and a solution proven by professional photographers, involves the use of a specialist **macro lens**. A macro lens effectively enlarges a close-up target. The full CCD sensor array is used to capture the image, meaning the digital camera can take clear, high resolution shots at a range of 50mm or less.



The Centurion XP Dual with macro lens and LED lamp.

4. Choose a digital camera that operates in the environment you work in

Your digital camera must contribute to safety - not detract from it. Wearing PPE and other protective clothing is a requirement for many petrochemical professionals and your digital camera must be operable in conjunction with this equipment. Make sure your digital camera Power and Shutter buttons are clearly separate and easily located/operated even with full PPE.

- Will you be using your camera in winter/cold environments?
- Will you be wearing PPE or gloves?

Working in a hazardous area can be tough: extreme weather, sub-zero temperatures, explosive atmospheres. A digital camera designed for this environment should be simple to operate while wearing specialist protective clothing such as bulky gloves, even those made from fire retardant (FR) material.

Your digital camera's power (On/Off) and shutter buttons should be sufficiently spaced so that they do not interfere with one another and be prominent enough to be easy to locate and operate even when wearing heavy gloves (as shown in the photograph of the Centurion XPG on the front page of this document).

5. Image quality is everything

Your digital camera must be able to provide images with a minimum of 5 megapixels and preferably have the ability to adjust the resolution in step up to 10 megapixels.

Onboard storage should be a minimum of 2Gb to provide sufficient storage for maximum high quality image storage plus movies.

- Will you need to take good quality close-ups?
- Will your shots be cropped for presentations or emailed to colleagues?

As with any digital camera, the greater the resolution, the better the image quality. This is especially important when you are trying to resolve small details which may need to be enlarged and then cropped to highlight important sections of equipment.

Clearly, a camera with 5 megapixels is capable of creating a more detailed image than a camera with 3 megapixels. The following table shows, for three sizes of camera sensor, how large an image can be expanded without a loss of picture quality:

# of Megapixels	Maximum 3:2 Print Size	
	at 300 PPI:	at 200 PPI:
3	180x120mm (7.1x4.7")	269x180mm (10.6x7.1")
4	208x137mm (8.2x5.4")	310x208mm (12.2x8.2")
5	231x155mm (9.1x6.1")	348x231mm (13.7x9.1")

Adjustable resolution can also be an important factor when selecting a digital camera. Having the ability to reduce or increase the image resolution as the situation dictates allows you to maximize the storage capacity of the camera whilst at the same time having the option of ultra-high resolution images when required.

Although most cameras are generally supplied with onboard memory greater than 1Gb, the recommended minimum for the maintenance professional is 2Gb. If your camera is capable of shooting videos, its onboard storage capacity is even more important with up to 1Gb required to record every 40 minutes of footage.

CorDEX instruments Ltd. are leaders in digital imaging for hazardous (explosive) areas. With world firsts including explosion-proof digital cameras with high resolution (5MP) arrays and on-board strobe flash, CorDEX Instruments are the perfect choice for your explosive area photography needs.

For more information on CorDEX Instruments or to request a demonstration, please email: janet.long@cord-ex.com or visit www.cordexinstruments.com



2 megapixels: blurred, no resolved detail and enlargements are unusable.



5 megapixels: clear imaging of large areas, expandable for fine detail.

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