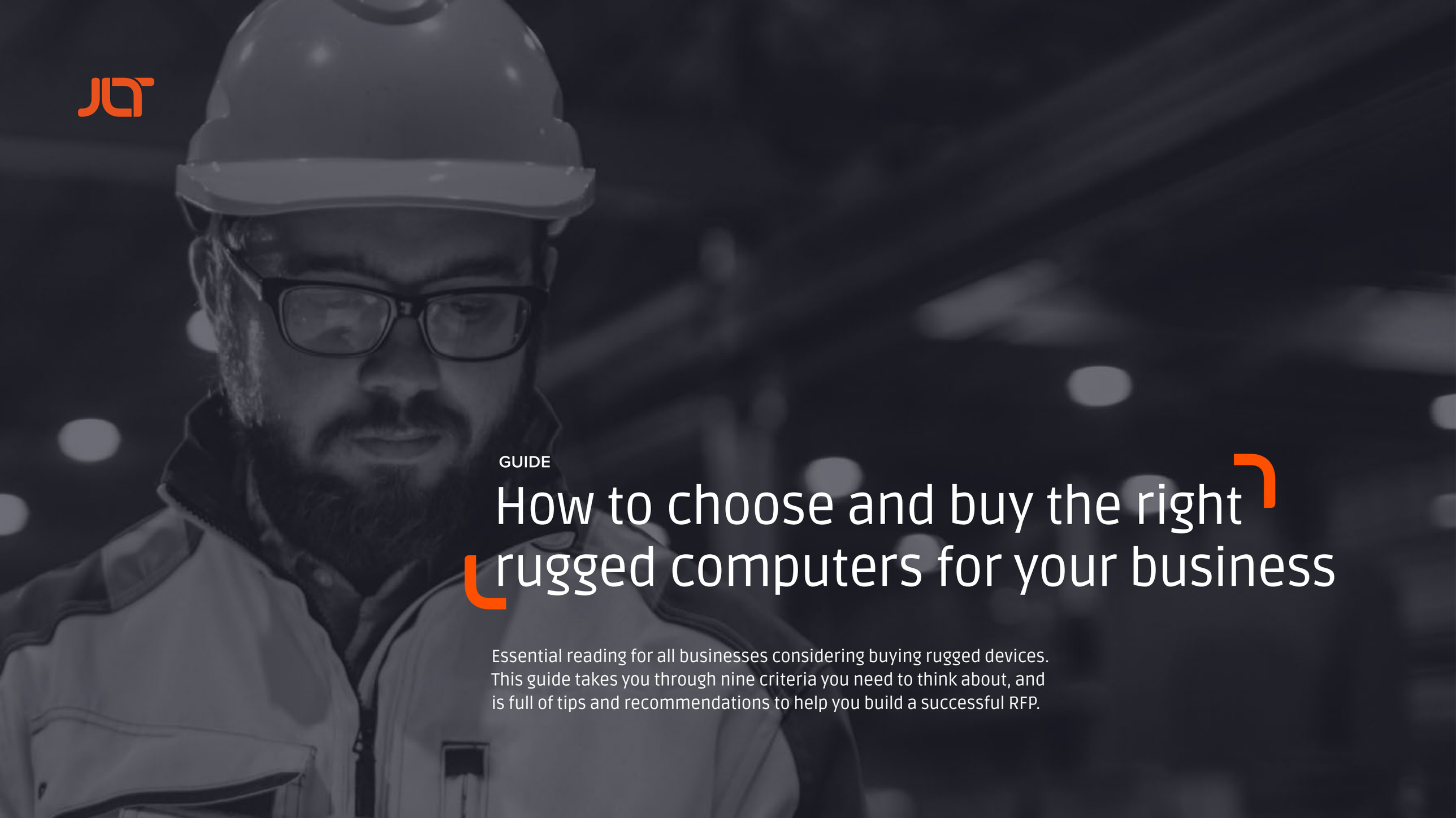


GUIDE

How to choose and buy the right rugged computers for your business

Essential reading for all businesses considering buying rugged devices. This guide takes you through nine criteria you need to think about, and is full of tips and recommendations to help you build a successful RFP.

Introduction

The rugged computer market is huge, with several manufacturers offering a variety of products – handhelds, tablets, wearables, vehicle-mounted terminals (VMTs) – in a range of ruggedness, from semi-rugged to rugged or even ultra-rugged. With so many different options available it's no surprise it can be confusing and difficult to determine which device suits your operation best.

Choosing the right device will help boost your productivity, improve workforce engagement and achieve your KPIs. Choosing the wrong one will slow your operation down and incur increasing costs. However, making the right choice might be easier said than done. Each operation comes with unique conditions and every business has its specific challenges. Determining which solution is the right one for you depends on how you will use the equipment and what your working process looks like.

In this guide we take you through questions you need to ask before you set out your purchasing requirements. It walks you through nine key decision criteria you should consider as well as providing you with tips on how to evaluate each aspect.

Are your devices carried or vehicle-mounted?

1 If work tasks require a lot of remote work, a tablet or handheld device is the obvious choice. But if most of the tasks will be performed from inside a vehicle, then a fixed-mount terminal (VMT) works better.

All rugged equipment is optimized for its intended use. A VMT withstands the stress caused by the vibrations and shocks as hard forklift wheels run across a concrete floor. It can handle the challenging power supply of a combustion or electric vehicle and features sophisticated wireless connectivity with integrated or external antennas for vehicle use.

Whereas a handheld or tablet has a compact form factor and low weight – perfect for carrying around all day. They also run on batteries, which can last a whole day on a single charge. Of course, you can put a tablet in a VMT but you'll lose the benefit of having a battery and it won't withstand the vibrations well.

There are rugged computers designed for the military or explosive environments – perhaps not what you need in an average warehouse.

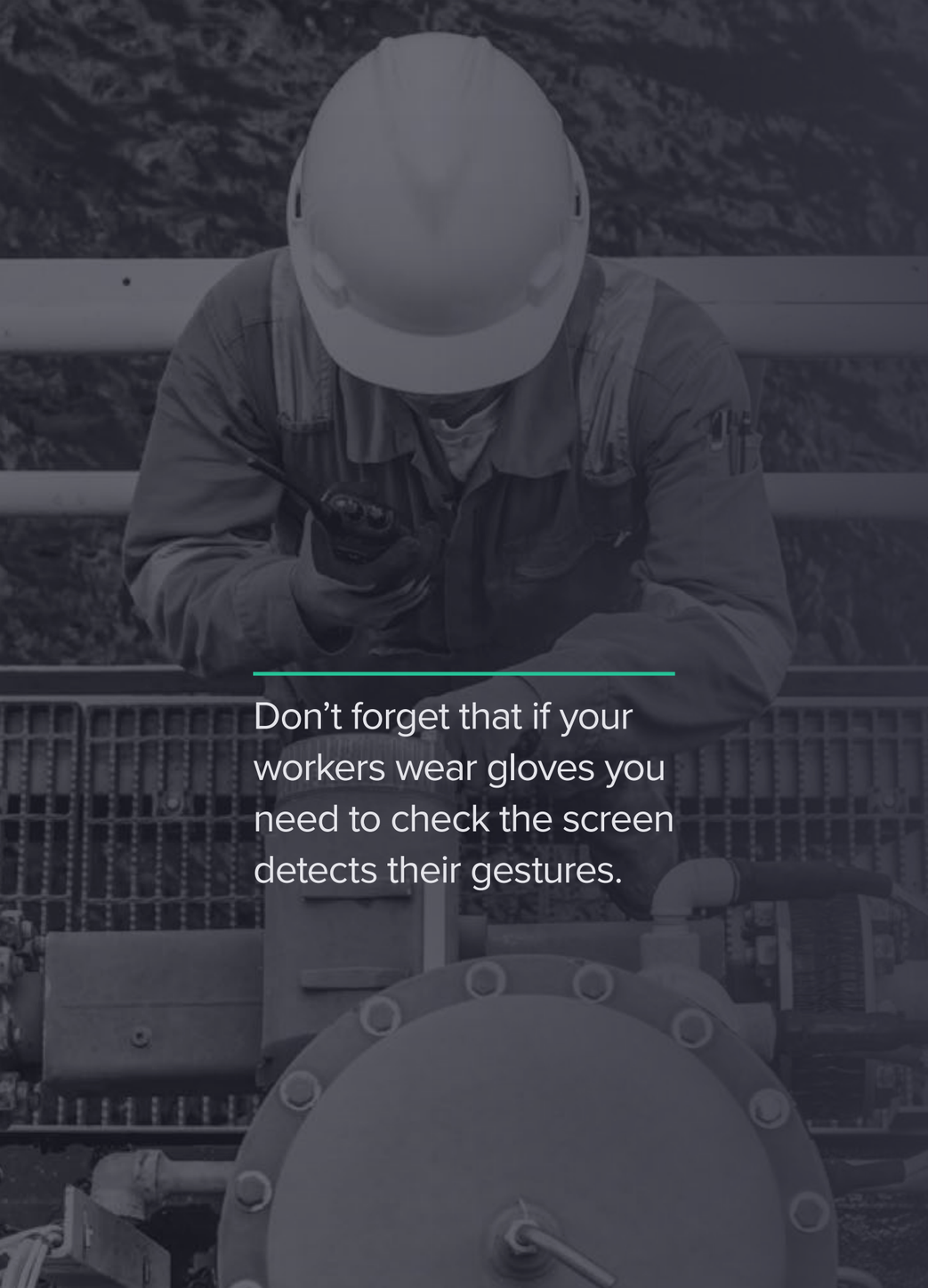
What's your work environment like?

2 Rugged devices are designed to be used in demanding environments and the degree of ruggedness you need will depend on the characteristics of your environment.

Is there a lot of dust in your environment? Is it damp? Do the devices need to work indoors and outdoors? If the casing isn't tight enough, dust or moisture can get in and the unit will malfunction. However, if the computer is used in variable temperatures, like in and out of freezer storage, the unit shouldn't be too tight to avoid a buildup of condensation.

You will find information about the ingress protection in the product specification. The standard used by most manufacturers is the IP rating (Ingress Protection) which uses the letters IP followed by two digits. The first digit refers to dust resistance and the second to water resistance. The higher the number, the tighter the casing. You can find a more in-depth explanation here.

Be careful not to over spec though. A higher rating isn't always better. There are rugged computers designed for the military or explosive environments – perhaps not what you need in an average warehouse. Don't forget that your accessories should meet the same standards too.



Don’t forget that if your workers wear gloves you need to check the screen detects their gestures.

What kind of display or touch screen do you need?

3 It’s important to consider your workforce when buying devices. Screens should be easy to use and facilitate your employees’ work. Everyone must be able to see and use the device without any difficulties. With the right screen usability improves, tasks can be completed more efficiently and user acceptance goes up.

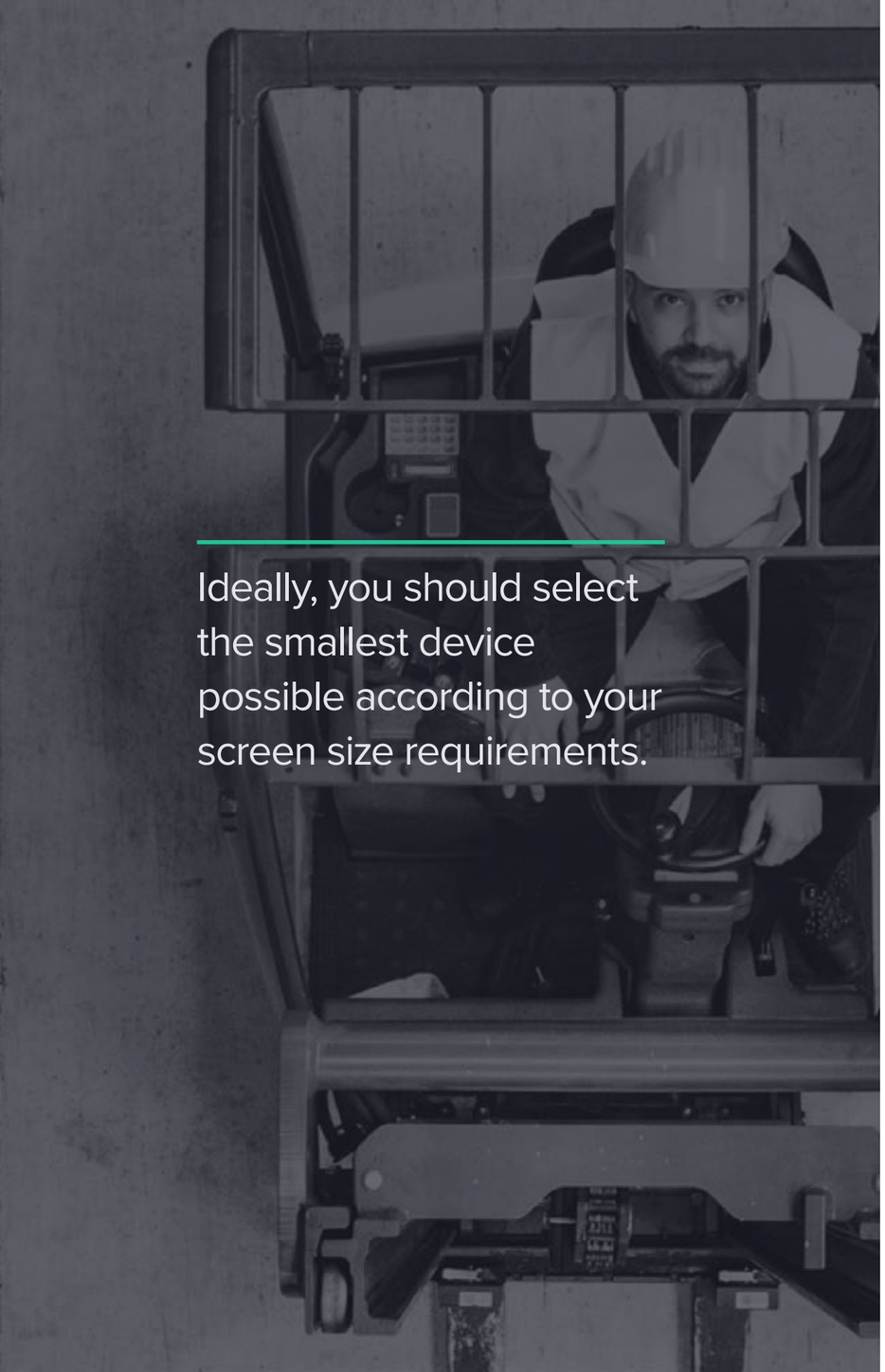
To get the right screen you need to understand the environment the devices will be used in. What’s the temperature? Some screens can be sluggish in the cold or shut down in the heat. Will it be used outside? If so, look for a display that is sunlight readable and comes with a touch screen that works in rain.

The best thing to do is to read the product specifications and try it out in your facility. This way your team can see and use the devices in their true environments and get a good picture of how they work and how they feel.

Don’t forget that if your workers wear gloves you need to check the screen detects their gestures. Fabrics affect the touch screen in different ways and there are different touch screen technologies. Test to see which one works best for you. If gloves cause a problem, your workers could switch to a stylus or try different gloves with better touchscreen conductivity.

If you operate in a really demanding environment, look for a product with hardened glass that withstands hard hits. You can find information about shock and scratch resistance as well as durability in the spec. Also check if any warranty or service agreement includes touch screens. Many don’t, even though it is the most likely point of failure.

For VMTs you also need to consider the viewing angle. This refers to the maximum angle at which a display can be viewed and seen. Ideally you want a viewing angle as close to 180° as possible. As a guide, most rugged devices score on average 90° for viewing from left to right and 80° up and down. Viewing angle isn’t as important for handhelds because you can move the whole device until you can see the screen.



Ideally, you should select the smallest device possible according to your screen size requirements.

What size device do I need and does weight matter?

4 When it comes to rugged computers, biggest isn't always best. It's more a case of good things come in small packages. Ideally, you should select the smallest device possible according to your screen size requirements.

If you're going to mount the unit in a vehicle, keep in mind the size of the cabin. Most likely, it is already cramped before you start adding extra equipment, so you need a device that doesn't take up much space once mounted. It also needs to work ergonomically and safely, so the operator is comfortable and sightlines are clear.

For handhelds, size is similar across most manufacturers. What's important here is weight. Your workforce will be using the unit all day, so they need something that is comfortable to carry for hours on end.

Information on dimensions and weight are easy to find in product specifications, but you should definitely get your workforce to test the computer in the real environment to ensure you get devices that work for them.

How are you going to power your devices?

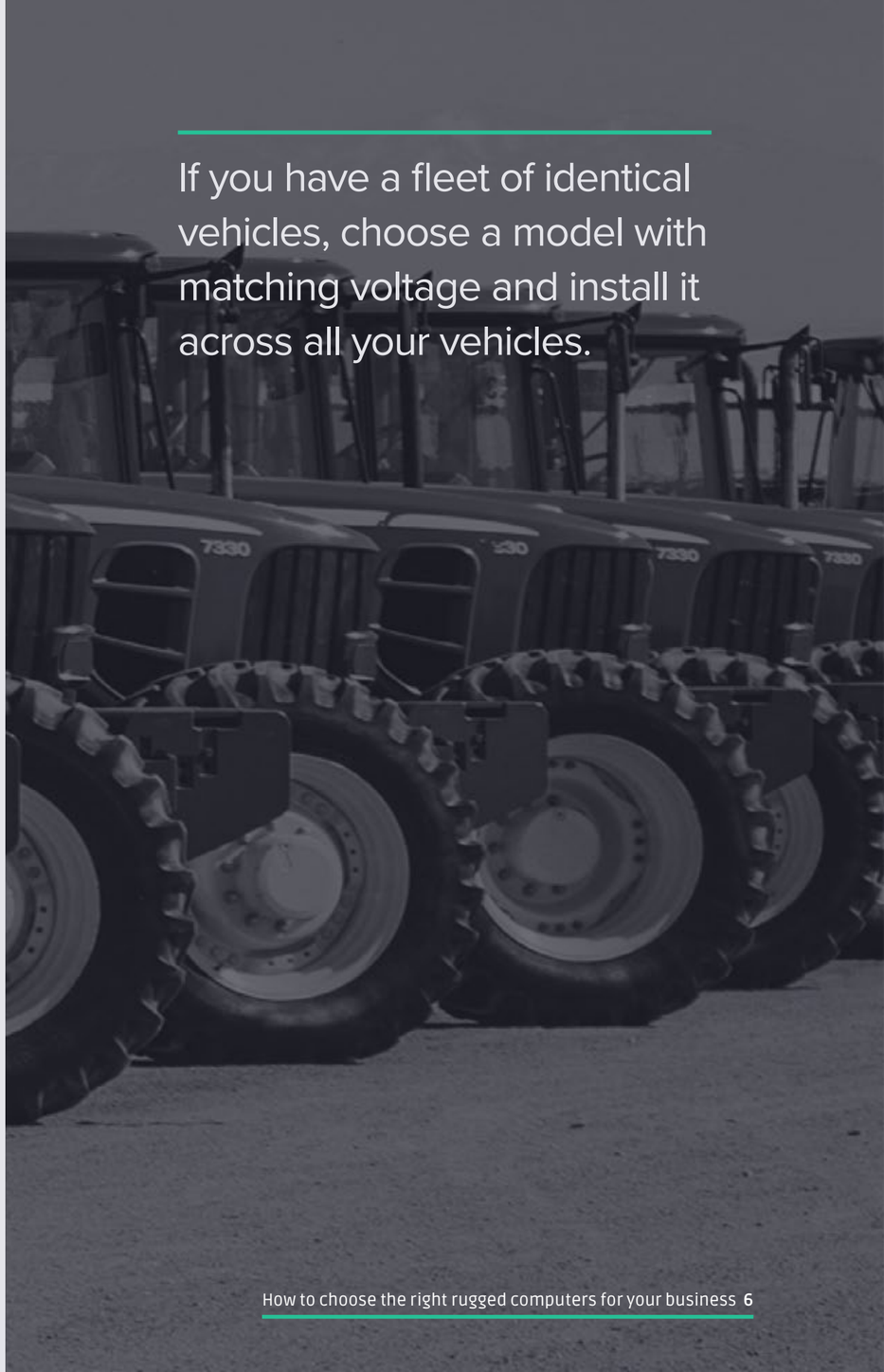
5 For handhelds, good batteries are important. Ideally, you want one that lasts a full shift – and a bit more – so operators don't need to swap the unit in the middle of their day. And of course, it should charge quickly, even after 1,000's of cycles. Product specs normally include information on how many hours use you get with one charge. But this varies significantly according to how you use the unit – another reason to test before you buy.

Despite battery performance improving, there is still a trade-off between length of charge and size and weight of battery. Decide what is most important for your operation – a light device that is easy to carry but may need regular battery swaps or a heavier device with longer lasting batteries that may be less comfortable to carry.

If you decide on a lighter model with a battery that discharges quickly, look for ones that don't need tools to remove the battery. The last thing your workforce want to do is spend time unscrewing a battery casing and then screwing everything back on once they've installed a charged cell.

For VMTs, input voltage range is important since diesel, gas and battery powered vehicles all have different voltages. In some cases an isolated power adapter is required. If you have a fleet of identical vehicles, choose a model with matching voltage and install it across all your vehicles.

However, most operations run a mixed fleet. In this case, you have three options. You could buy a range of models to match the different voltages of your vehicles. But it can be costly to maintain and manage multiple configurations. Alternatively, you can use voltage adaptors, but these can complicate installation and create a potential failure point as well as add cost. The easiest option is to choose devices with an integrated power adapter that is isolated for a wide input range, so the same model works across all vehicles – cost effective and easy to manage.



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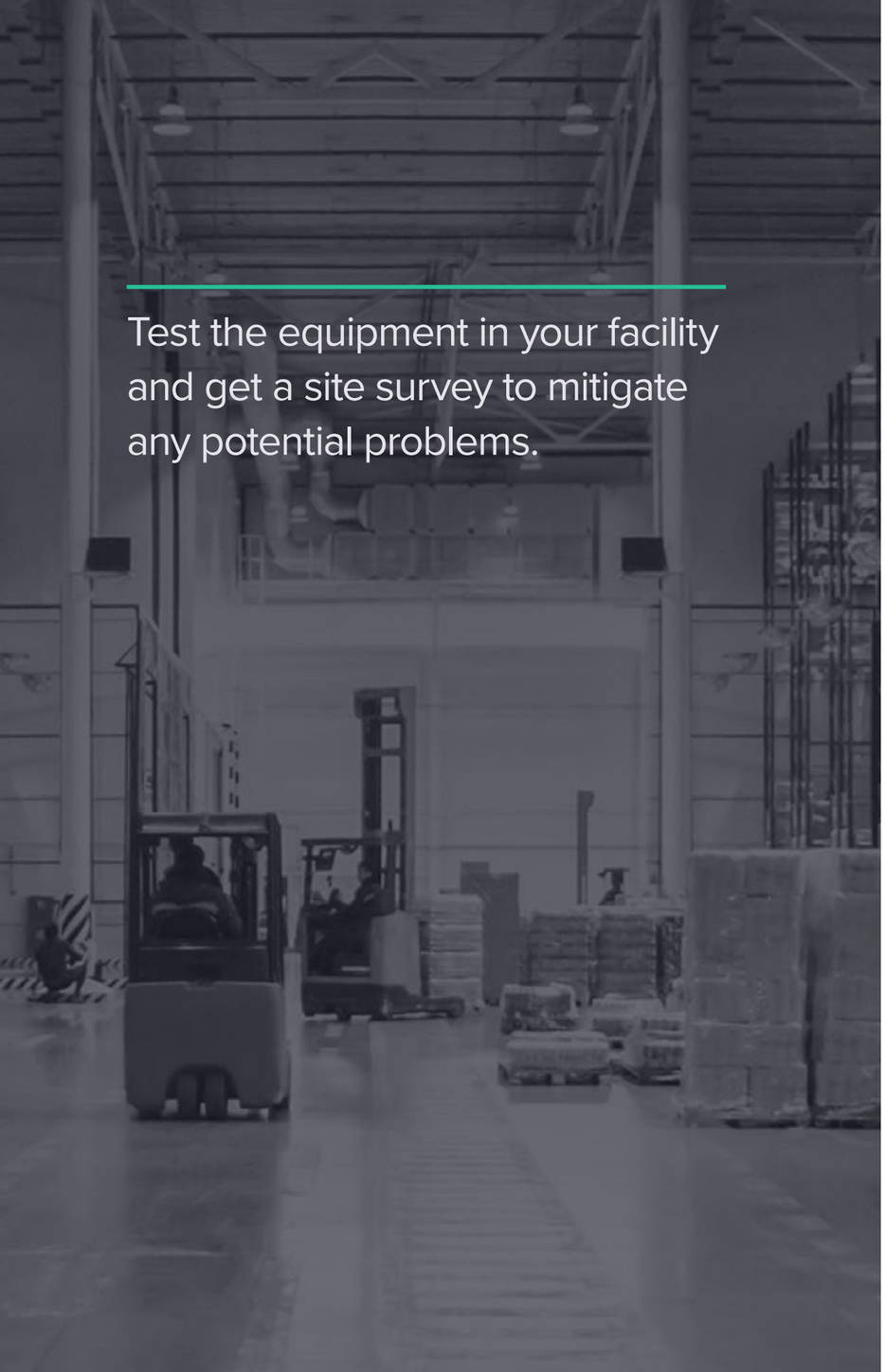

Test the equipment in your facility and get a site survey to mitigate any potential problems.

How critical is your connection?

6 To access business critical information and applications your devices need to connect to a WLAN/WIFI or WWAN/cellular network, or perhaps to both. With technology evolving at a fast rate, a good rule is to try and buy the most up to date products you can. Of course, the older the device the lower the price tag, but low expenditure could be offset by needing to update devices when they no longer connect to your network.

For WIFI connectivity, consider your network plans. For example, are you planning to update your WIFI infrastructure? If so, it will be best to buy new devices at the same time to ensure they are compatible. Likewise, if you are building a new facility from scratch.

On the other hand, if you don't plan to update your WIFI for the next five to ten years then you don't need to buy high spec devices. But be aware it can be a challenge to mix devices and infrastructure that have different generations of WIFI technology, even if they are supposed to be compatible. Test the equipment in your facility and get a site survey to mitigate any potential problems and to ensure all units maintain a reliable connection.

Equally important as WIFI infrastructure is the WIFI radio and antenna design of the computers. Look for dual-band WIFI radio modems with optional integrated or external antennas, especially for VMTs mounted inside a cabin.

Many businesses use a cellular network. If you do, be aware that in many parts of the world 3G infrastructure is being dismantled to make way for 5G. If you buy a 3G device now it could be obsolete in a couple of years. Find out more about the sunset of 3G and 2G here.

You can find information about radio frequency options in the product specifications.

What size CPU do you need?

7 A CPU is the brain of any computer. It performs calculations, actions and runs all your programs so it's important to make sure you have the right powered CPU to meet your application setup and graphics needs. And if you rely on real-time data or video to run your operation, then CPU performance is critical.

If you run a thin client, i.e. your application runs from a server, then a high-performance processor is not so important. All you need is a terminal emulator app or an up-to-date web browser to access the applications on the server. However, if you run a thick client, i.e. the application is installed and run locally on your computer, then you need to make sure you choose a CPU that has the right performance to run these programs.

You should also consider what kind of graphics your applications will display on the device screen. Some machines take in data from sensors and present this information in visual format to the operator. In this case you will need a bigger processor to make the graphics viewable in a timely manner.

As well as making sure the CPU fits your needs, you should check that the devices work with your preferred operating system, generally Android or Windows.

Check out the product specification to find information about the CPU and operating system.

If you rely on real-time data or video to run your operation, then CPU performance is critical.

Are your accessories as rugged as your devices?

8 Purchasing high-quality rugged devices isn't worth it if your accessories don't meet the same standard. By accessories we mean everything you use with your computers, i.e. scanners, keyboards, printers, scales, mounts, docking stations, adapters and so on.

The market is awash with cheap consumer versions, but they are not built for harsh environments so they will break frequently or not work at all. A keyboard with a low price-tag may seem attractive, but after you've bought your fifth keyboard in as many months, the value of spending more upfront suddenly makes sense. Especially factoring in the impact and cost of downtime.

Many rugged device manufacturers also make accessories that can withstand the same level of dust, damp, vibration and shock. They will last longer and cost less in the long run.

After you've bought your fifth keyboard in as many months, the value of spending more upfront suddenly makes sense.

Have you thought about support and service?

9 Equally important is high-quality service and support. When you rely on computers for your workforce to complete their tasks, you must avoid downtime at all costs. However, devices break and accidents occur.

All computers, rugged or not, come with a warranty, however, these only cover manufacturing defects and vary between manufacturers so make sure you know what is included and, perhaps even more importantly, what isn't.

To be fully covered, you need a service agreement. These vary from company to company, so do your homework to avoid unpleasant surprises later on. Things like turnaround times and limitations can make a huge difference when a device fails.

Also check with a manufacturer if they can deliver adaptations, a package tailored to your requirements. These adaptations can cover both hardware and the complete solution.
For example, delivering accessories and cables for easy deployment, running training to help workforce productivity or offering repairs with short turnarounds to maximize uptime.

Five things to keep in mind

1 Product specs don’t tell the full story

You can find a lot of information about devices in the product specification; everything from processor power to dust and water resistance. However, it is always best to test devices in the environment in which they will be used to get a true picture of their performance and suitability. Product specs published on websites may be missing some information, so always contact the manufacturer to get the full document.

2 Prioritize your requirements

Despite the market being filled with hundreds of different rugged devices, you will probably not find one that ticks all your boxes and will have to compromise somewhere. When you build your requirements, prioritize them and decide which ones are non-negotiable and which you can concede.

3 Look for comprehensive warranties and service agreements

Rugged devices are expensive pieces of equipment and when you’re spending that much money on something, you need peace of mind. Look for manufacturers that offer solid warranties that cover product failures and good service agreements that offer guaranteed turn-around times at a predictable cost.

4 Total costs are higher than the price tag

The price tag of a computer only tells you the purchase cost. For items like rugged computers you need to factor in all costs over the lifetime of the product to get an idea of the real value. Factoring in things like repair and downtime can change your idea of which device offers the best value for money.

5 Get expert help to get the best solution

To get the most out of your rugged devices look for a manufacturer that can become your partner. One with the expertise and services to support your complete solution, not just answer questions about the product itself.

JLT – 25 years of making data communications work

Our story starts in 1994. The Internet was new. Industrial computers were basic and 3G was still a dream. Over the following decades, JLT pioneered the rugged computing market. By taking design and quality to new levels, we brought the possibilities of computing to industries where a typical office machine might last just minutes. We think every business should be able to utilize the power of communication technology without restrictions – anytime, anywhere.

Today we are one of the leading companies in the rugged computer market and have shipped over 100,000 units worldwide. Our mission remains the same as ever: we're here to empower customers' business by enabling hassle-free data communication in challenging environments.

Warehousing, ports, manufacturing, logistics and other demanding environments presents a range of challenges, including the need to minimize downtime and difficult environments for wireless coverage. We match these demands through the most dependable devices and enabling services that go the extra mile.

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