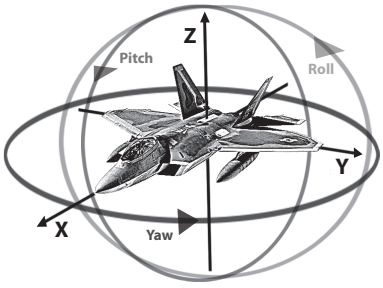
Advanced Impact Defense™

"There hasn't been a significant development in head protection technology since the **incorporation of EPS** as the primary energy management device **over**

50

years ago!"



WHY?

Today, helmet technology is stagnant... multi-density EPS is about all we've gotten over many, many years of development... maybe some larger shells, more foam, but that alone will not improve the helmet to the level that our athletes need and deserve.

The more we studied the problems, the testing methodologies, and learned about head injury, the more we realized it would require a very creative and completely new approach to build a truly improved helmet. The helmet would need to manage critical angular acceleration energy issues present in all impacts, as well as reduce low-threshold energy transfer to the brain. We need a softer, more compliant helmet design, but without compromising high-energy performance.

This became our challenge and our goal: to develop a revolutionary design concept utilizing creative, forward-thinking technology that would change the market and improve the safety capabilities of the sport's helmet.

Bob Weber
Founder / CEO

MISSION STATEMENT

Provide the public with superior safety helmets from both a technological perspective and a design perspective. Continually challenge our company to improve its technology and lead the marketplace with innovative solutions.

6D™ DEFINITION

Six Degrees of Freedom – In engineering terms, refers to the ability to move 3 dimensionally in space about the Cartesian coordinate system of X,Y and Z, including rotation about each axes.

This accurately defines the ODS™ technology and is the foundation of our brand name – 6D.™

"Almost 1/3, **29%** of all serious injuries to professional motocross racers are **head injuries,** of which **92%** are **concussions**.*"

(* Asterisk Mobile Medical Center)

WHAT?

The 6D™ ATR-1 off-road helmet incorporates revolutionary Omni-Directional Suspension™ (ODS™) technology which is a patent-pending kinetic energy management solution.

ODS™ is designed to protect your brain over a broader range of impact energy, particularly low–threshold energy prevalent in most accidents. Low-threshold impact energy is the primary cause of concussion and second impact syndrome*. Independent laboratory testing also confirms a significant reduction in angular acceleration energy with ODS™. Angular acceleration is the primary cause of rotational brain injury, which is a potentially deadly and life-changing impairment.

The improved performance of 6D's™ exclusive ODS™ technology can reduce the likelihood and propensity of concussion over traditional helmet designs. Although no helmet can protect you from all potential impacts or injury, the 6D™ ATR-1 was engineered to provide active free-motion capability within the helmet's protective liner and exceed current required helmet standards.

**Second-impact syndrome is a condition in which the brain swells rapidly and catastrophically after a person suffers a second concussion before symptoms from an earlier one have subsided. This potentially deadly second blow may occur days, weeks or minutes after an initial concussion.*

Southwick 1987

Saddleback 1979

"The challenge — to create a safer helmet."

THE TEAM

BOB WEBER FOUNDER/CEO

Bob is the epitome of an enthusiast. His motorcycle industry career began with one of his first jobs at a local Honda dealer to earn money to support his racing. He went on to compete at the professional AMA National Motocross level before setting his sights on a career within the motorcycle industry, where he has worked for over 30 years.

As an industry professional, he has managed the operations, growth, development, manufacturing, and marketing sides of countless projects including professional race teams and race events. He has had the opportunity to work with, and grow with, great companies like White Brothers, Emap Peterson Publishing, (publisher of Dirt Rider, Motorcyclist, and Sport Rider magazines) and Troy Lee Designs.

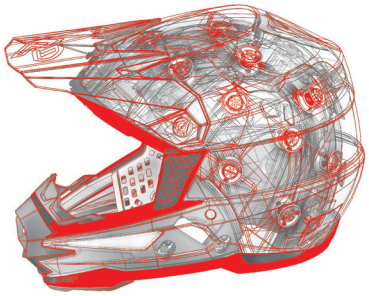
As an innovator and owner of one utility patent already, Bob has worked intimately with motorcycle helmet manufacturing companies and racers at all levels. He challenged himself to create a safer helmet.

ROBERT REISINGER FOUNDER/DIRECTOR OF ENGINEERING

Robert started his motorcycle racing career in the early 70's and raced the AMA Supercross, Nationals and Trans-Am events.

Robert went directly from a top professional AMA National Motocross racer and Factory Kawasaki R&D test rider to an engineering graduate at Cal Poly State University, San Luis Obispo, CA, where he stayed on as an instructor/lecturer for courses on CAD/CAM design, CNC fabrication/machine tool programming, robotic programming and tool design for work cell set-up.

An entrepreneur by nature, Robert founded Mountain Cycle bicycle company right out of college. Robert has owned, or worked with companies in the motocross or mountain bike industries for over 30 years. He holds multiple patents and has developed many innovative products, from MTB upside-down suspension forks and disc brakes, to MX 4-stroke exhaust systems. This very unique blend of talents and experience made Robert the perfect choice to lead 6D's™ development.



" ODS™ — represents a fully active, in-helmet suspension and kinetic energy management system. "

ODS™ (OMNI-DIRECTIONAL SUSPENSION™)

6D's™ revolutionary patent pending ODS™ (Omni-Directional Suspension™) represents a fully active, in-helmet suspension and kinetic energy management system. The mechanics, engineering, materials, and manufacturing are very complicated, but actually, the concept is quite simple.

Working with leading research and development experts in the area of motorcycle helmet safety, design, and advanced product testing, our goal was simple; design a better performing off-road motorcycle helmet. We applied creative 'clean-sheet' engineering concepts to the problem and started building prototype helmets for testing. Extensive testing provided data to support a vastly superior 'proof of concept' design. This design matrix was taken into beta testing for further evaluation and development, and then on to pre-production testing.

To manage kinetic energy (including linear, angular, and lower-threshold acceleration energy), the ODS™ system starts with an internal EPS liner not unlike traditional helmets; but that is where the similarities end. With the ODS™ system, the EPS liner is divided, creating a compound-liner assembly. These two liners are separated by a very specific programmed array of elastomeric isolation dampers creating an air-gap. It is this array of isolation dampers surrounding the entire liner, combined with the air-gap, that affords the free-motion suspension capability of ODS.™

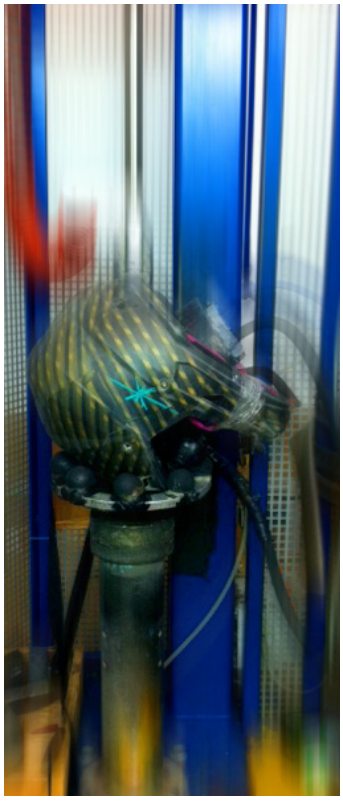
The unique 'hourglass' shape designed into the elastomeric isolation dampers function with specially designed frusto-conical ramping chambers within the ODS™ system to produce a rapidly escalating spring rate under compressive load. These same features allow the split liner system to shear omni-directionally within itself to provide improved performance against oblique impacts and angular acceleration demands. There is no other helmet technology that can offer these combined energy management features.

6D's™ innovative ODS™ system improves impact force management within the helmet's interior environment. Omni-Directional Suspension™ (ODS™) technology is designed to protect your head over a broader range of energy transfer; especially angular energy in low and high velocity impacts, than traditional helmet designs. In testing, ODS™ has shown to significantly reduce the energy transferred to the head. This can reduce the likelihood of a concussion or brain injury over a traditional helmet.

PATENT PENDING
ODS™
OMNI-DIRECTIONAL SUSPENSION™

" — ODS™ can reduce the likelihood of a concussion or brain injury over a traditional helmet."

6D's ATR-1 engineered CAD model.



LOW-THRESHOLD ENERGY (OR LOW VELOCITY IMPACTS)

In recent years, research has provided alarming conclusions surrounding the causes, severity, and long-term effects of concussions. We now know that even seemingly minor concussions ('I'm fine, I just rang my bell') may have much more serious effects on the long-term health and well-being of one's brain. It is well documented that concussions occur from impacts in the range of 60 to 169 G's* in the adult male and may be location dependent. This value is less in women and children.

'Low Threshold Energy', or low velocity impacts, is qualified for sake of reference, throughout our documentation as velocity equal to, or less than, 4m/sec (meters per second) as measured on traditional linear helmet testing equipment. A 4m/sec impact is equivalent to roughly 120 G's being transferred to the brain in most current model Snell and ECE approved off-road helmets. That's 100% more than the energy necessary to sustain a concussion in an adult male!

Helmets certified to both the DOT FMVSS 218 and Snell 2010 standards are very strong and have to manage linear drop test velocities of up to 7.75 m/sec to meet the standard in varying arrays of tests. For a traditionally designed helmet to perform at this level, a stiff shell and EPS combination is required. This combination adds unnecessary weight to the equation, and limits the capability of the EPS to function adequately at lower threshold energy demands. This is due in part to the higher density EPS formulation required to pass the combined standards. The alternate solution would be to have a very large helmet with a lot of soft EPS foam installed, but this solution creates obvious problems as well.

Unfortunately, EPS foam just cannot support both ends of the energy demand spectrum at the same time without increasing its thickness by significant margins and/or being formulated from softer EPS. This is why the industry has evolved to multi-density EPS liners and larger shell diameters over recent years. While this is an improvement over single density EPS foam or extra large shells, it is not the ideal solution. And none of this does anything for rotational shearing forces caused by angular accelerations due to oblique impacts.

" Unfortunately, EPS foam just cannot support both ends of the energy demand spectrum — "

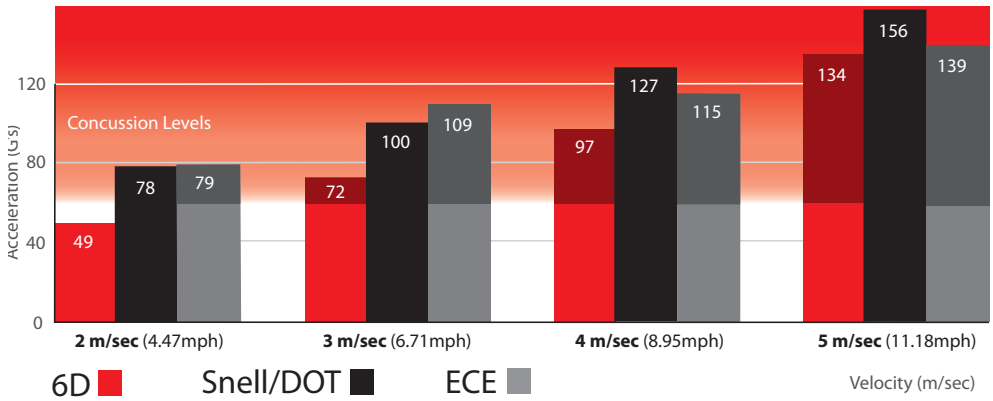
In other words, current helmet technology and design is still seriously lacking adequate protection from lower threshold energy demands. The stiff shell and EPS is not sufficiently active inside this low-threshold energy range and has limited ability to mitigate angular acceleration.

6D's™ fully-active ODS™ dual-liner suspension system, dramatically improves low-threshold energy compliance while effectively maintaining high-energy protection as well. ODS™ also adds a whole new dimension of much needed angular acceleration energy management, not found in conventional helmets of today.

**American Academy of Neurology / Ellen Deibert, MD / Richard Kryscio, PhD*

Low Threshold Test Results

Acceleration: G's / Velocity (meters per second (m/sec): 2.0 / 3.0 / 4.0 / 5.0



LOW THRESHOLD ENERGY

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"Low Threshold tests concluded the 6D™ helmet with ODS™ technology can significantly **reduce the G forces to the head** by as much as

38%*"

(*Manufacturing Test Lab)

" angular acceleration contributes more than linear acceleration to concussive injuries — "

ANGULAR ACCELERATION ENERGY

Thomas A. Gennarelli, M.D. and Lawrence E. Thibault, M.D. concluded that angular acceleration contributes more than linear acceleration to concussive injuries, diffuse axonal injuries, and subdural hematomas. Angular acceleration is the cause of rotational brain injuries. Rotational brain injuries can be serious, long lasting, and life threatening.

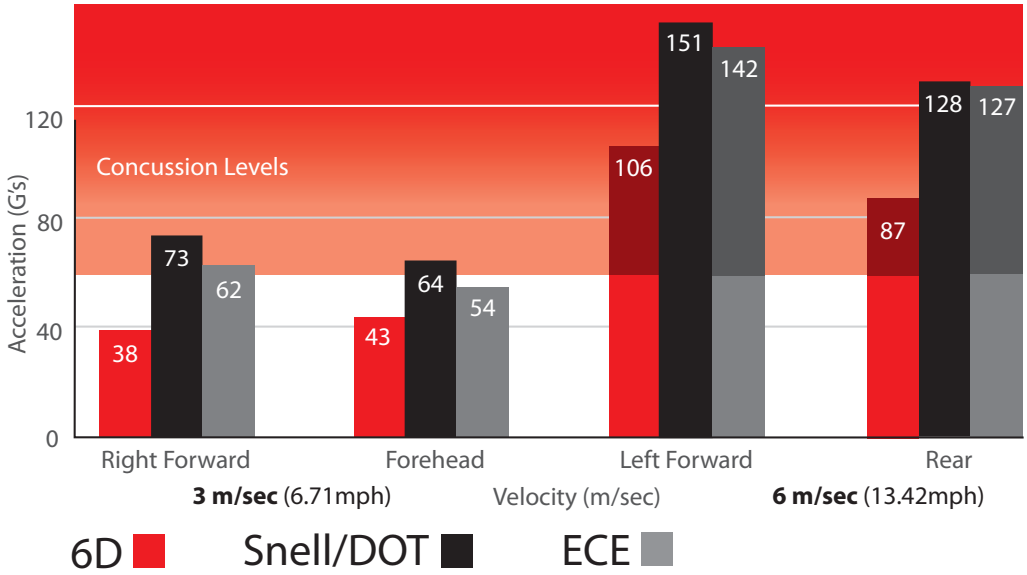
Experiments conducted by David C. Viano, PhD. M.D. and the Bioengineering Center at Wayne State University confirmed that a helmeted head sustained the same degree of angular acceleration as the un-helmeted head when subjected to identical impacts. So, if angular acceleration is the major cause of brain injury, then how is the brain protected by traditional helmet technology? Unfortunately, in the aspect of angular acceleration, it is not.

The focal point of traditional helmet design has always been directed at providing protection against linear impact energy test compliance. Helmets are tested to standards by dropping them in a vertical plane on very complex test equipment in a controlled environment. This testing assures the public that a level of compliance is achieved before a particular helmet makes it to market. While this is an excellent control method, impacts in a 'real-world' accident are in fact much different, and the impact will almost certainly be an oblique angle strike. This means the helmet will impact an object or the ground at an angle greater or less than 90 degrees to the center of mass (the brain) within the helmet. During this event (impact), angular acceleration energy is transferred to the brain. 6D's™ goal is to reduce this angular acceleration energy transfer thereby reducing the potential of brain injury. 'ODS™' achieves this goal. In some test cases, the 6D™ ATR-1 off-road helmet reduces resultant angular acceleration over traditional helmet design by over 200%, resulting in a truly revolutionary helmet.

6D's™ ODS™ equipped ATR-1 helmet delivers the best of all worlds; a helmet with great low-threshold energy compliance, mitigation of angular acceleration energy, and required high-energy performance all in one certified helmet design.

Angular Acceleration in G's / Test Results

Acceleration: G's / Velocity (meters per second (m/sec): 3.0 / 6.0



"Angular Acceleration tests show the 6D™ helmet with ODS™ can **reduce the acceleration** (G's) **to the head by nearly**

48%*

when compared to other premium helmets."

(* Dynamic Research)

ANGULAR ACCELERATION

Angular Acceleration is the rate of change of angular velocity.

The angular acceleration can be defined at either:

$$\alpha = \frac{dw}{dt} = \frac{d^2\theta}{dt^2}, \text{ or } \alpha = \frac{a_T}{r}$$

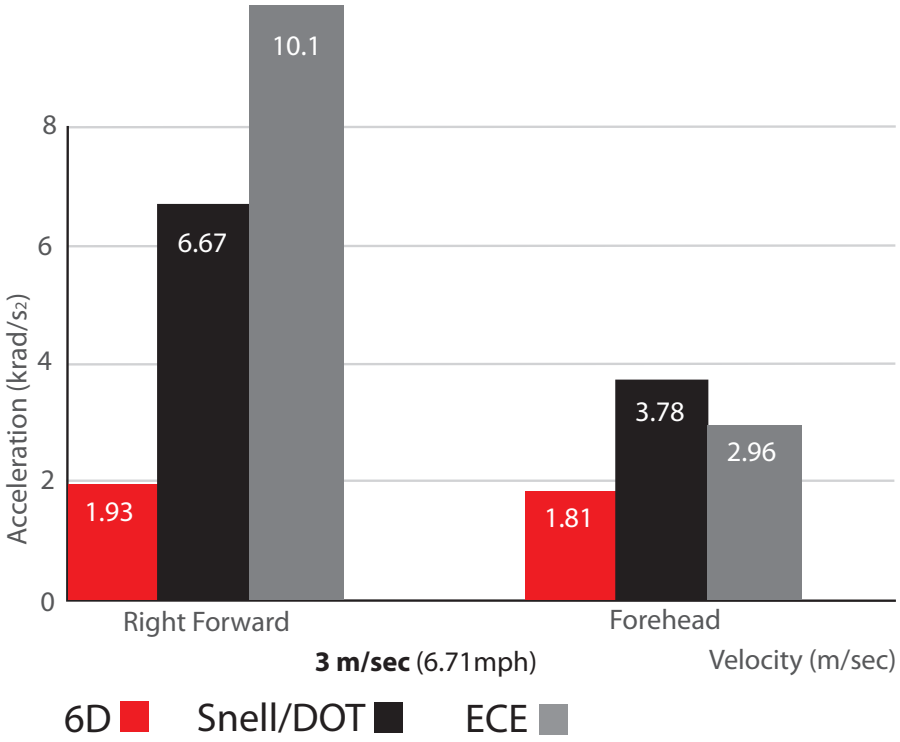
(where w is the angular velocity, a_T is the linear tangential acceleration, and r is the distance from the coordinate system that defines θ and w to the point of interest.)

"Resultant Angular Acceleration tests confirm the 6D™ helmet can **reduce the angular acceleration** (krad/s²) **to the head by nearly 81%*"**

(* Dynamic Research)

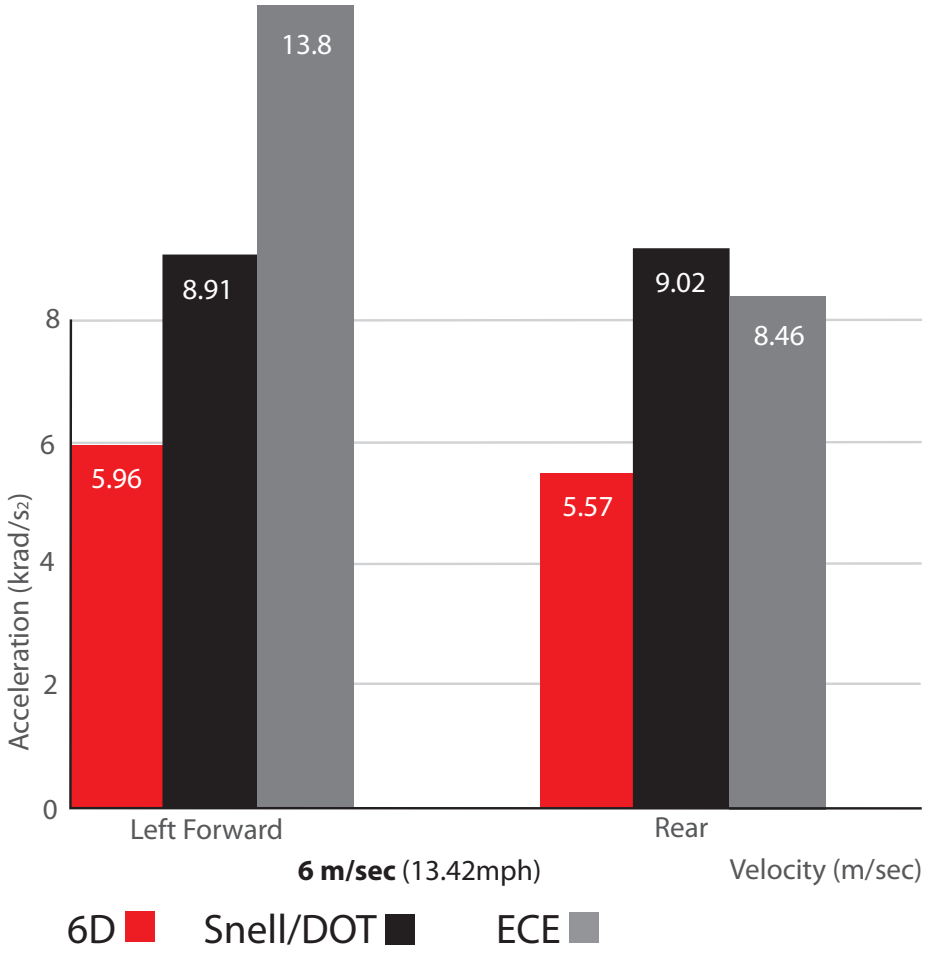
Resultant Angular Acceleration in Krad/s² (Rotational Energy) / Test Results

Acceleration: (kilorads per second/squared (krad/s²)
Velocity (meters per second (m/sec): 3.0



Resultant Angular Acceleration in Krad/s² (Rotational Energy) / Test Results

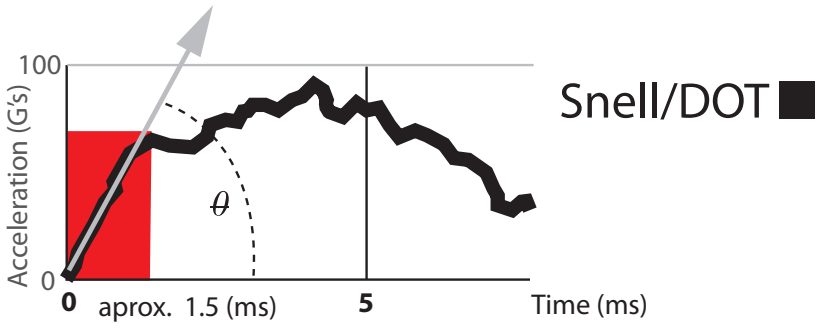
Acceleration: (kilorads per second/squared (krad/s²)
Velocity (meters per second (m/sec): 6.0

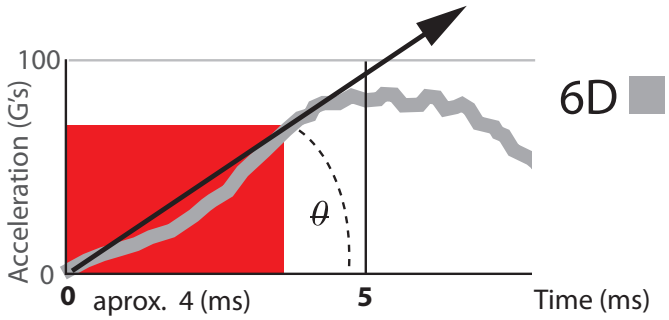


"In a traditional helmet — a helmeted head sustained the same degree of angular acceleration as the un-helmeted head when subjected to identical impacts."

Acceleration / Time Test Results

Time (milisecond (ms) / Acceleration: 0 to 70G's
Velocity (meters per second (m/s): 3.0





"Force/Time tests confirm the 6D™ helmet can dramatically **increase the time in an event by more than**

150%*"

(* Dynamic Research)

ACCELERATION FORCE / TIME

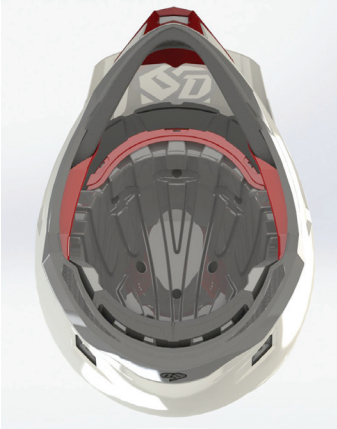
Current technology dictates that the exterior shell and the corresponding interior liner are tasked with managing all forces applied to the helmet, be them linear or angular. When force is applied which exceeds the capability of the helmets' combined resources, the excess force (i.e. energy) is transferred to the head and brain of the user. The desired function of helmets is to absorb and dissipate as much energy as possible, OVER THE GREATEST AMOUNT OF TIME POSSIBLE.

"We're very excited to work with 6D™. We've seen our share of concussions over the years and the safety of our riders is our first priority."

- Mike Larocco
(FCR Team Manager)

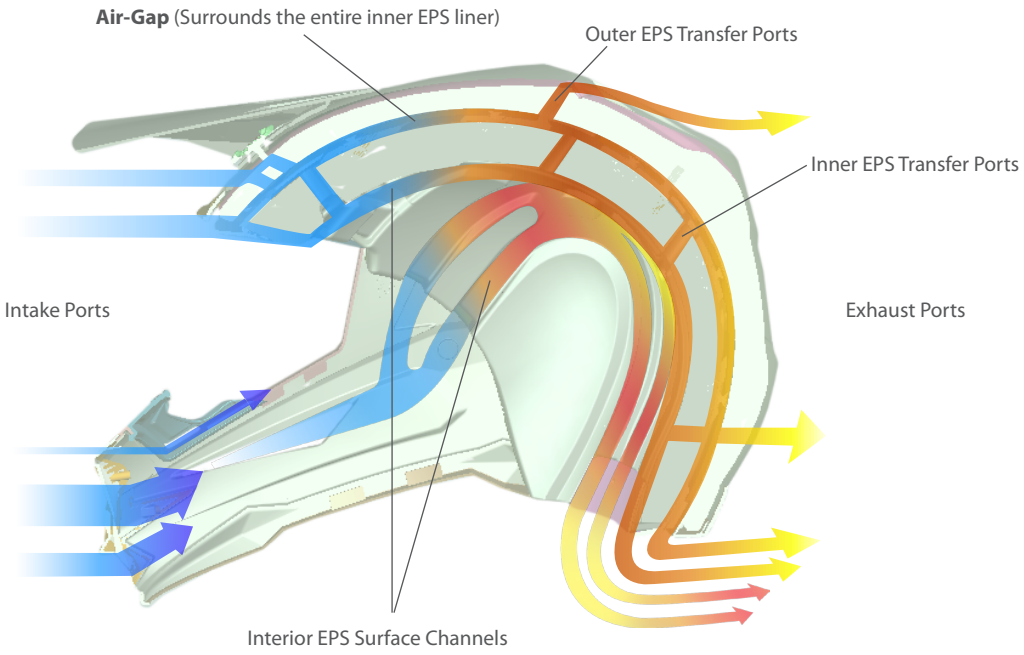
TEAM FACTORY CONNECTION / GEICO / HONDA

The 6D™ ATR-1 helmet will make its AMA Supercross debut with SX Lites West Coast Champion, Eli Tomac, and the Factory Connection Racing / Geico / Honda Team, at Anaheim 1, January 5th, 2013.

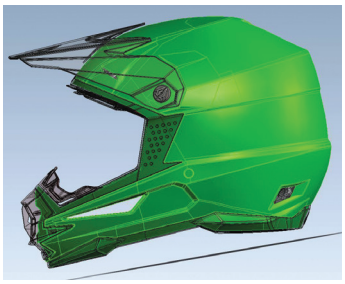


AIR-GAP TECHNOLOGY™ VENTILATION SYSTEM

The 6D™ ATR-1 helmet incorporates Air-Gap Technology,™ an advanced air flow management system designed to provide significant air flow throughout the entire helmet. This air flow system aids in heat and moisture evacuation from within the comfort liner area providing a cooler and safer environment during extreme riding conditions. Eight (8) intake ports channel fresh air into the helmet where it is managed by a network of 13 transfer ports and 5 exhaust ports to keep the air moving. Aggressive channels designed on the interior surface of the inside EPS liner mate directly to the comfort liner for superior moisture transfer and evacuation from the helmet by means of the Air-Gap Technology™ air flow.



"— designed to provide significant air flow throughout the entire helmet."



"— designed with the singular goal of building the safest, most effective off-road helmet possible."

6D™ ATR-1 FEATURES

- ODS™ (Omni-Directional Suspension™) Technology

- Air-Gap Technology™

- Shell – The ATR-1's shell combines a proprietary woven blend of advanced aerospace carbon fiber, composite fiberglass, and Kevlar to create the perfect ratio of strength to weight. There are no protrusions, sharp edges, or radical fins incorporated into the shell design which improves rider safety. The ATR-1's shell was designed with the singular goal of building the safest, most effective off-road helmet possible.

- Visor mounts flush with integrated recess into the outer shell surface.

- Large eyeport opening provides excellent fitment of all popular motocross goggles.

- Cheek pads channel air flow from the chin bar into the air-gap for improved ventilation and comfort.

- A removable contoured roost guard provides additional protection from rocks and roost while accommodating all popular goggles and nose protectors.

- Integrated traction posts at the eyeport combine with a shell recess to keep your goggle strap properly positioned throughout the entire moto.

- Rear Delta Vent – Designed and engineered by aviation experts, Delta Vents assist in the evacuation of air by creating a low-pressure venturi effect upon the external surface of the helmet. Delta Vents aid transfer by scavenging air from within the helmet.

- Clavicle Cut-Away – The lower chin bar opening is designed to reduce both mass and weight, as well as provide increased clavicle clearance without sacrificing strength.

- Sternum Pad – The ATR-1 incorporates a unique EPU (Expanded Poly Urethane) sternum pad design, which steps down below the nose of the chin bar area. The sternum pad provides a progressive surface for added protection of the chin, jaw and sternum in the event of an accident.

- The ATR-1 is fully compatible with all neck braces.

- The ATR-1 has titanium "D" rings and chin strap rivets.

- Comfort Liner – The ATR-1's comfort liner consists of more innovative materials and design concepts. Genuine CoolMax™ anti-bacterial fabric is used for a superior sweat management solution while providing optimum support, comfort and fit. Easy removal makes washing and replacement easy.

"— engineered plastic visor hardware is designed to shear-away with accident force."

6D™ ATR-1 FEATURES

- Emergency Release Cheek Pads – Our simple, yet effective design provides easier access and helmet removal during emergency situations without unnecessary levers or additional parts being manipulated by emergency personnel.
- Shear-away Visor Screws – Manufactured of engineered plastic rather than aluminum or titanium, allows the screws to shear more easily in the event of a high-stress impact or snag, improving rider safety.
- Effective visor design blocks roost, vents aggressively and mounts securely.
- Stainless steel screens protect all shell openings.
- Replaceable mouth piece provides excellent roost protection and air flow.
- Exclusive 6D™ graphics.
- Weight: +/- 1,490 grams.
- 3-year limited warranty.
- Exceeds DOT and ECE standards.
- Suggested Retail: TBA
- Available: February 2013

CONTACT INFORMATION

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6DHELMETS.COM