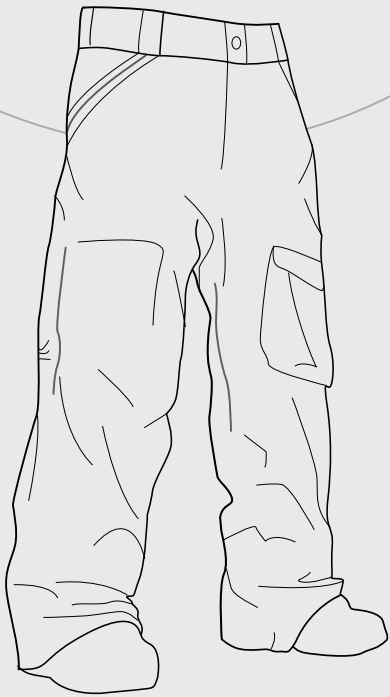
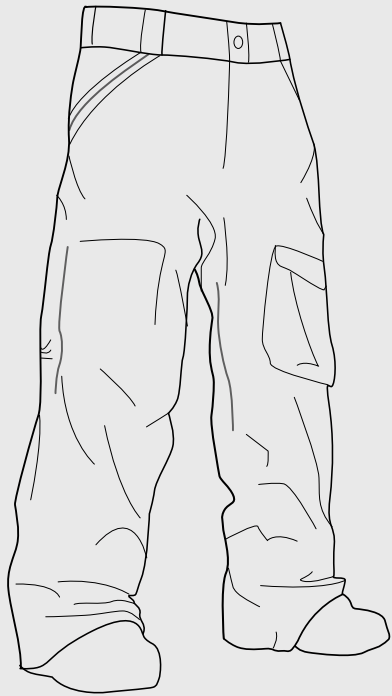


An old product meets new materials:

MINDBLOWINGLY SWEET SNOWBOARD PANTS



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OBSERVATIONS

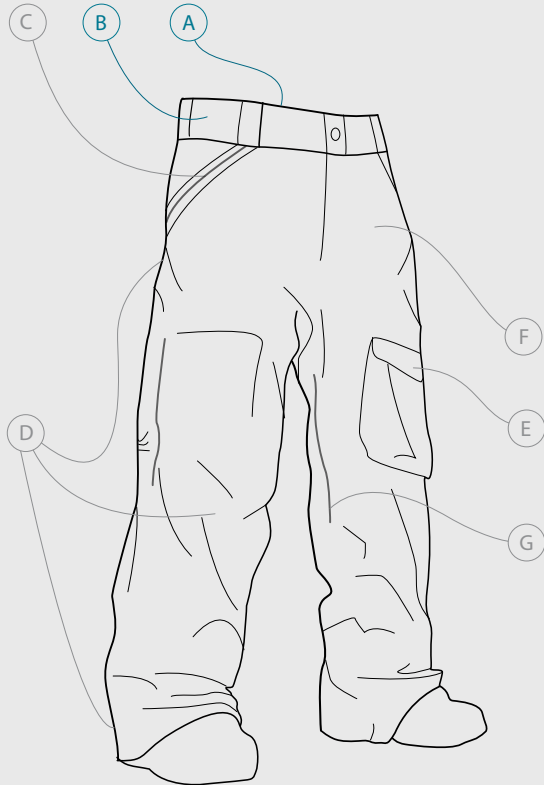
When we interact with a product, all of our senses gather information and collaborate to create a distinct experience. Documenting what our five senses pick up and how we interpret that information is a very subtle, nuanced, and intimate process. This section lays out what the different parts of the product are made of and what how our senses respond to what they pick up.

IDEAL EXPERIENCE

Every product is made to satisfy a set of goals. This section provides context for the ideal experience (an aspect of a product that is usually left at the curb) the user would have when using the product.

MATERIALS

How can new materials make our plain old boring boarding pants mindblowingly sweet? Check this section out.



LINER

A

The liner is currently made of lightweight fleece above the knees and of a lightweight mesh below the knees. The mesh makes it easy to slip the bottom of the pants over your boots. The fleece sticks to any insulation layers on your body though, which causes the two materials to bunch up, fold over themselves, and get pretty uncomfortable. The nice thing about the fleece though, is that it stays warm, pliable, and soft when the temperature drops real low.

There is no insulation layers between the liner and the shell. This allows the rider to put the right kind and weight of insulation on underneath the pants depending on what the day's conditions are.

After sweating in this for an entire season, it usually smells. It may also harbor bacteria when in storage.

The use of mesh and fleece allows the pants to dry out relatively quickly if they get wet or if you sweat in them a lot.

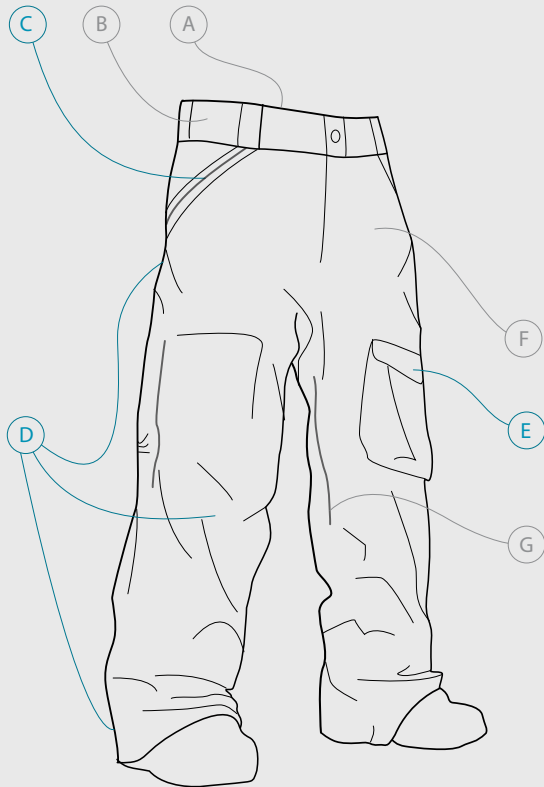
WAISTBAND

B

The waistband is mostly plain fabric, but there is elastic in the back and on the sides. There are also 5 belt loops: one in the middle back, two on the sides in the back and two in the front.

All that elastic and belt loop material makes bulges that are uncomfortable with back-packs.

The elastic is a nice idea but it isn't strong enough to hold the pants up on top of my insulation layers and it detracts from the clean lines of the pants.



HIP POCKETS

C

These are lined with a light weight fleece and are kept shut with #5 coil zippers. The zipper pull is hard to grab with gloves on and cold with bare hands but the fleece lining is nice: warm and soft regardless of temperature.

It can really hurt to fall on things that are kept in these pockets.

HIGH WEAR AREAS

D

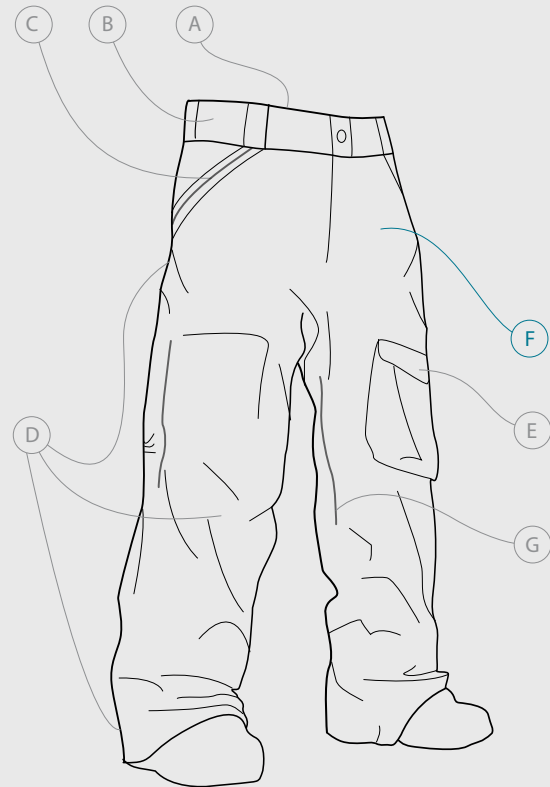
Unfortunately these areas are made of a single layer of the shell fabric: it is why the pants wear out. The fabric in these zones get abraded, crushed, and rubbed between two surfaces on a regular basis. This is also where the waterproofing disappears first: the last spot you want it to, because this is where you usually come in contact with water or snow.

CARGO POCKETS

E

These are made the same way as the shell. They are not lined, and the gore-tex backing is revealed in the interior of the pocket. Because of the small size, you need to take your hand out of your glove to get anything out of them, but at cold temperatures, this hurts! The nylon and urethane get hard, sharp, rigid, and feel very cold.

The pockets use Velcro to stay closed but rips open when you fall or it gets caught on things.



SHELL

F

The shell is made of 900 D rip-stop weave nylon with a gore-tex coating for waterproofing. The seams are taped to water-proof the stitches that hold the pants together.

At 10 degrees Fahrenheit, this nylon and gore-tex becomes very hard and sharp. It also feels very cold. Other fabrics, like fleece, feel warm at this temperature and are still pliable and soft.

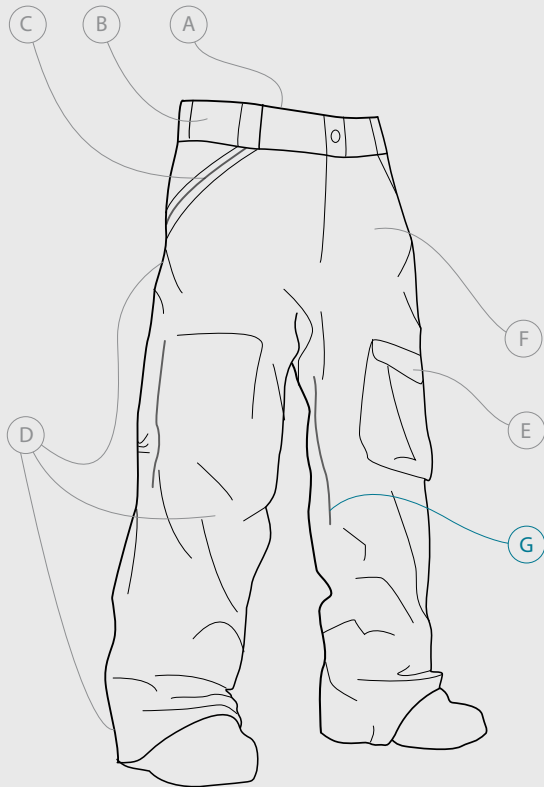
There are no reflective panels for other riders to see you at night or in the woods. This would potentially aid in a rescue search if you got hurt.

The gore-tex coating wears off with use and deteriorates every time you put the pants in a dryer.

There is only a single line of stitching holding most of the pants together. This doesn't look good, doesn't look durable, and doesn't feel adequate. These pants get punished a few times every week, one line of stitching isn't much defense against a tree branch.

When you fall, the nylon slides enough on the snow so that your pants don't get pulled off, but they have enough friction so that you don't feel like you're on a sled.

There is no padding in the butt, so every time I sit to buckle in, ride the lift, or hang out, I am subjected to the temperature of whatever I'm sitting on.



VENTILATION

G

A #5 coil zipper unzips to reveal a mesh. That open zipper and mesh allows lots of cool air to rush in near your inseam just above your knees. In addition, the zipper is not wind-proof or waterproof. This renders all that money spent on gore-tex and taped seams useless.

The zipper pull is hard to grab a hold of with gloves on, and the cold metal is definitely not something I look forward to grabbing with my bare hands.

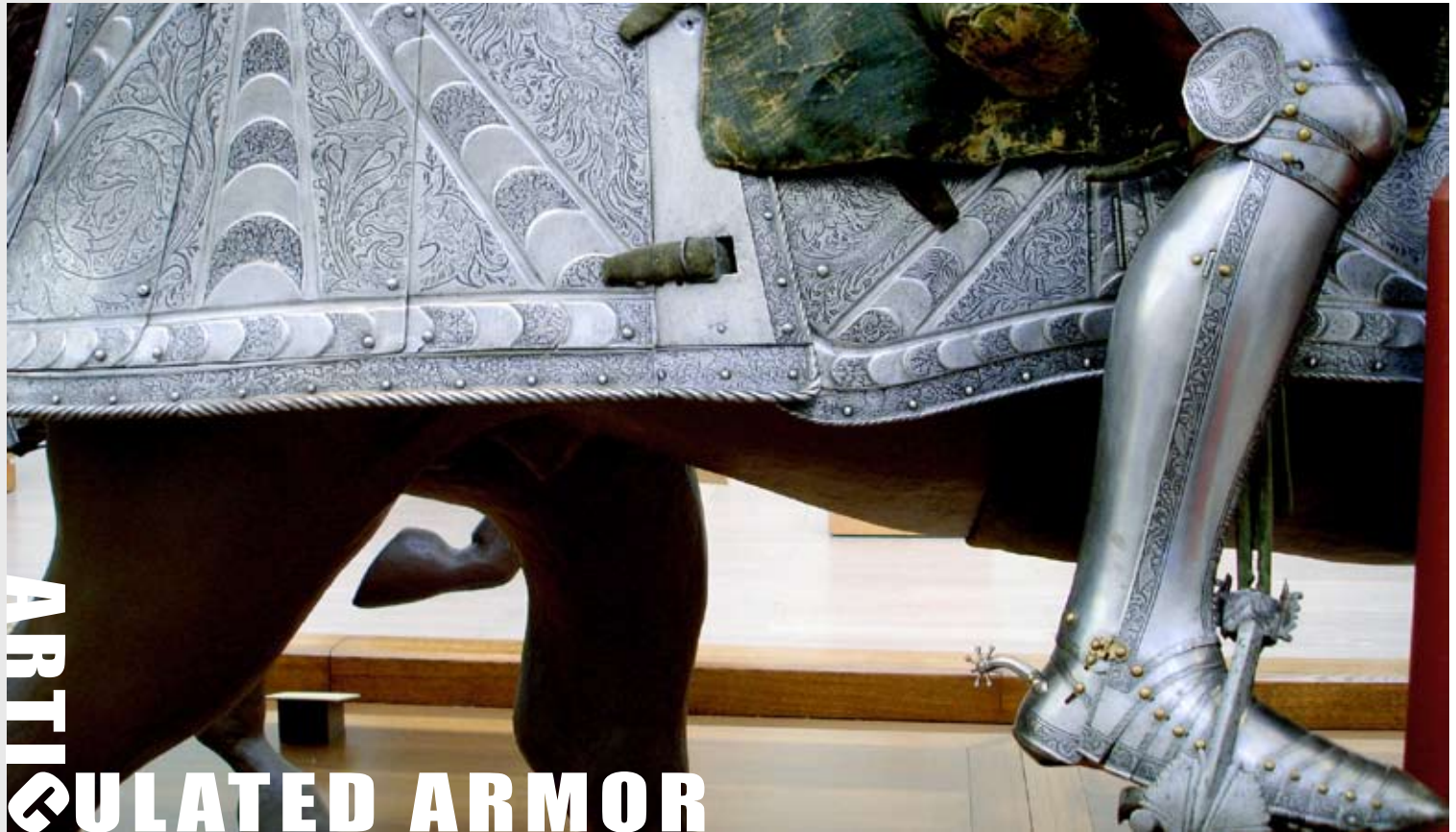
The use of a coil zipper makes it easier fix if it ever becomes forced apart by accident. The coil type is also much more flexible than a tooth zipper and it doesn't destroy surrounding fabric if it gets caught while zipping up.

There is no way to have the ventilation kind-of open. The zipper needs to be all the way down to get any air in. When it is only partly down, little to no air gets through the slit.

PURE + NATURAL SPEED







ARTICULATED ARMOR



CONFIDENT RENEGADE

PRECISE, FLUID MOTION



SHEAR THICKENING GELS + ELASTOMERS

WHAT

This material is flexible during normal use but when impacted it stiffens, creating a shield that distributes the force.

WHY

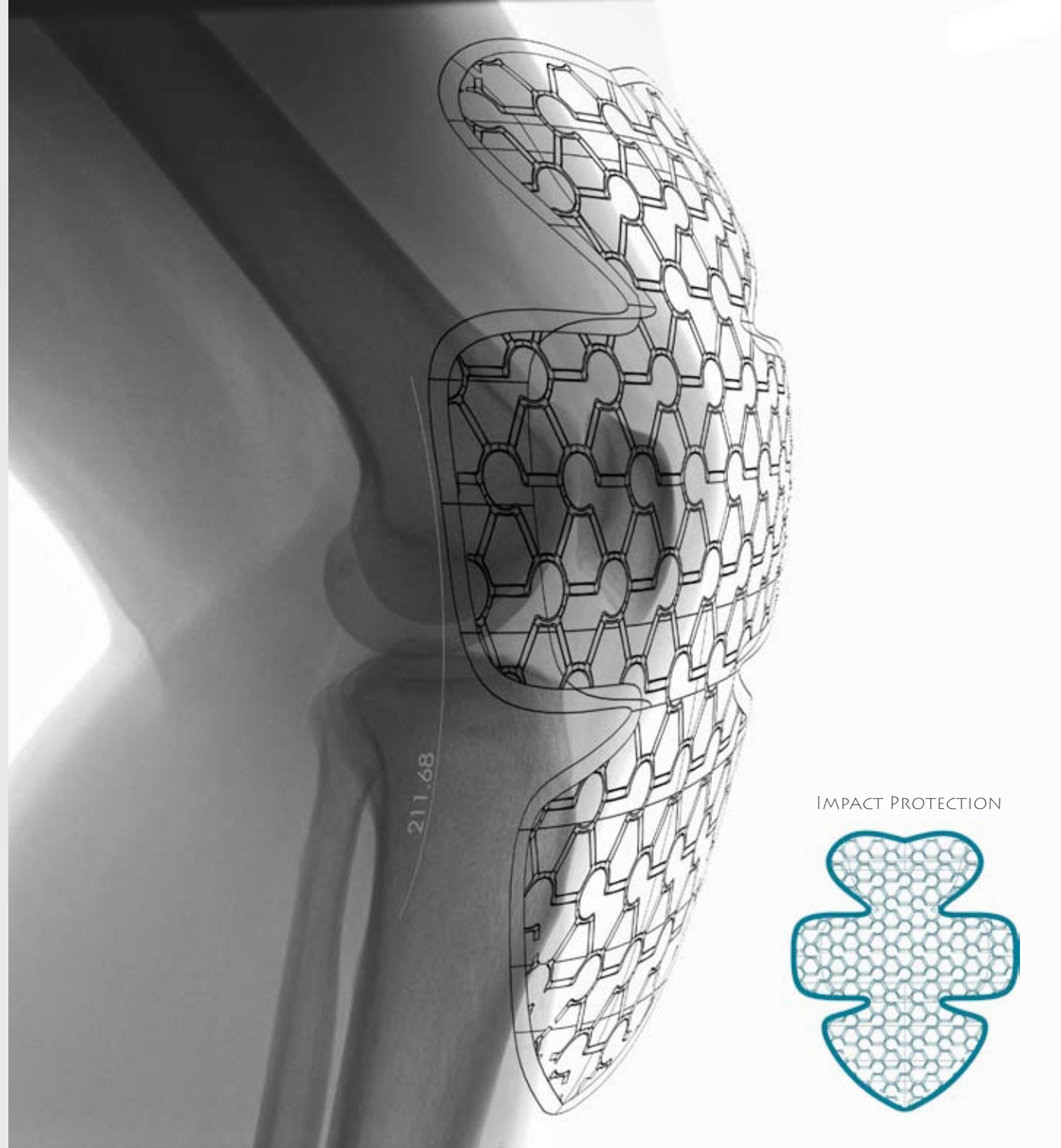
If incorporated into the knee and butt areas, this material could seriously decrease the amount of pain experienced when you catch an edge on ice or crash into a tree.

HOW

The material can be molded into thick sheets or pads that can then be tucked into pockets or sewn in between layers of fabric.

NOW

Currently the material is used for construction knee pads, sports (soccer shin pads), and the army is developing a flexible bulletproof jacket.



HIGH - TENSILE - STRENGTH THERMOPLASTIC ELASTOMER

WHAT

This material is highly resistant to tearing, abrasion, oil, grease, weather, UV rays, and fungus. It is also very flexible at low temperatures!

WHY

It would be used on the back of the pants where they wear from walking and binding's high-backs. It could also be used in other areas that usually get destroyed like the knees.

HOW

The material can be molded into a thin sheet that would then be stitched onto or into the pants.

NOW

This material is usually referred to as a TPU (thermoplastic polyurethane elastomer with high tensile strength). It is used for seals, gaskets, hand grips, and other products that are overmolded or comolded. This new application would be simple but revolutionary.

GREEN POINTS

It is such a new material that there is very little information about how green the material is.



PHILLIPS LUMALIVE FABRIC

WHAT

It's a durable waterproof fabric that can display any kind of digital media, including movies.

WHY

The fabric would replace any large panels of fabric in the pants pattern.

This would be like a tattoo that you can change everyday. It's a supersweet means of self expression.

The display could respond to feedback from a temperature sensor, accelerometer, or altimeter embedded in the pants.

The panels would display photos or artwork that you designed on your computer at home.

HOW

The fabric has colored LEDs embedded in the fabric that don't interfere with the fabric's characteristics such as softness or flexibility.

It requires a battery (see the next page).

NOW

It is brand new and Phillips is looking for applications.



FLEXIBLE BATTERIES

WHAT

It is a very thin (.3 mm), flexible battery.

WHY

A battery would power a LUMALIVE display, recharge a cellphone or radio, or provide extra Ipod hours.

Because batteries heat up as they power things, it would double as a heat source!

HOW

The battery would be slid into an interior pocket in the pants.

Many different companies are developing proprietary technologies to offer us more choices. Several choices already exist.

NOW

NEC, Solicore, and Power Paper are a few of the companies that have developed this technology. It is new and most consumer products are hard, so they don't have many applications yet.

GREEN POINTS

NEC's organic radical battery (ORB) doesn't use any of the heavy metals that traditional batteries use. If you have to use a battery to get it done, this one will score you mega green points.



ANTI-BACTERIAL TEXTILES

WHAT

A fabric that kills bacteria that try to live in it.

WHY

It's kind of like deodorant for your pants.

I don't wash my pants because it destroys the waterproof membranes I paid oh so much for. So, my pants' liner smells horrible. If the liner was made out of this stuff, there wouldn't be any smelly bacteria living in my pants - so they wouldn't smell.

HOW

Different textiles do it different ways. Some incorporate silver (an antibacterial metal) into the thread that the material is woven from. Others use coatings such as catechin (derived from crab and shrimp shells) that are antibacterial.

NOW

The fabric is used mostly for hospital and medical environments. Malden Mills makes an anti-bacterial fleece with silver fiber yarn.

GREEN POINTS

Some coatings don't affect the molecular makeup of the fabric, so they are green when used with recyclable fabrics such as polar fleece. Research would need to be done to figure out whether or not incorporating silver into a recycle able textile is plausible.



TIZIP

This zipper is used for dry suits (think scuba diving). It keeps out every drop of water that hits it. If you land in a puddle, your seams will leak before your zipper will. This means it's windproof too, so you don't need to stitch in a wind-flap.

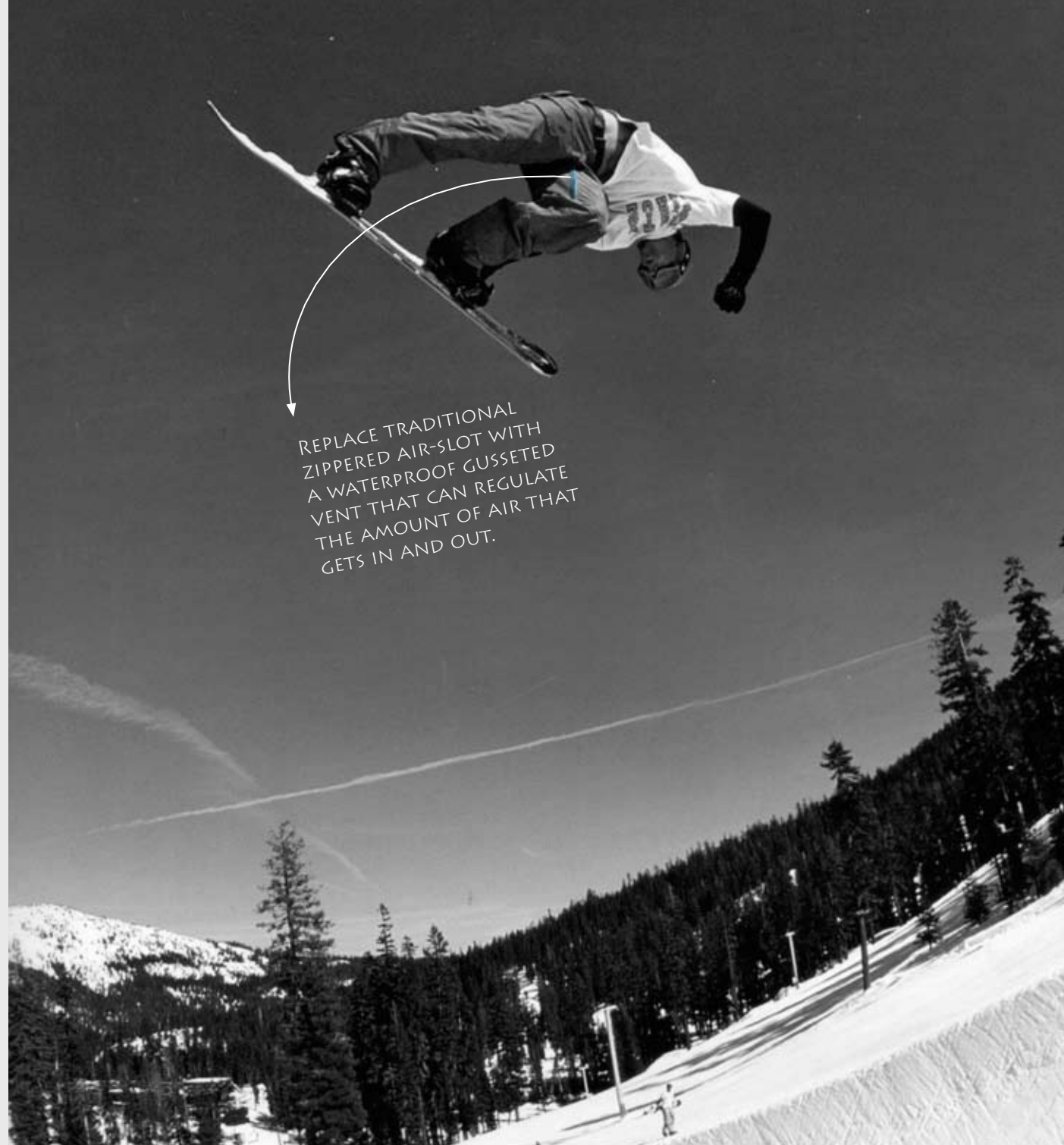
This is great for ventilation areas that typically "leak" in extreme wind.

WIND SHIELDING TEXTILE

You are no longer mercy to ventilation that is either "on" or "off."

When you have your ventilation open, you are subject to the environment. If it is windy, you're going to get cold fast. If it is snowing, you're most likely going to get snow in your pants.

This textile is breathable and lets 80-90% of wind through it. It could be used as a gusset that is exposed when a ventilation zipper is opened. It would allow for a more gradual and controllable temperature change. The gusset would keep out any snow that wants to get in too.



REPLACE TRADITIONAL ZIPPERED AIR-SLOT WITH A WATERPROOF GUSSETED VENT THAT CAN REGULATE THE AMOUNT OF AIR THAT GETS IN AND OUT.

DYE-SUBLIMATION DIGITAL PRINTING

WHAT

It is a digital printing method that uses heat to transfer a dye to any synthetic medium.

WHY

This is one of the keys to mass customization.

I can create some artwork or take a picture upload it to a web site. Using a dye-sublimation printing process, a manufacturer could make custom pants with my artwork or imagery. This is a lot like the Lumalive tattoo concept, but a one-time thing.

WHERE

On any part of the pants that are synthetic (the entire outersurface of most snowboard pants).

NOW

Manufacturers currently use the technology to print on T-shirts, hats, mugs, and other surfaces.

GREEN POINTS

More research would have to be done to find out whether or not fabrics that are printed with specific dyes can still be recycled or not.



RETRO-REFLECTIVE TEXTILE

Millions of lenses, glass balls, or dishes are embedded in the textile so that as soon as a light source hits the fabric, it lights up to a brilliant bright white.

Not only does this make you extremely visible to cars, but it would “dance” as you float under and away from slope lights.

ANTI-STATIC FILAMENT

Every time I take off my pants my leg hairs stand up on end and I get zapped by the next metal object I touch. In woven form, this filament prevents these two problems.

The technical terms: the filament is a conductive carbon core with a nylon or polyester sheath.

