



## Research Overview

October 2011

**Honeywell**

## *Old Assumption in Safety Eyewear*

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### *“One size fits all”*

- In the field of protective eyewear, the old assumption is that one size fits all – or at least it fits most people. In fact, during the past 20 years, the market has moved to “universal size” spectacles.
- While designers created models for the majority of the working population, to accomplish this they had to compromise –and the compromise they made was “comfort and fit”.
- Let’s compare protective eyewear to two other PPE categories...

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*Small, Medium, Large*

In respiratory protection, because it is critical to have a tight seal where the mask meets the face, there are typically three sizes of facepieces—small, medium and large – to fit a wide range of head shapes and sizes.

## Hand Protection

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**6XS, 7S, 8M, 9L,  
10XL, 11XXL**

And because dexterity and a sure grip are important safety factors, in hand protection there are typically multiple glove sizes –once again to fit a wide range of hand sizes.

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# *Impact of Cultural Diversity in PPE*

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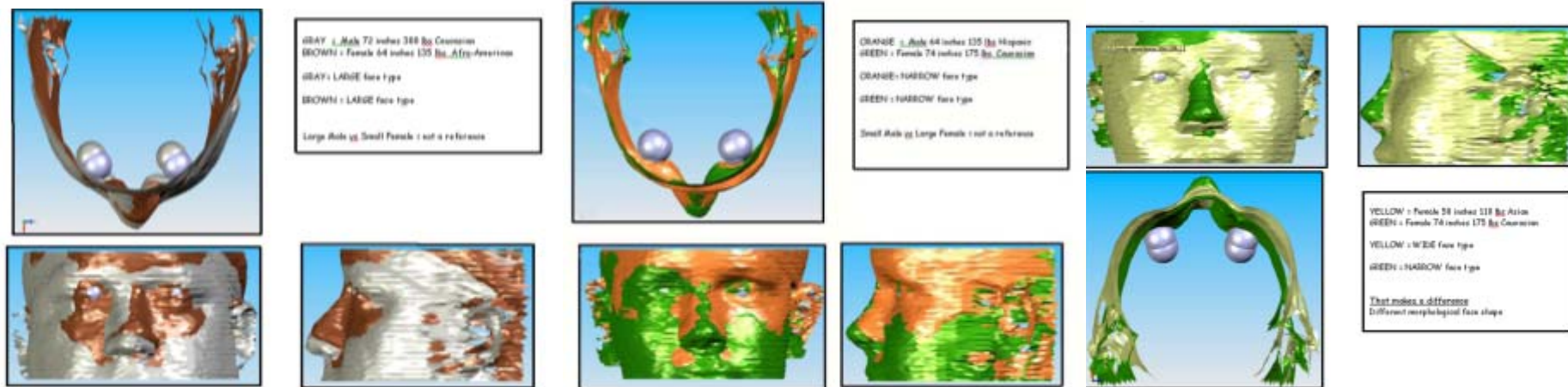
Greater diversity means greater differences between the size and shape of heads, faces, eyes, noses, ears –and that impacts the ability of protective eyewear to do its job.

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# Anthropometric research

## 1) Studied 3D scans of faces



**Anthropometric research** can be defined as the scientific measurement of the human population to better understand their physical variations. This research plays an important role in everything from furniture and clothing design, to ergonomics and architecture –anywhere information about our populations body dimensions can be used to optimize products... such as safety eyewear.

By using the database of the **Centre of Excellence of Comfort**, we wanted to find and prove the relations between size and the shapes of heads, faces, eyes, noses and ears. The assumption that the first split would be between male and female proved to be a false one. Instead, cheekbones, height of ears, nose size and nose positions became the main drivers in our studies.

# Anthropometric research

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- 2) Identified 3 morphologic groups
- 3) Developed 3 lens sizes



**Morphology** is a branch of bioscience dealing with the study of the form and structure of organisms and their specific structural features –including outward appearance as well as the form and structure of the internal parts like bones.



**Our research** identified 3 groups with similar facial characters. The groups became the names: Regular –Narrow –Wide.  
**Prototype lenses** and frames were developed to do fit testing with our focus group.

# *Extensive VOC Research Validates Design*

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**Product prototypes were tested** during VOC (voice of customer) research in one-on-one interviews with safety managers and workers at 18 companies in the United States, Canada and Europe.

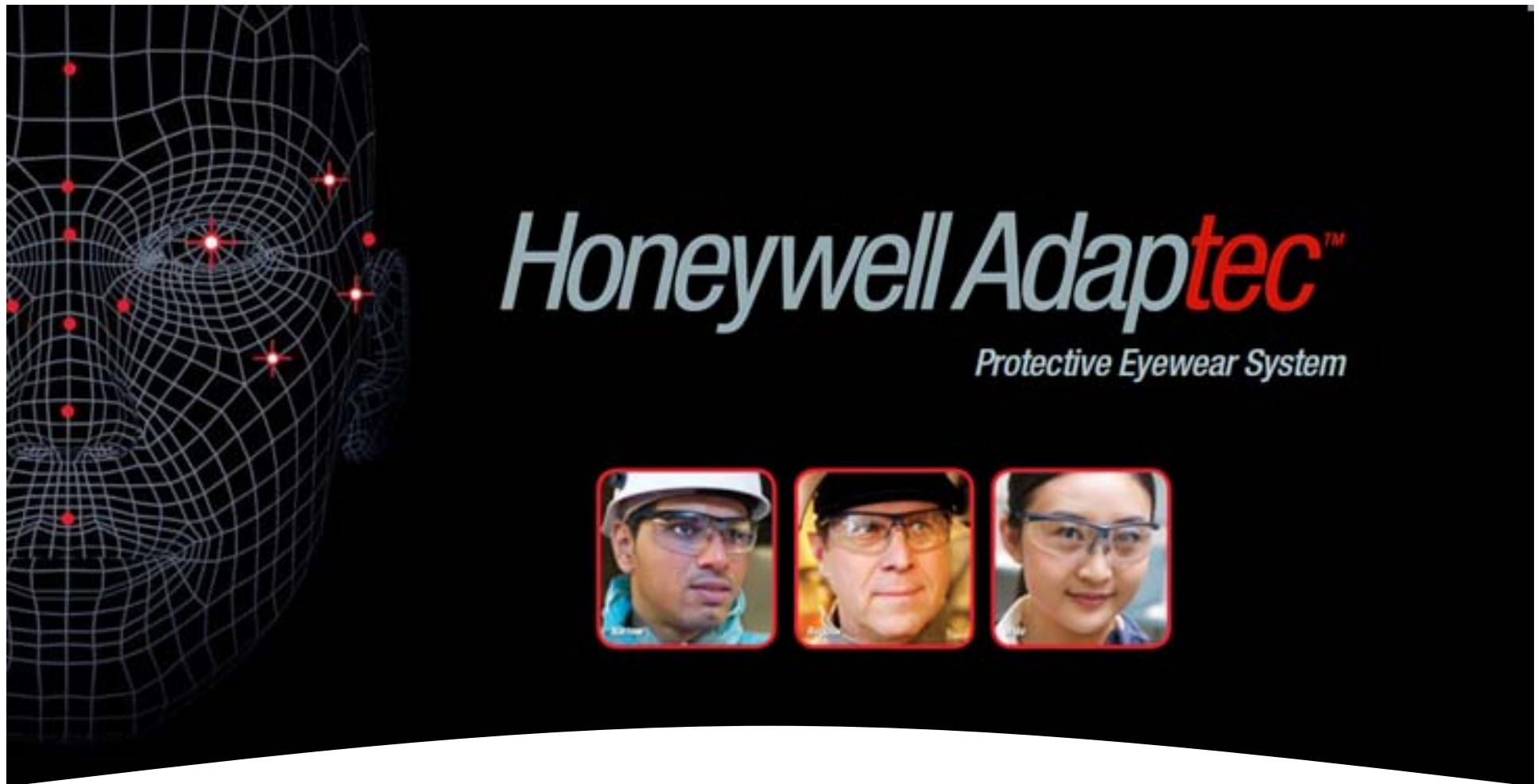
While the results are confidential, the resulting product design is now part of the Honeywell family of products.



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## Design Features & End-user Benefits

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# *One Style. Three Sizes. Customized Fit & Performance.*

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- 1) Narrow
- 2) Regular
- 3) Wide



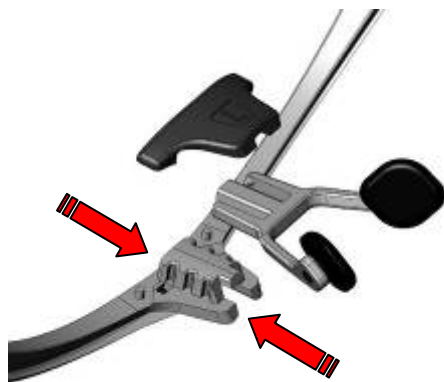
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### 3 Customized Fit Adjustments

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Three-position nose bridge adjusts to keep eyes centered in the lens, providing best optical clarity while reducing eye fatigue.

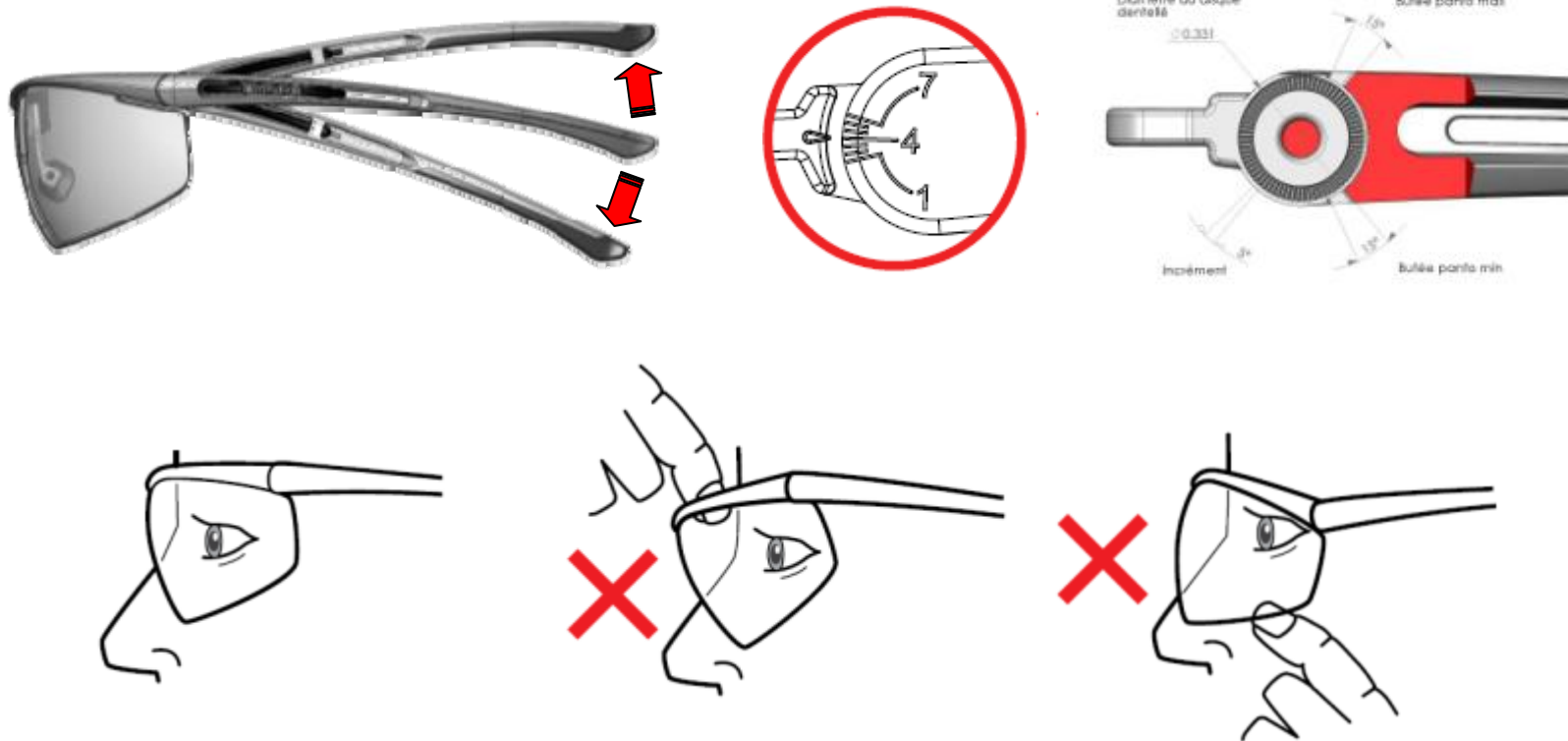


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### 3 Customized Fit Adjustments

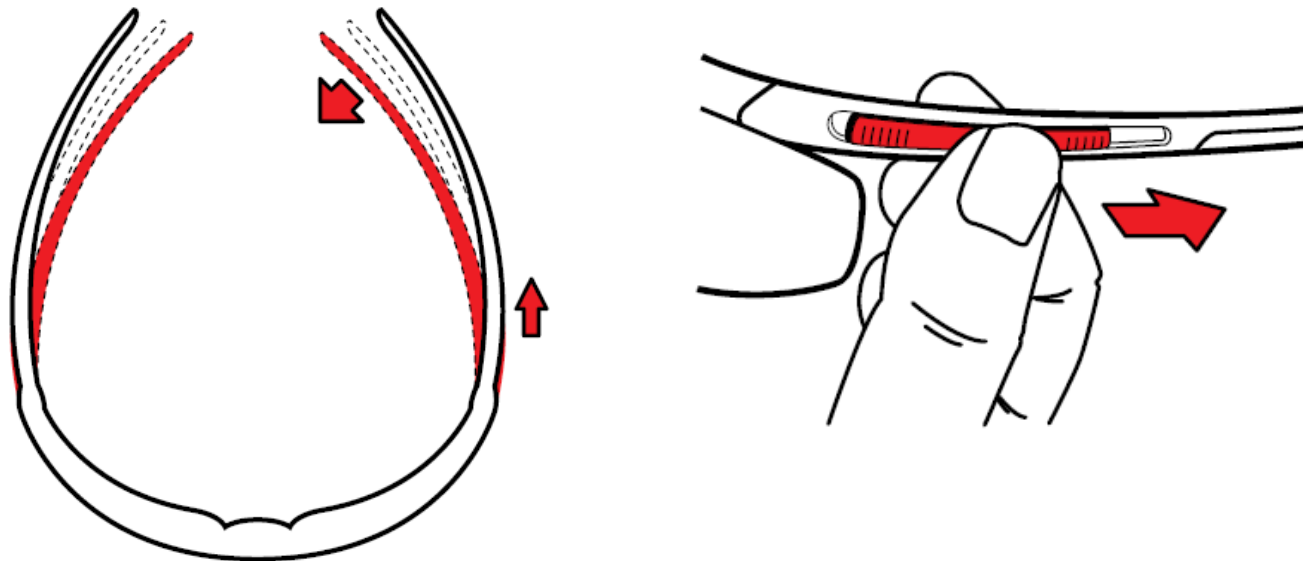
Pantoscopic hinges adjust temple angles +/- 15° to equalize space around the lens – improve safety and reduce fogging.



### 3 Customized Fit Adjustments

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Temples (patent pending) micro-adjust for a snug fit and all-day comfort – adjust safely anytime, without removing eyewear.



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# Differentiating Features / Benefits

	Feature	Benefits
1	One style	<ul style="list-style-type: none"><li>▪ helps simplify ordering &amp; reduce number of SKUs in inventory</li><li>▪ standardizes worker equipment with a stylish design that has broad appeal</li></ul>
2	Three Sizes	<ul style="list-style-type: none"><li>▪ fits vast majority of workers, regardless of gender, ethnicity, or facial features</li></ul>
3	Customized Fit & Performance	<ul style="list-style-type: none"><li>▪ optimized safety &amp; protection</li><li>▪ all-day, superior comfort increases worker compliance and productivity on the job</li><li>▪ reduces lens fogging &amp; eye fatigue</li></ul>

## Additional Features / Benefits

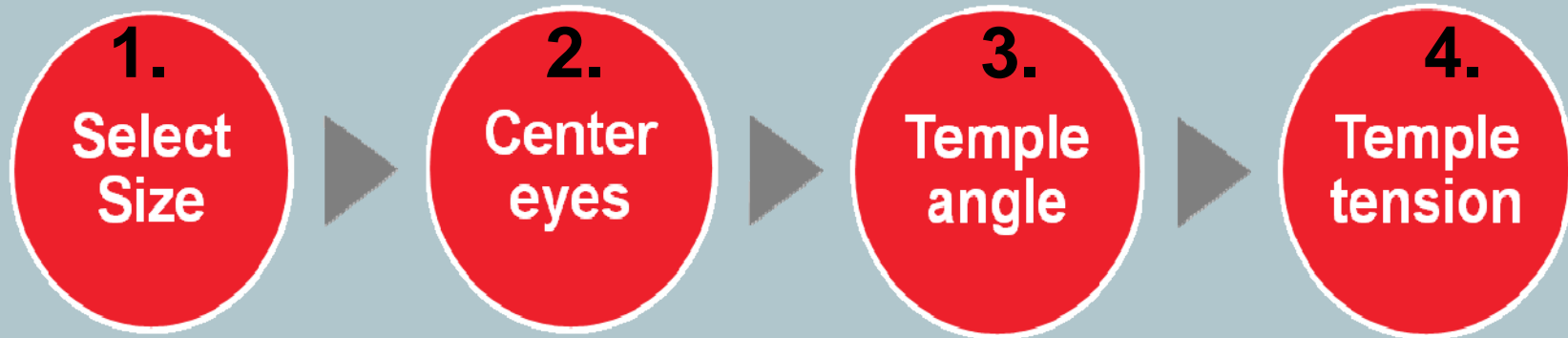
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	Feature	Benefits
1	Premium optics	<ul style="list-style-type: none"><li>▪ improves clarity</li><li>▪ reduces eye fatigue</li></ul>
2	4A lens coating	<ul style="list-style-type: none"><li>▪ ensures excellent anti-fog, anti-static and scratch-resistant properties</li><li>▪ 99.9% UV protection</li><li>▪ meets EN 166, ANSI Z87.1-2010 and CSA Z94.3</li></ul>
3	Available in six tints, including 3.0 & 5.0	<ul style="list-style-type: none"><li>▪ ideal for most tasks and applications</li></ul>
4	Lens replacement system	<ul style="list-style-type: none"><li>▪ replace lens quickly and easily</li><li>▪ improves total cost of ownership</li></ul>
5	Soft, flexible material covers frame components	<ul style="list-style-type: none"><li>▪ comfortable, secure fit</li></ul>
6	Dielectric	<ul style="list-style-type: none"><li>▪ No metals parts. Ideal for utilities</li></ul>

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## *Four Steps to a Perfect Fit*



**N-R-W**

**Nose  
bridge  
height**

**Temple  
hinge  
angle**

**Slide  
temple  
inserts**