HI-TEC
TECHNOLOGY
MANUAL

4:SYS

THE **4:SYS** OF NATURE

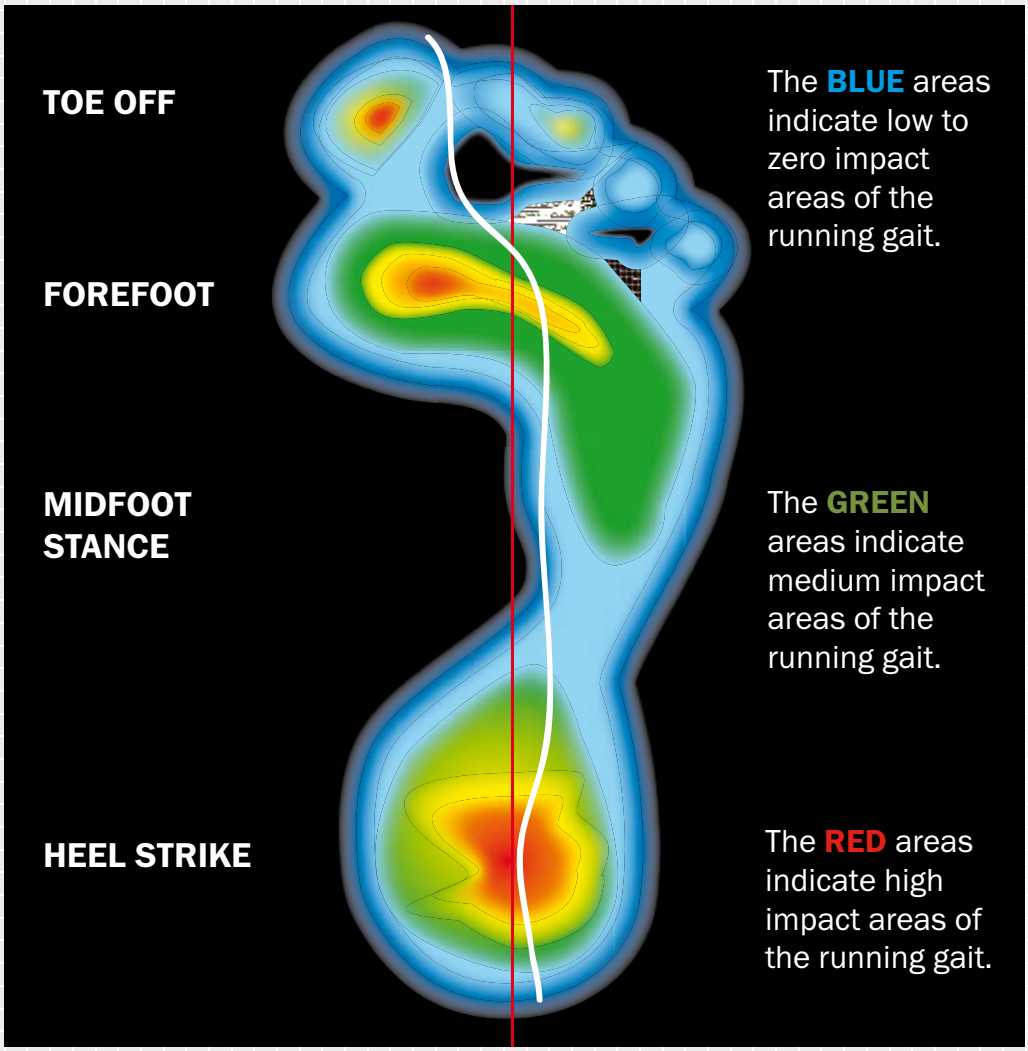
www.hi-tec.com/4sys

THE 4:SYS OF NATURE

For the past 2 years Hi-Tec have been working with SATRA® to examine the dynamics of the foot in a variety of sporting contexts. The basis of the approach, utilising the latest pressure mapping technology, was to assess and evaluate the high-pressure areas of the foot during the respective sporting movements.

The running / walking study has revealed that there are four critical phases to the running gait. Heel strike, mid-foot stance, forefoot and toe off. The new insight here is the high pressure that is driven through the big toe and the critical role that plays in balance, stability and forward propulsion.

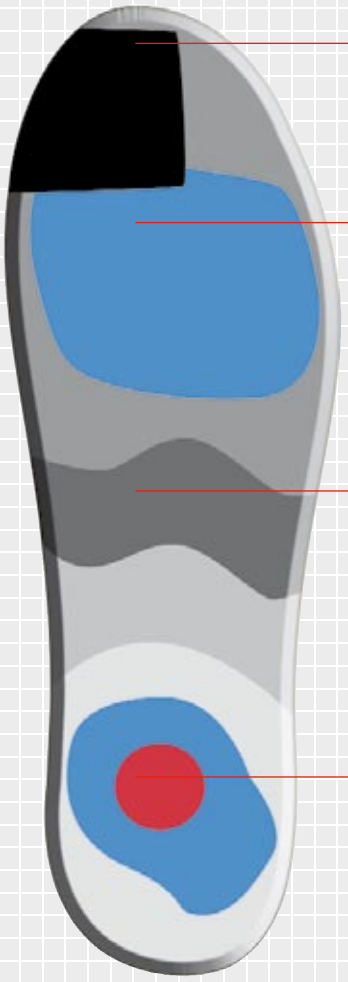
From this advanced research Hi-Tec developed the 4:SYS concept to reflect the different forces applied by the bare foot during the running gait.



THE **CONCEPT**

Hi-Tec believe that if the footstrike wearing shoes could more closely reflect that of the barefoot then that could yield some significant benefits to the runner.

This lead Hi-Tec to develop the 4:SYS midsole configuration which is intended to encourage the foot to function in a more natural way. The 4:SYS midsole works by optimising the material used in the various sections of the midsole, which in turn reflect the demands of the barefoot. 8 grades of material have been moulded into the midsole - softest where the highest pressure is exerted, stiffer where support is required and energy return materials in the forefoot and 'toepulsion' zone, where an element of propulsion is required.



The 'Toe-Off' Area
Unique 'toepulsion' area to spread impact energy and return it to allow 'spring' into next step

The Forefoot Area
For cushioning and energy return to help forward motion

The Midfoot Area
For support. Stiffer, denser materials support the foot during transition or stance phase.

The Heel Area
For cushioning and shock absorption. Softest density in the centre to reflect the highest pressure zone during heel strike.

Hi-Tec 4:SYS technology has been designed to encourage the foot to return towards the barefoot strike, subsequently delivering a more natural, more stable and more direct line transfer of energy during the running footstrike.

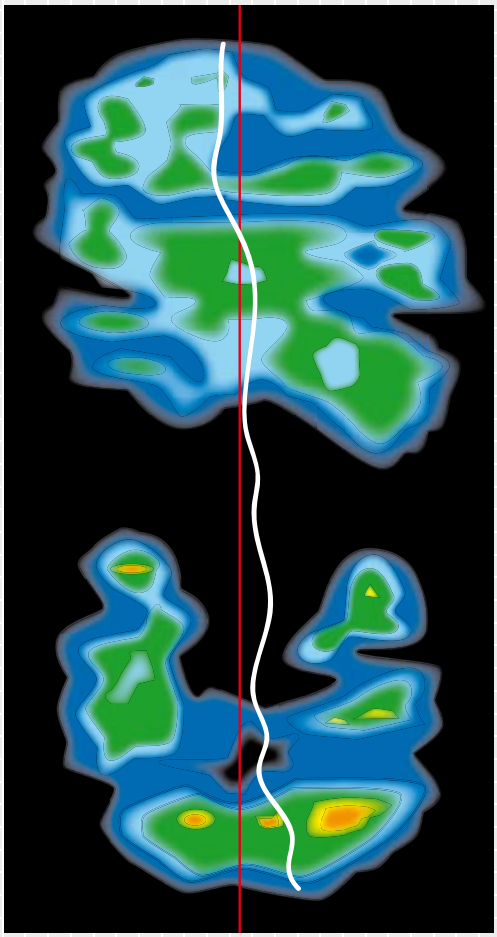
THE **LAB RESULTS**

Independent research by Biomechanics experts Quintic Consultancy has shown that channelling the energy through the 4:SYS midsole has enabled Hi-Tec to create a shoe that delivers:

1. a faster foot strike (i.e. the foot is in contact with the ground for a shorter period of time) which by definition it gives the runner a more energy and time efficient stride.

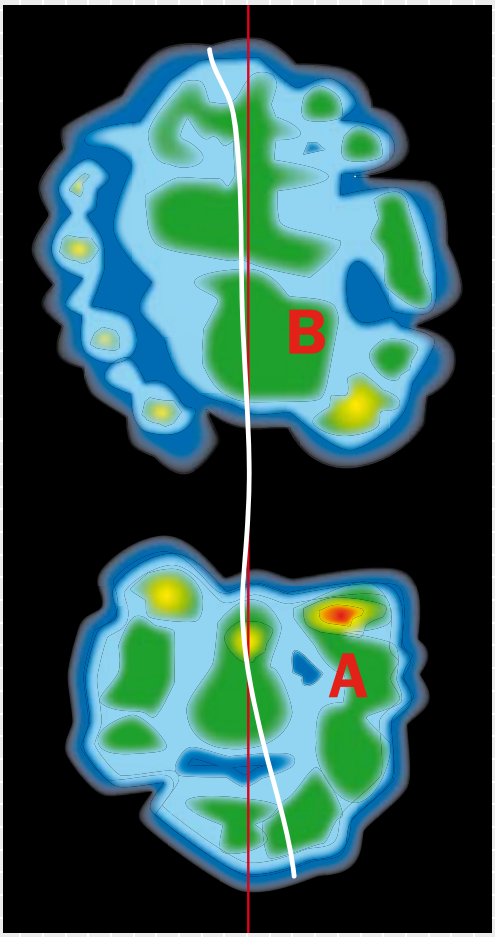
2. a midsole that places less strain on the lower leg, which is essential in stabilising the foot during the footstrike.

Competitors Product



Competitor products showed a less efficient stride and more of a 'wobble' during this energy transfer which results in a more unstable, therefore less efficient stride.

4:SYS Midsole



The 4:SYS midsole directly channels energy towards the centre of the heel seat region (A) then encourages this energy through the centre line axis line until toe off in the most direct route possible (B).

THE LAB RESULTS

Direct Centre Of Pressure (COP)

The COP line for the Hi-Tec Phtera and Silver Shadow X5 was 2.15% and 2.3% respectively shorter than in the benchmark competitor shoes.

More direct COP line = footstrike 5 milliseconds shorter

Lower Leg Stability

The longer the COP line the more stabilising the lower limb has to endure during each contact phase, therefore the closer the value can be to 100% the more efficient the running style will be.

V-Lite Phtera	105.34%

Silver Shadow X5	105.50%
Benchmark average	107.64%

High speed film taken during the filming has also shown that the lower leg physically has to work more to stabilise the foot the higher the COP value.

Lower COP value = Less strain on the lower leg