# Peak Performance

from your vineyard

Southern Water Engineering

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Mike

Stephen

Brad

Brent

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Rigger

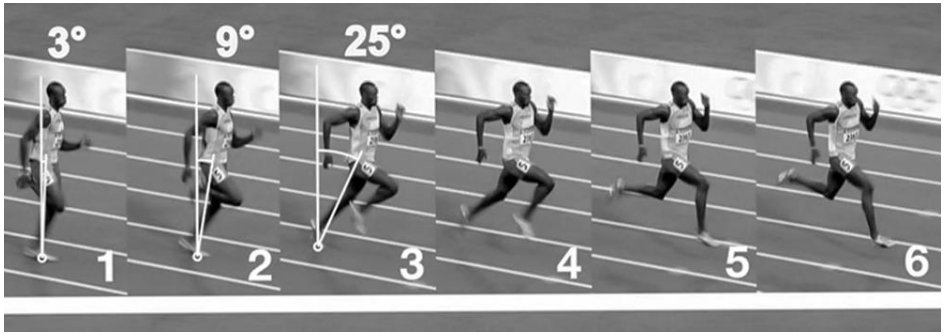
Phil

# "The Lightning Bolt"

Peak performance:

- 11 times World Champion
- 6 times Olympic Champion
- Triple World Record Holder
- World's Fastest Man

Not by luck!



# Peak Performance

How?

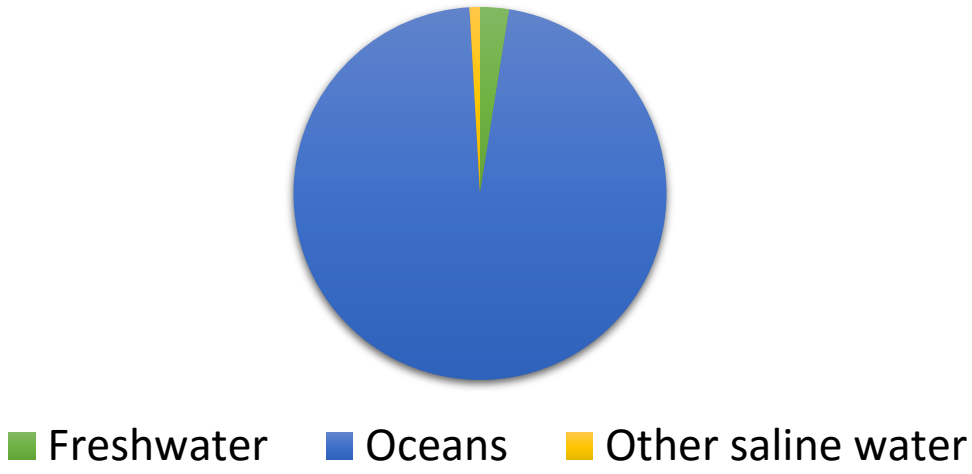
A-C-T

- Analysis
- Coaching
- Training

# Why Does Peak Performance Matter?

Although there is plenty of water in the world >>

only 2.5% of it is freshwater!




And most of this 2.5% is stored as glaciers or deep groundwater.
So only a small proportion is readily accessible for use

# "Peak Water"

"By 2030, demand for water could be 40% greater than supply available" – UN Report, 2015.

- Groundwater mining
- Disappearing rivers
- Vanishing lakes
- Shrinking glaciers

# Thirsty Work

Average person uses 1,386 tonnes of fresh water per year
= 1,000,000 tonnes of water each in a lifetime

Irrigation now grows 40% of world's food using 69% of its water

By 2050 65% of world food <u>supply</u> will require irrigation

Conclusion:
"we must <u>double</u> food output using <u>half</u> the currently available water"

**It takes...**

# about 110 litres of water

to make 1 glass of wine

# The Challenge To Us All

To more than double global food output with:

- half the present amount of water
- less land
- no fossil fuels (eventually)
- unaffordable fertilisers
- inadequate investment
- unreliable climate

To perform better, with less

Photo: REX

# The Opportunity

- Save power
- Save water

# Potential Power Savings

23,000 hectares of producing vineyards

10% power saving > represents saving $17 per hectare per year

or $400,000 power savings per year (as wine region)

+ additional saving associated with reducing line charge

= potential 2.4 million kilowatts less power wasted, per year

= enough electricity to power 220 homes for 1 year!

# Potential Water Savings

Average of 5% potential water saving per year

= minimum saving of 102 m3 of water per hectare per year

= minimum saving of 2.3 million m3 of water per year (as wine region)

# What Does That Look Like?

1,000 Olympic-sized swimming pools worth of water every year.

Offers potential for irrigating further 900 hectares of extra land.

# How Do We Achieve These Savings?

Remember Bolt's A-C-T peak performance

Irrigation system investigation and analysis = SmartAudit

# SmartAudit

Simple implementation

Significant savings

# Real Life Examples

# Case Study – Vineyard A

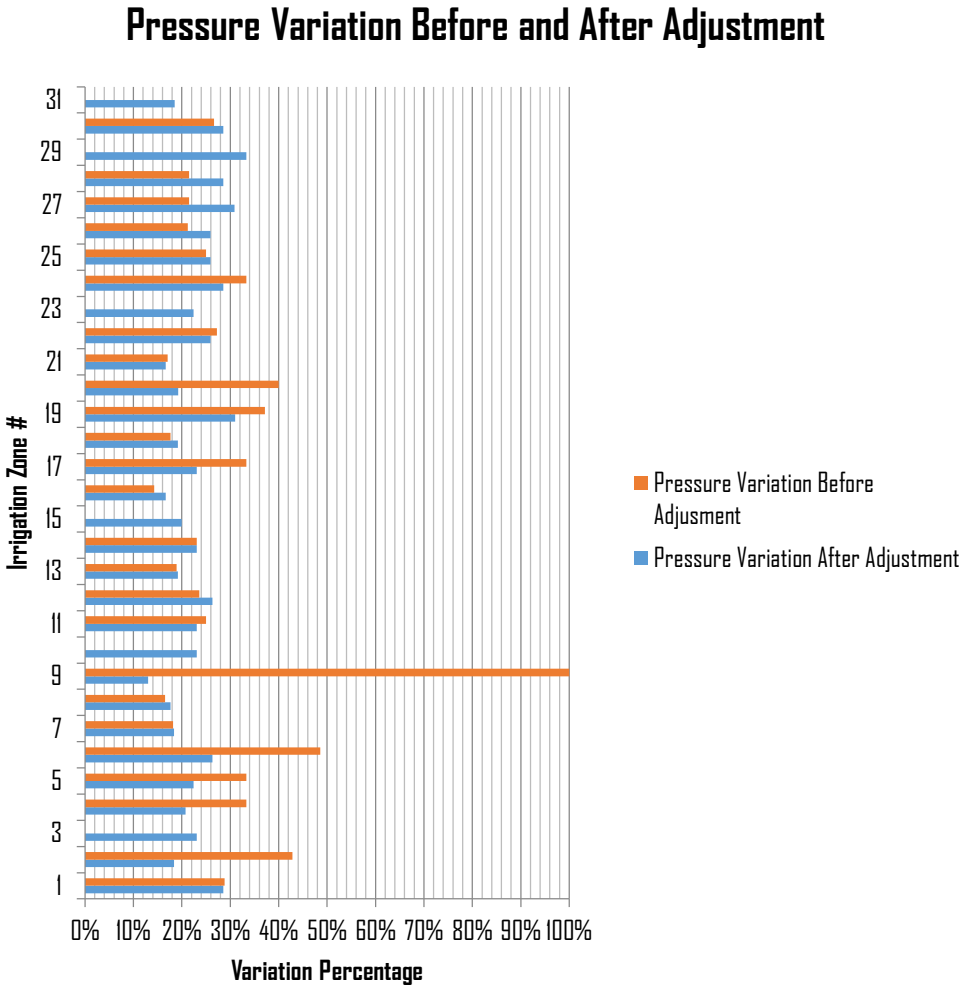
- Browning, canopy issues, problems with mainline.
- SmartAudit, service, replaced componentry, report recommendations.
- Areas functioning below par corresponded with canopy issues and lack of uniform application.
- Pre-audit only 70% of water well-utilised.
- Now 98% + greatly enhanced uniformity.

# The Data

## Sample pressure measurements

| Corners | | | |
|---|---|---|---|
| **SE** | **SW** | **NE** | **NW** |
| 55 | 25 | 60 | 15 |
| 180 | 50 | 200 | 70 |
| 50 | 25 | 110 | 45 |
| 55 | 70 | 85 | 65 |
| 80 | 45 | 60 | 50 |
| 50 | 45 | 55 | 0 |
| 270 | 200 | 235 | 210 |
| 95 | 80 | 115 | 75 |

Variation across corners and zones should be <20%!

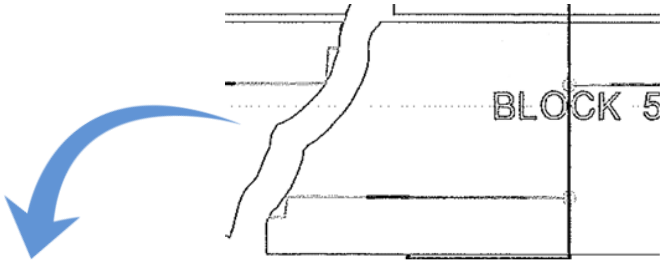


# Case Study – Vineyard B

- Sub-main block and over-spec pumps
- Service, downsized pump and removed blockage
- Power bill is down from $60k to $40k per annum

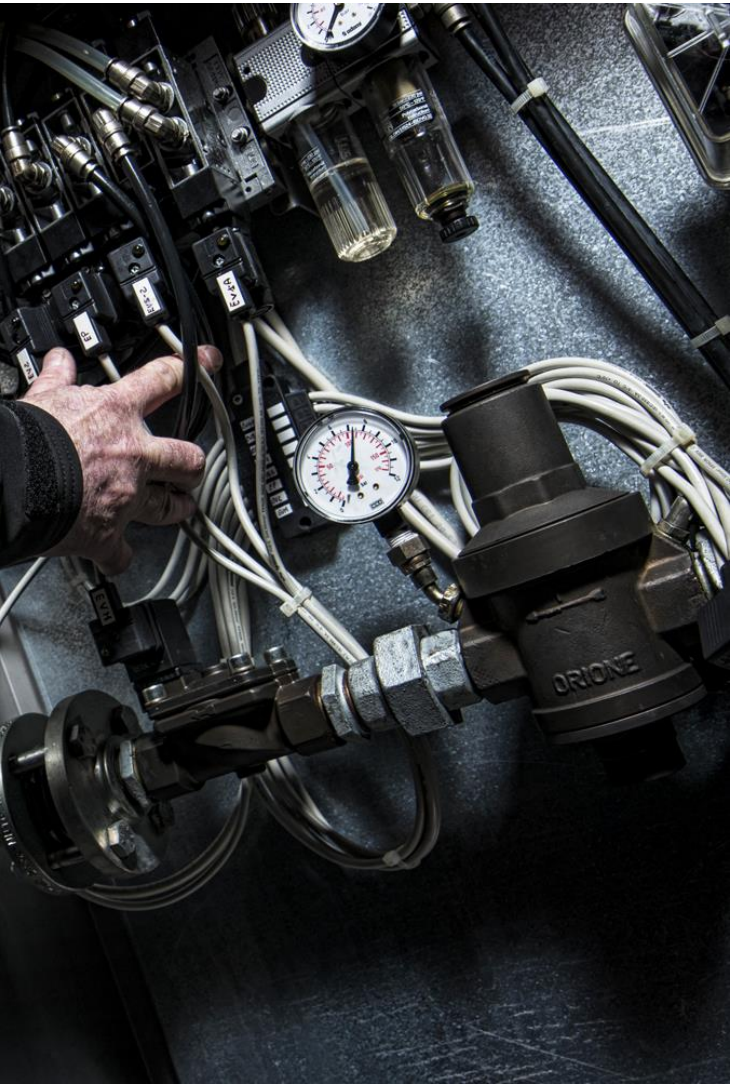
  = client saves $20k per year!
- Client's focus on reducing water *wastage.*
- Now water application measurably more efficient

# The Data



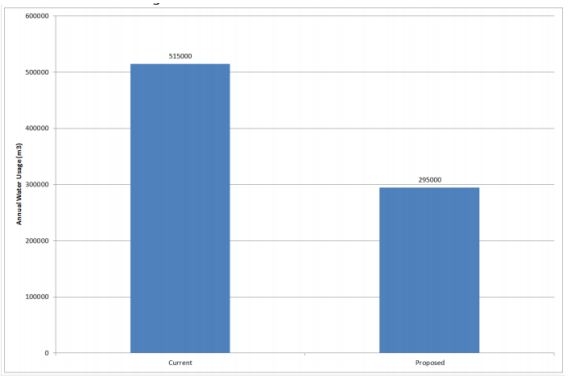
| | | Rows (20 row gaps – heading West) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Valve | 260 | 240 | 220 | 205 | 185 | 150 | 95 | 90 | 85 |
| Bays (5 bay gaps – heading North) | 260 | | | | | | | 95 | | |
| | 200 | | | | | | | 95 | | |
| | 170 | | | | | | | 90 | | |
| | 150 | | | | | | Row end | 85 | | |
| | 145 | | | | | | | | | |
| | 135 | | | | | | | | | |
| Row End | 135 | | | | | | | | | |

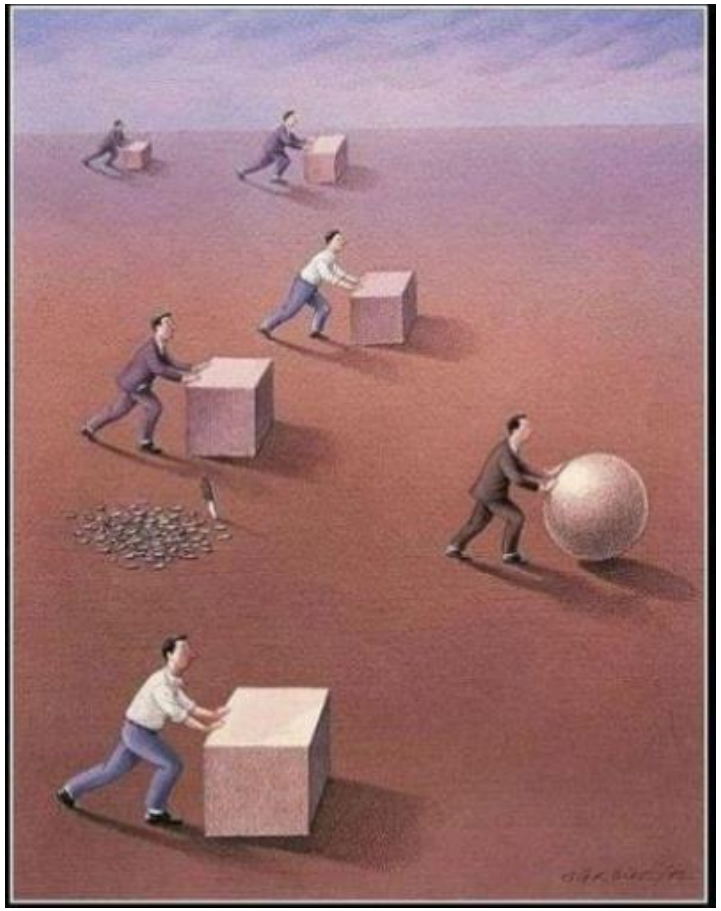
Poor design → Sub-optimal performance → Impact on crop and $




# Further Application

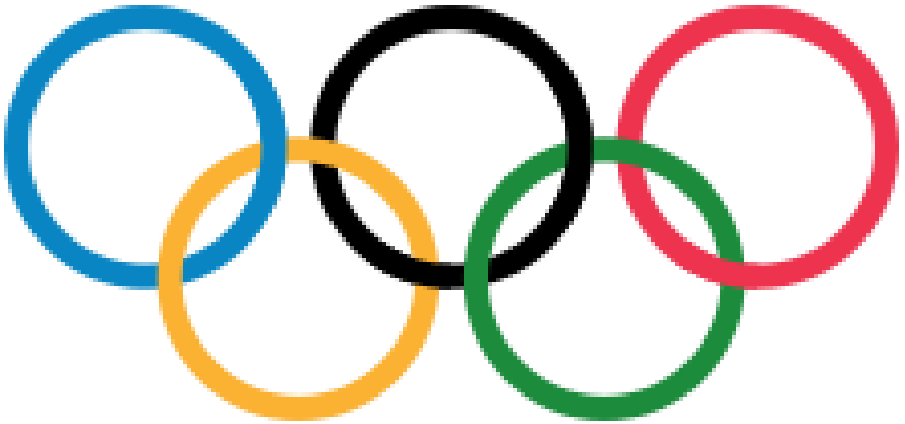
- Vineyards = tip of the iceberg
- Winery and food-processing facilities
- 43% reduction in water usage





Working smarter to go

Faster – Higher - Stronger



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expert design | excellent advice | exceptional service