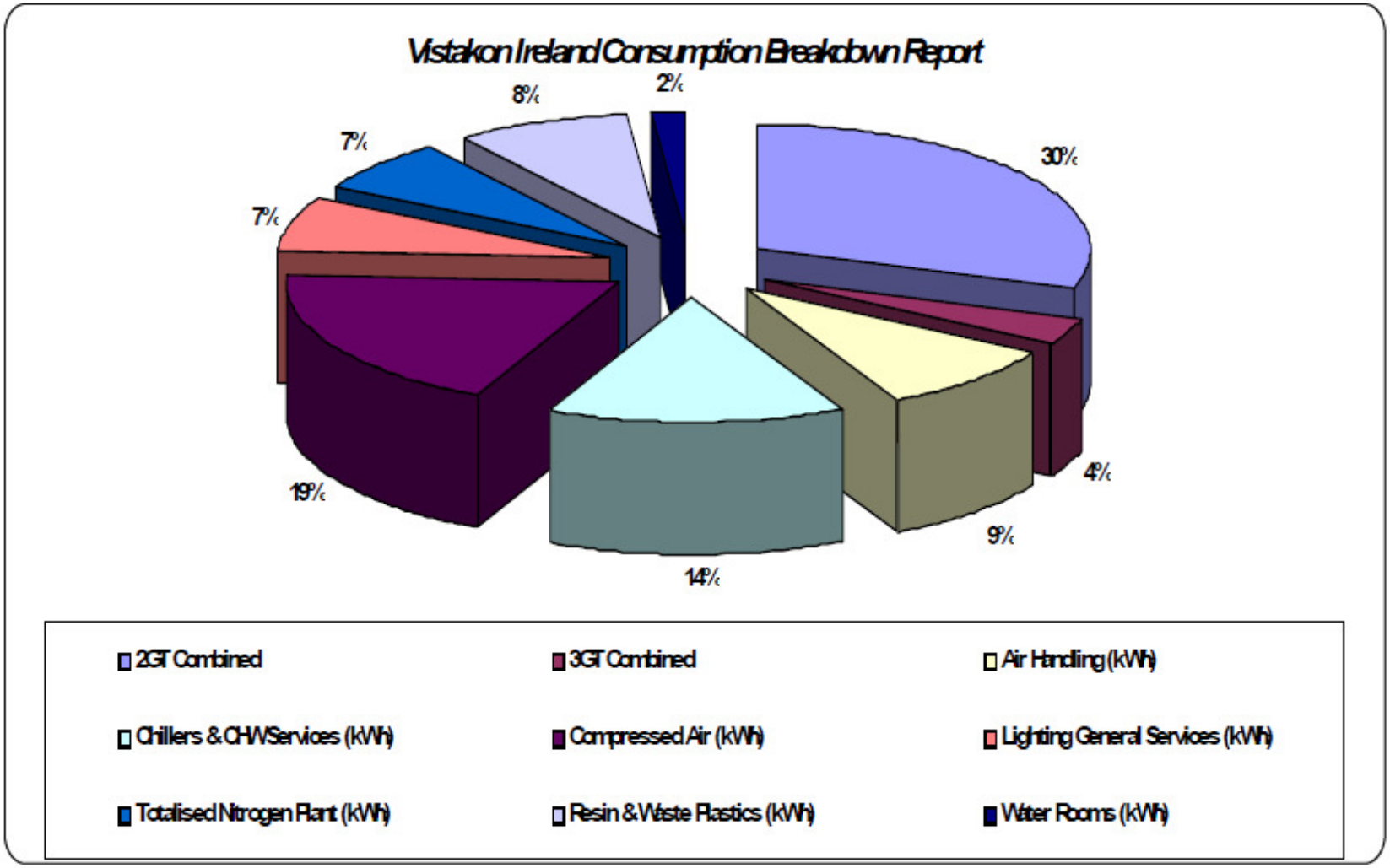
Vistakon Ireland

Category – Open Loop > 100kW thermal capacity

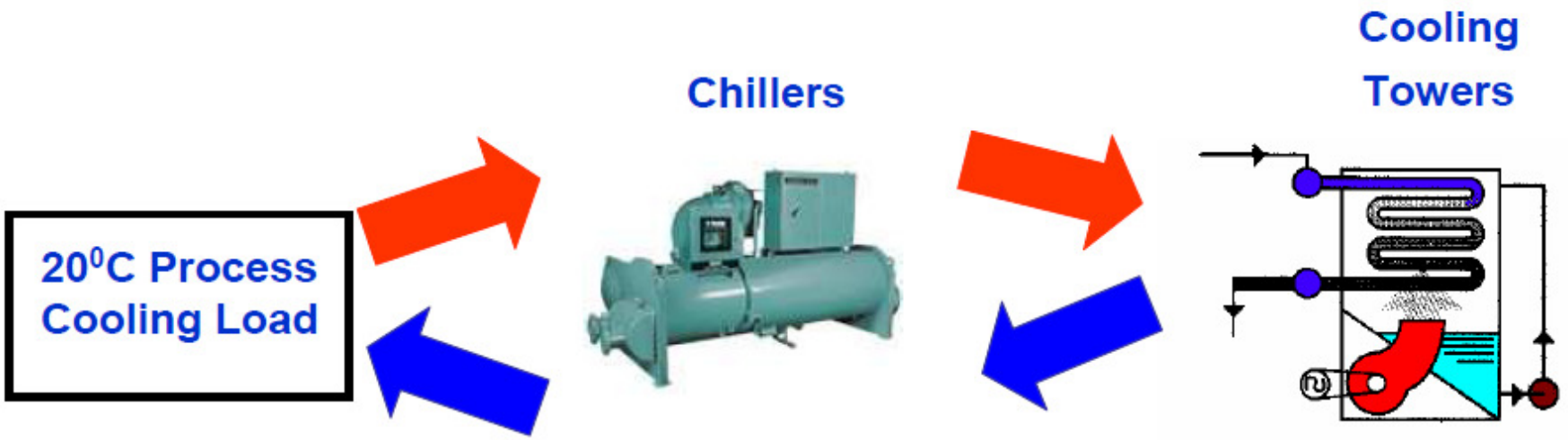
VISTAKON IRELAND
Division of Johnson & Johnson Vision Care, (Ireland) Ltd.

Energy Efficiency Team



Before Bore Hole

- Vistakon has a cooling load of about 5000kW$_{therm}$



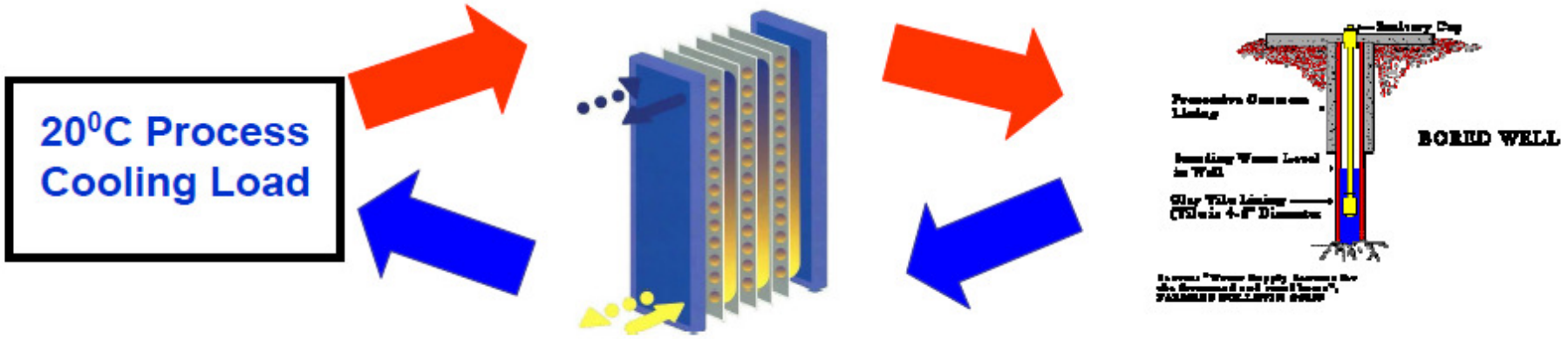
- Process cooling is cooled by chillers, which are then cooled by Cooling Towers
- Chillers Electrical Cost of ~€800,000/annum

With Borewell Cooling

- Vistakon extracts most of it's water requirements from an onsite well

Borewell

Heat Exchanger

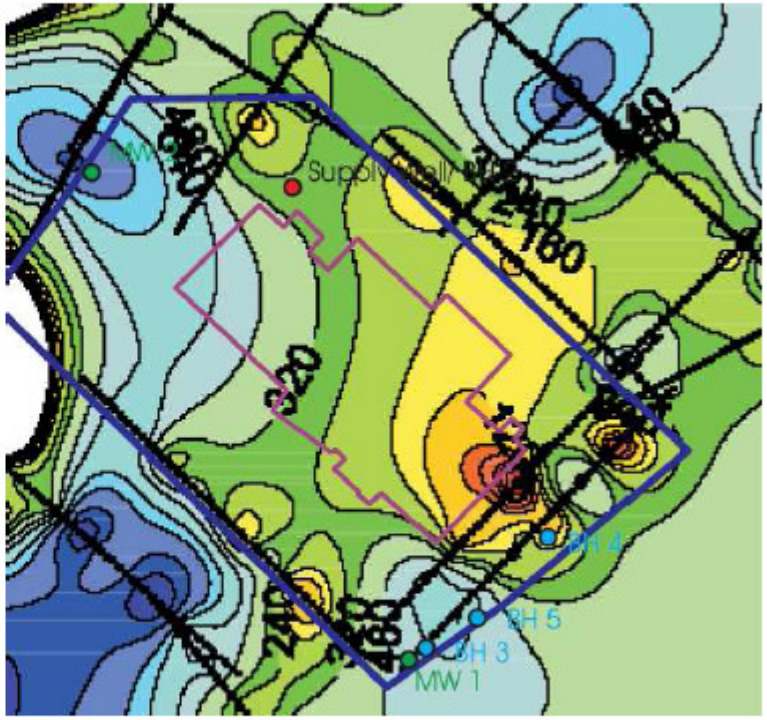


- Well water is extracted at 11-13⁰C all year round

Current Status

Phase 0: Hydrogeological Survey and System Design

- Testing of Flow Rates
- Resistivity Test rest of site
- Identify suitable areas for further drilling



Phase 1: Use water currently being consumed by the plant to cool compressors

- Complete

Current Status

- **Phase 2: Identify more wells to increase available water**
  - In progress
    - 4 test wells drilled
    - Currently results being compiled
    - Hydrological analysis and proposal due for completion end June
    - Results to be submitted to EPA for approval and inclusion in IPPC licence

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Borewell Project Works cont.

Initial Well Development

Creamy brown water discharging at about 15l/s.
The water is being blown out of the well using compressed air.

Creamy brown water is from weathered clay filled fractures

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Borewell Project Works cont.

1m x 310mm OD x 280mm ID
pre-coated PVC Screen

Pre-coated Gravel Screen

Specified to minimise sediment coming into the well

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Borewell Project Works cont.

Installing Screen And Casing

Installing Screen

280mm ID x 12mm WT x 4.9m uPVC casing

280mm ID to 110mm ID uPVC reducer

Installing Casing

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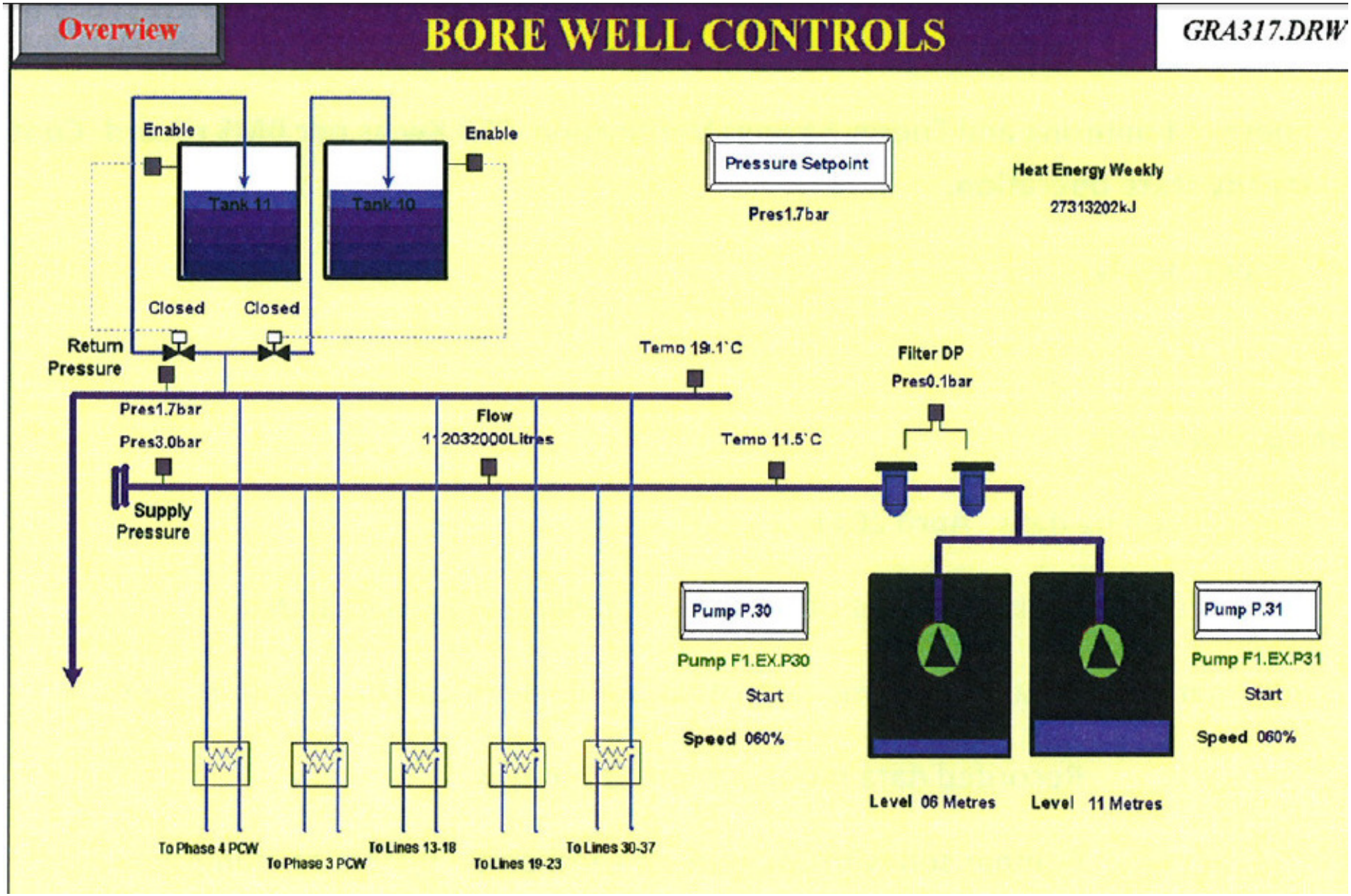
Borewell Project Works cont.

FILTER SKID, PRESSURISATION UNIT AND HEAT EXCHANGER


Overview
BORE WELL CONTROLS
GRA317.DRW
Enable
Enable
Tank 11
Tank 10
Closed
Closed
Pressure Setpoint
Pres1.7bar
Heat Energy Weekly
27313202kJ
Return Pressure
Pres1.7bar
Temp 19.1`C
Filter DP
Pres0.1bar
Flow
12032000Litres
Pres3.0bar
Temp 11.5`C
Supply Pressure
Pump P.30
Pump F1.EX.P30
Start
Speed 060%
Pump P.31
Pump F1.EX.P31
Start
Speed 060%
Level 06 Metres
Level 11 Metres
To Phase 4 PCW
To Phase 3 PCW
To Lines 13-18
To Lines 19-23
To Lines 30-37

COOL-FIT ABS PIPEWORK

COOLFIT PIPEWORK WITH CONTROL VALVES

Vistakon Ireland Geothermal Cooling

Summary:

Displaced cooling energy capacity	- 890kW
Displaced Electrical energy for cooling 2012	- 953,530kWh
Energy cost savings excl.VAT	- €94,513
Displaced Mains Water Supply	- 171,072m^3
Water supply cost savings excl.VAT	- €196,733
Energy savings on displaced mains water	- 93,234kWh
Total CO_2 savings 2012	- 511.87 Tonnes
Simple Payback on installation cost	- 4.5 years

The Geothermal Association of Ireland presents the winner of the 2013

Brecan Mooney Award

for excellence in Geothermal Energy Transfer Systems in the category of ***Open Loop, Greater than 100kW thermal capacity****, to*

Vistakon Ireland

Co. Limerick

Presented on Wednesday 13th November 2013, for an

energy efficient, high quality geothermal cooling system completed in April 2011 which succeeds in controlling manufacturing plant operating temperatures with low associated energy, cost & CO_2 emissions.

John Burgess - Chair of the GAI

Robin Curtis - Geoscience Ltd. Independent Adjudicator from UK