

# Operational Datacentre Upgrade

## Project Background



CO<sup>2</sup> compressor

A major insurer was planning a new datacentre to replace an existing 20-year old datacentre (constructed to approximately 400W/m<sup>2</sup>). The new facility was expected to take 36-months to deliver. The 20-year old datacentre was expected to run out of UPS, generator and Cooling capacity before the datacentre became operational. A tactical upgrade to the 20-year old datacentre was required to extend its operational life until the new datacentre was available.

Limitations within the construction of the datacentre and operational requirements were a key factor in the design, planning and execution of the project:

- it was not possible to install additional Room Air Conditioning Units (RACU's) to increase cooling
- no spare chilled water capacity was available
- no water was to be introduced into the datacentre
- no downtime was allowed to facilitate an upgrade
- all works had to be completed within 4-months
- all products had to be demonstrable on a similar scale
- no increase to the external sound levels was permitted

Mafi Mushkila, with the client and consulting engineers developed a solution to increase UPS, generator and cooling capacity that met all of the customer requirements. The solution required implementation of:

- an additional UPS
- two additional 2.25mVA generators
- 15 High Density (20kW) Racks

A tendering process was managed by Mafi Mushkila with the client's purchasing department to procure a High Density Cooling solution, IT Racks, structured cabling and local power distribution. Trox AITCS was selected to deliver the High Density cooling; the solution removed heat from the racks via rear door mounted heat exchanges using liquid CO<sup>2</sup> with resilient CO<sup>2</sup> compressors mounted external to the datacentre.

Additional packages were purchased to install structural steel work, temporary load banks, temporary UPS & generator, structured cabling, IT racks and network switches.



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Before works could commence within the IT hall, Mafi Mushkila managed and executed a process to create sufficient contiguous space within the IT hall, by relocating IT equipment and decommissioning redundant IT systems.

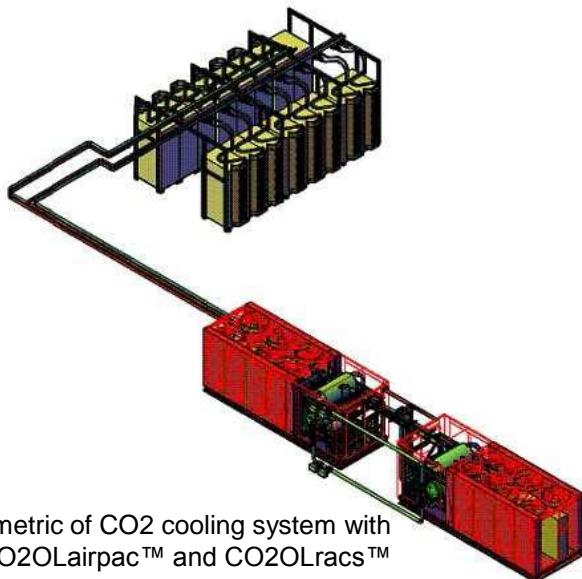
Mafi Mushkila successfully managed the planning and installation of the packages that constituted the final solution.

A third party, managed by Mafi Mushkila was contracted to develop and successfully executed an Integrated System Test (IST) of the High Density cooling solution.

To resolve hot spots within the datacentre, Mafi Mushkila was retained under a separate engagement to migrate twenty-eight IBM and Dell Blade Centres and a further sixty high heat producing servers into the newly installed High Density racks. Mafi Mushkila provided a complete migration solution package; negotiation of outage, network planning and provisioning, SAN planning and provisioning and physical relocation. No unplanned outages were experienced as a result of the relocation of the servers.

Both projects were delivered within budget, on time and did not result in any unplanned outages within the IT infrastructure. The useful lifespan of the datacentre was extended until the replacement facility came on-line.

The High Density Cooling solution was shortlisted as a finalist at the 2007 Datacentre Dynamics in the category of 'Innovation in Medium Sized Datacentre' and at the 2007 Cooling Industry Awards in the category of 'Installation of the year, Industrial and Commercial'.



Isometric of CO2 cooling system with 2 CO2Lairpac™ and CO2Lracs™

