

INFRARED OR LASER – **WHICH IS BETTER?**

*Get the truth on what technology
works best for laser tag...*

It's Friday afternoon -I have just received my third enquiry this week asking the same thing...

**“Doug, do your guns use Lasers or Infrared? ... And
“Which one is better?”**

There is a lot of miss-information about this subject - and its It's an important question - **which is better Laser or Infrared?** The answer is...

Infrared is the best technology!!

...have you heard a different story?

Have you read how infrared is old technology and that laser technology has surpassed it?

...I must admit, it's a shame that this article has to be written to defend a technology that shouldn't need defending. I'll say it again -

Infrared is the best tagging technology for laser tag.

I'll tell you about our experience with this...

It was 2002 - Dave my business partner and I were just beginning to develop our laser tag guns - we did a lot of research, we visited one laser tag centre after another - Twenty seven all up. We noticed that all of them used infrared technology as a means to tag the other player.

It was about that time I was sent some information about how infrared technology should never be used in Laser Tag... surprising I thought! The article said that infrared was old technology and that it was dead. It said infrared had been superseded by laser technology. The article I read was very very persuasive.but then again, logic seemed to say otherwise...

So we decided that we needed to do some more research, we had to immediately find a centre which had laser-only tagging technology. Once we had played the game, we would know...

...In fact we found two sites. Within three minutes of donning the equipment we knew our answer. The games we played were two of the most frustrating games we had ever played. We found that laser tagging equipment created a very unrealistic gaming experience - no wonder almost every other laser tag manufacturer had steered clear of this technology.

I write this article now because I think that it's time the real technology facts are presented to would-be buyers.... I hope this document will provide you with some logical reasons as to why we chose infrared and why we still love that decision.

INTERESTING FACT

Lasers are still used in almost all laser tag equipment (including ours) - but only to show players where they are shooting... It is the infrared signal which is used to tag the other player

THE SITUATION

Here's what happens during a typical laser tag game...

A player aims his phasor gun at another player and pulls the trigger - a **light beam** is emitted from the end of the phasor gun. The light beam is encoded with pulses of information which will tell equipment sensors - "You have been tagged"

The light beam which is emitted from the phasor gun can be either a **laser beam** or an **infrared beam** - depending on the make and model of the equipment.

So why is Infrared better?

To answer this, I need to quickly need to talk about the main differences between these two light beams...



LASER BEAMS

Most people will be familiar with laser pointers - well the lasers used in Laser Tag are exactly the same technology.

Laser beams are visible and highly focused. In most cases the beam is red – however, green lasers are also becoming a popular choice for both laser tag and laser pointers.

A typical laser tag laser can travel further than a kilometer with the beam width increasing very gradually.

With most laser tag arena's having dimensions of less than 30m, the beam width, will not increase by more than 10mm in diameter.

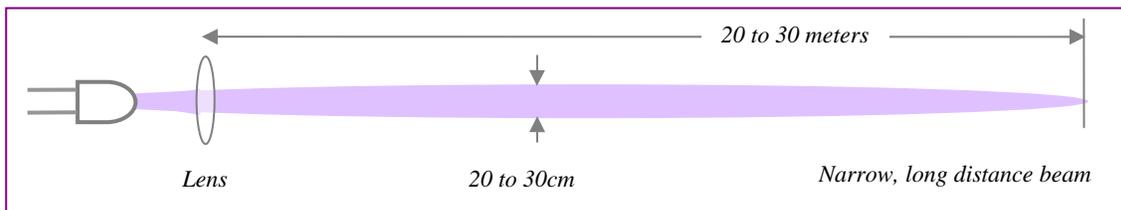


INFRARED BEAMS

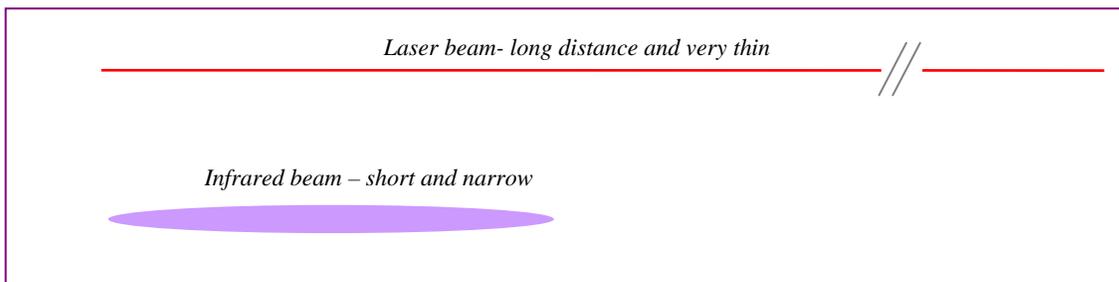
An infrared signal is the same kind of signal that is emitted from most TV remote controls. The beam is invisible and has a wide angle. Wide angle beams are great for TV's because as long as you're pointing the remote in the general direction of the TV, it will work.

Obviously a TV remote control beam wouldn't work with laser tag – the beam is too wide, and it doesn't travel far enough...

With laser tag equipment the beam is focused through a lens to ensure it can travel further and is also narrow...



THE DIFFERENCES



❌ WHY NOT LASERS?

Take a look at the image on the right... the trigger is being activated many times and laser beam hits the player and the vest in various locations. With a laser these shots would be all undetected...

The problem is laser beam is far too narrow!

A laser beam is so small, pin-point accurately is required to tag the sensors.

This is bad bad bad!

If you aim at the players shoulder, arm or even on the torso as show in the diagram, no tag is registered. We've played with this is technology and we know from experience - it's really frustrating - Imagine playing this – game play becomes both tedious and unrealistic.

WHAT ABOUT THE DISTANCE A LASER BEAM CAN TRAVEL?

As mentioned above, lasers can travel for more than a kilometer – the thing is, laser tag arenas are never more than 30 meters long – and even then, they have so many internal walls, the light beam never has to travel more than 15 to 20 meters.

No Good ❌

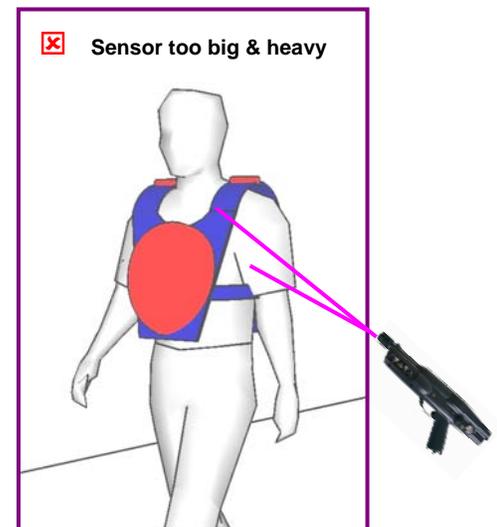
❌ LASER + LARGE SENSOR

This is one solution that has been attempted - by making the sensor much larger it will be easier to hit. However, there are lots of problems with this...

- Problem 1:** The Vest becomes too bulky and heavy
- Problem 2:** The Vest becomes inflexible & uncomfortable
- Problem 3:** With laser tagging light beams, there are still large areas which can not be tagged

These are major problems. Big heavy vests will not be appreciated - especially by the younger players aged between 7 and 12 who represent the largest laser tag demographic. If they don't like wearing the equipment, they'll play somewhere else... so ...

No Solution ❌

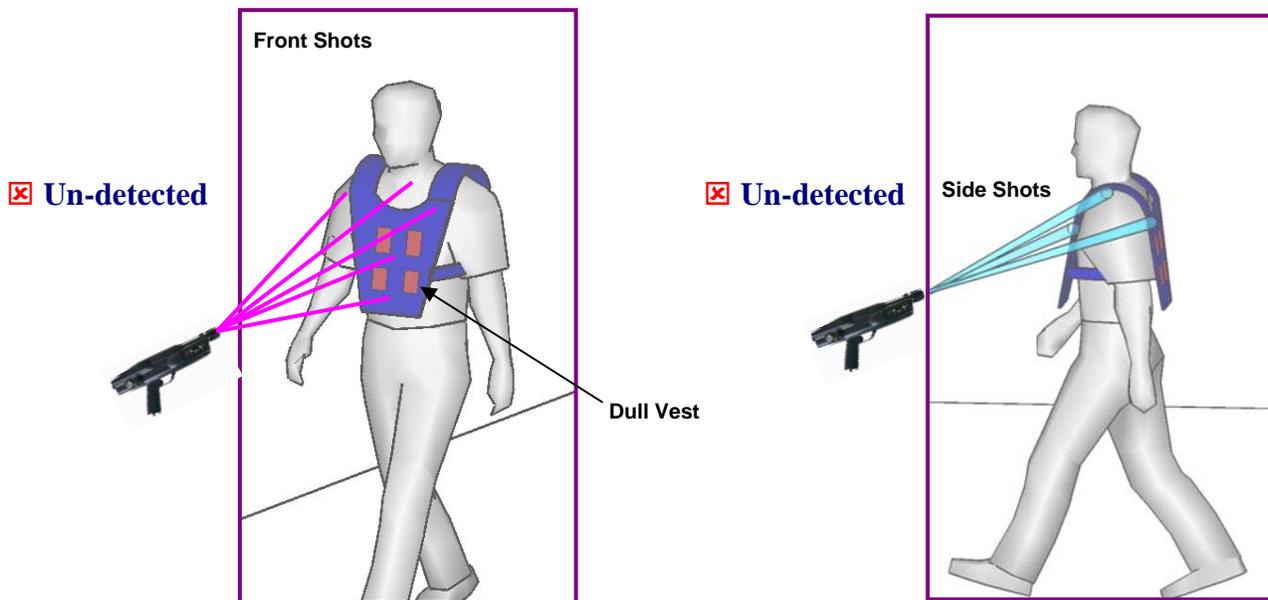


❌ LASER + FIBER OPTICS

Another solution is to use fiber optics to detect the laser beam. The technique here is that the fiber optics can be fed around the vest and attached to flexible plastic "pads". Effectively increasing the size of the sensor area... Additionally this combination can also be used to emit the vest color through these pads. This sounds like a good solution! Well actually no, Fiber Optics has some very unfortunate disadvantages...

DISADVANTAGES OF FIBER OPTICS

- Problem 1:** The pack color emitted from these fiber optic pads is extremely dull - there is no *WOW* factor to the player's vests. Dull vests also make locating players in the arena very difficult.
- Problem 2:** Even with multiple pads, the vest is still frustratingly hard to shoot (see below)
- Problem 3:** Side shots are almost impossible because the pack has such a low profile that the pads do not pick up the signal



No Solution ❌

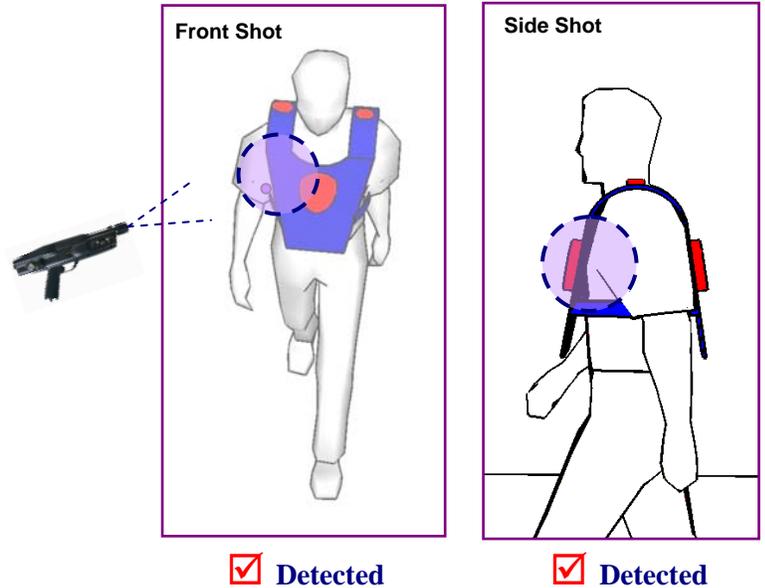
INFRARED - GREAT

With infrared, the cone of the beam is wide enough to hit the player's sensors – even though the centre of the beam is not directly tagging the sensor.

Additionally with a standard sensor pack and a wide angle beam, Side shots are also no problem.

Infrared is ideal!

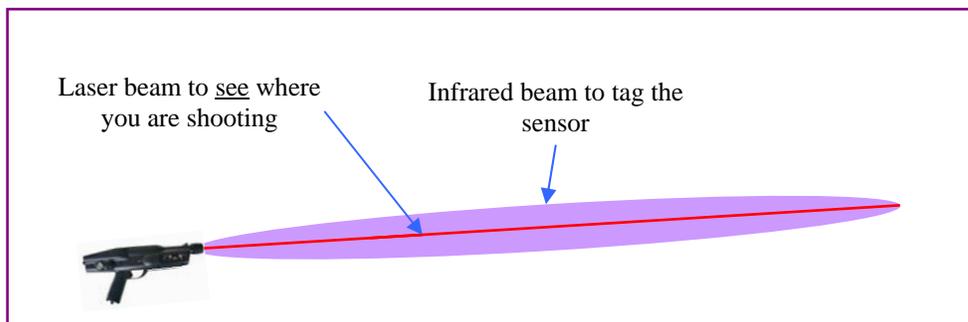
There is however one more problem... because the infrared beam is invisible, the shooter can't see where he is aiming ...this leads us to the ideal solution...



INFRARED AND LASER - PERFECT

Well designed laser tag equipment **still uses a laser beam**– but only to visually indicate the direction the player is shooting. What we do is install both a **laser and an infrared emitter** into an optical block. The beams are aligned and we now have the best of both worlds.

With modern day components, alignment of these two beams is very accurate –The red laser creates the illusion that it is that is targeting the player (when really it is the infrared) – and we now have a winning combination!



Solution

The ideal laser tag combination

THE COST

As mentioned at the beginning of this article, when we first started designing our laser tag product, we did a lot of research into which system we would use. We visited many sites and tried all the different systems out there. We experimented around with our own ideas. We choose to use the system above because it provides the very best game play for your customers. As a manufacturer, it costs us a little more to implement both laser and infrared technology; however we felt the end results were very justified

DOES IT MATTER?

Absolutely – The enjoyment of your laser tag business will be hugely affected by the choice of light beam technology used, because it influences game play immensely

I am aware some manufacturers are still promoting laser-tagging as the better system – and that makes your choice very difficult – who do you believe or trust?

There is only one solution – try out both systems by visiting different sites yourself – there is no other substitute!

In the process you will be able to see that a combination of laser for visual indication and Infra-red for tagging provides the most realistic and fun game play possible.

We hope this information has been helpful. If you require any other advice or assistance, please feel free to call.

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P.S.

Radio Frequency is also used in our product – the use of this technology is completely separate from the “tagging” technology detailed in this article

P.P.S

Take a look at Delta Strikes [“Laser Tag like computer games”](#) and find out how Delta Strike equipment is designed to increase your profits...

