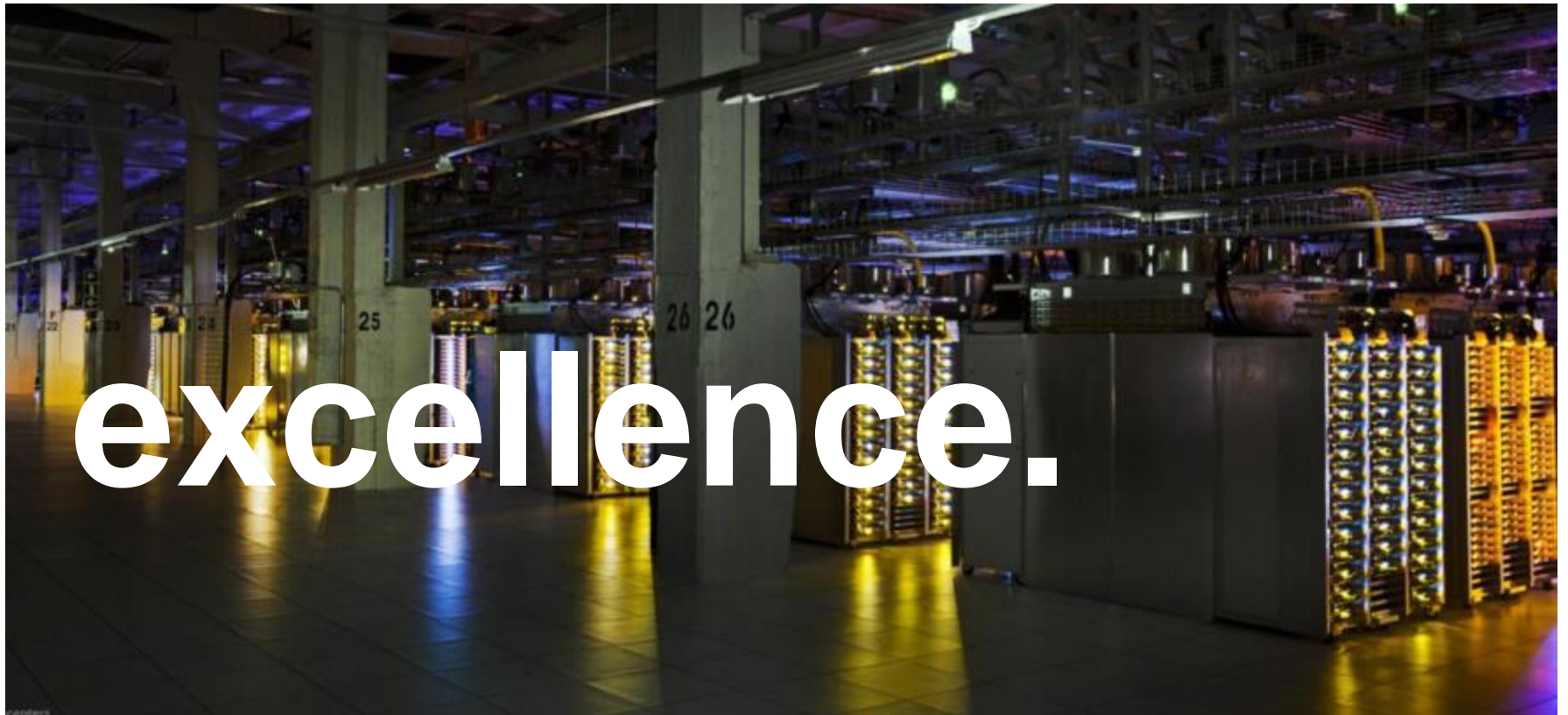


Data Centres and Mission Critical Facilities
Presentation to Enterprise Ireland
German Inward Buyer Event
March 2015



The Project Delivery Specialists



You can rely on our team of 2,100 people to deliver your data centre project successfully

- An international, integrated design and project management firm
- Proven track record since 1973
- World class expertise
- Employee-owned company
- Revenue > €300million
- The right attitude!



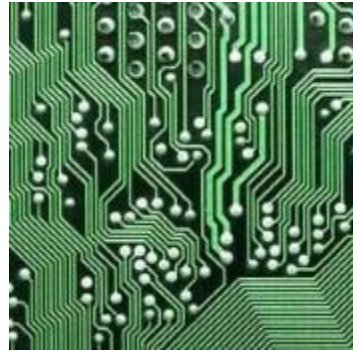
Sector Focus



Mission
Critical



Advanced
Manufacturing



Biopharma



Food



Medical
Technology



Healthcare



Energy



International
Financial
Institutions

PM Group Worldwide Office Network



International Office Network

Belgium
China
Czech Republic
India
Ireland

Poland
Russia
Saudi Arabia
Singapore
Slovakia

Turkey
United Kingdom
United States

Sample of Group Clients



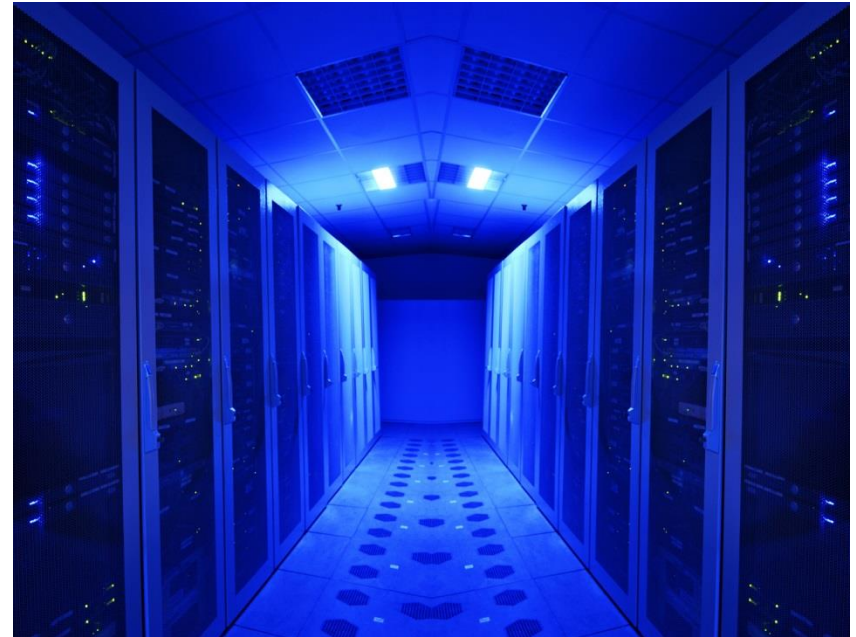
ENR ranks PM Group as a Top 10 Data Centre Engineering Firm Worldwide

(ENR Global Sourcebook)



Our Data Centre Services

- Masterplanning and Programming
- Site Selection & Confirmation
- Architecture and Engineering
- Permitting
- Environmental
- Sustainability Engineering (LEED / BREEAM)
- Alternative energy solutions
- Procurement
- Cost & Schedule Management
- Construction Management
- Commissioning Management
- IST Management

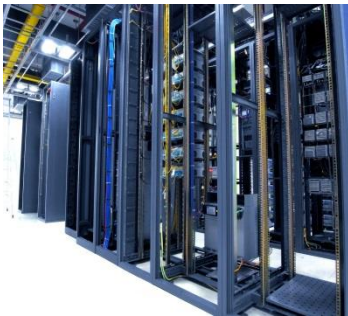


We provide design services for ALL types of data centres....



LEGACY – perform audits & prepare action plans to...

- resolve operational problems
- increase capacity & reduce operating cost
- restore reliability & confirm availability



BROWNFIELD

- repurpose decommissioned buildings
- renovations & expansions



GREENFIELD

- site selection assistance
- masterplanning
- full service design - architecture & engineering

- 2007
 - world's first large scale direct free air cooled DC
 - Chillerless
 - PUE of 1.45
- 2013
 - Super High Density Air Cooled DC (14kW/m²)
 - PUE of 1.06 to 1.08
- 2014
 - Estimated PUE 1.0766, 32MW facility



Site - Dublin

Actual PUE's achieved by PM Group

- 2002 – PUE > 2
- 2007-9 – PUE 1.45 - 1.25
 - Green Grid Gold equivalent
- 2010 – PUE 1.1
 - Green Grid Platinum equivalent
- 2014 – PUE 1.06 to 1.1

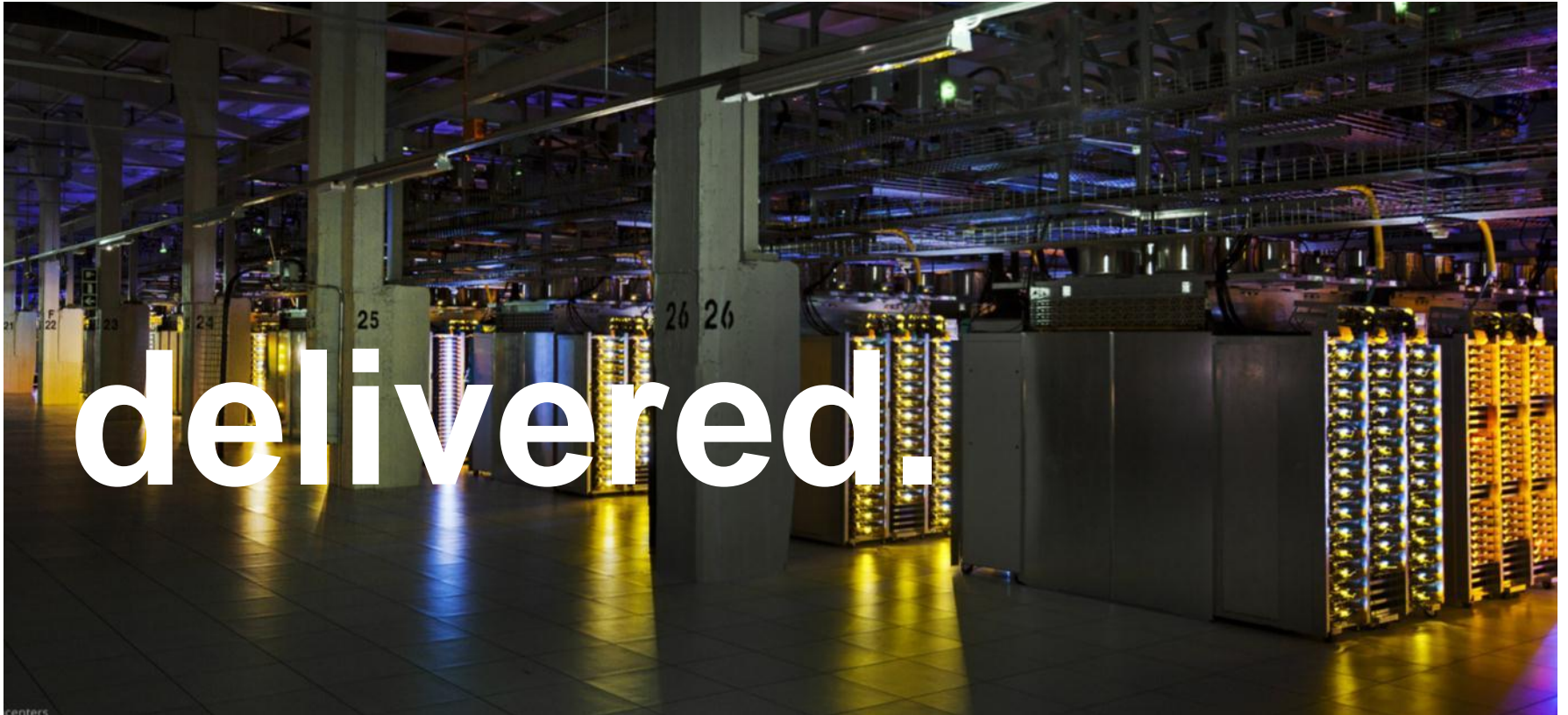
‘Thought Leadership’ studies for major MNC Clients

Focus Areas:

- Modular
- Layout / space relationships
- Fast Track
- Cost Effective / TCO
- PUE
- Chillerless
 - Air side economisers
 - Water side economisers
- Generators / UPS
- Electrical distribution



Selected Projects



Confidential – Client A

DB3 & DB 4 Data centre



Project Type:	Data centres
Value:	Ca. €500 million
Completed:	2007 - 2012
Area:	>40,000 M ²
Services:	DB3: Mechanical and Electrical Design, Procurement, Commissioning, DB4: Architecture, Civil structural, Mechanical, Electrical The Netherlands – Site Selection

Recognized by the European Commission's Sustainable Energy Europe Campaign as 'Best Practice' in Environmental Sustainability

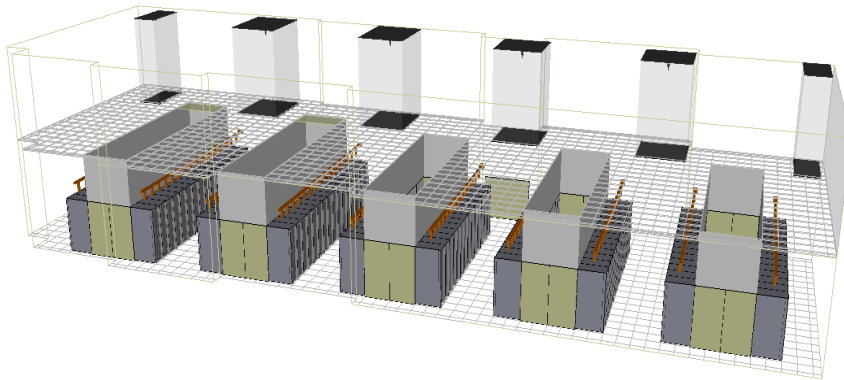


- Projects 200 kW to 120MW
- Services:
 - Site Selection
 - Concept Design
 - Design to increase PUE
 - Detailed Design - Greenfield
 - Reliability Surveys
 - Program Management
 - Procurement
 - Construction Management
 - Commissioning
 - IST



- Project Locations:
 - USA
 - Europe
 - South America
 - Asia

Confidential Client Santa Clara, California



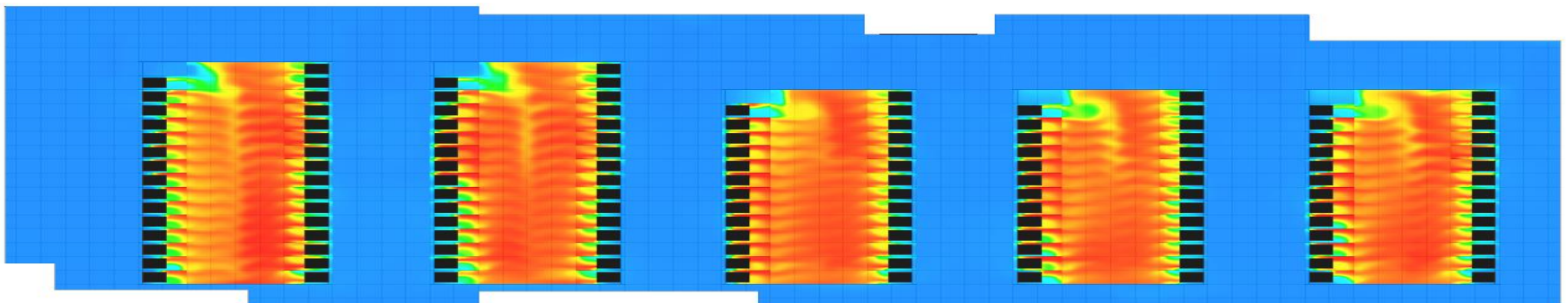
Project Type: Former R&D Wafer fab converted to a Data centre

Size: 7 MW

Completed: 2014

Area: 5,000 sq. ft.

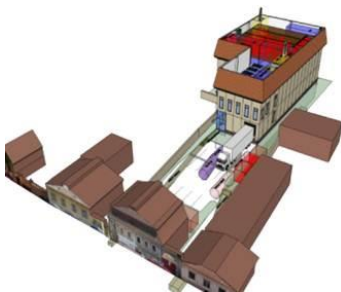
- Key Points
- 1400 W/SF
 - PUE verified = 1.06
 - Real-time power monitoring
 - 100% Outside Air
 - 95F cold aisle / 135F hot aisle
 - Full transparent containment
 - Fast track schedule
 - 3 phases of server deployment



Poland (Dell) / Romania (Transfond) / Slovakia (Datacube)



Project	Tier 4 1.6MW Facility (Dell)
Value:	Confidential
Completed:	2008
Services:	AE Design, Procurement, CM, Cx
Other Key Points:	Fast track project – Design and construction completed in 9 months. Part of an overall 65,000 M ² manufacturing facility

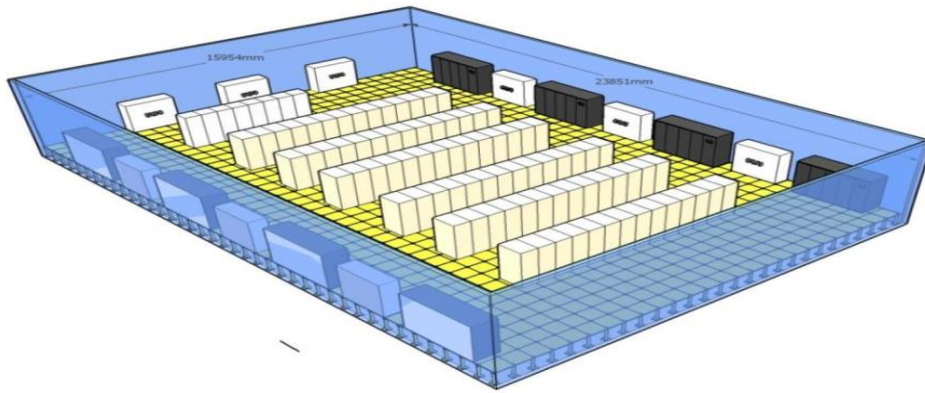


Project	Data centre (Transfond)
Value:	\$20 million
Completed:	2010
Area:	3,000 M ²
Services:	AE Design



Project	Data centre (Datacube)
Value:	Confidential
Completed:	2012
Area:	1,500M ²
Services:	Construction management

IBM Technology Campus Dublin, Ireland



Project Type: Data centre

Value: Refit of Existing Buildings

Size: Data Suite 2 – 1MW
Data Suite 3 – 2 MW

Services: Mechanical and Electrical Design

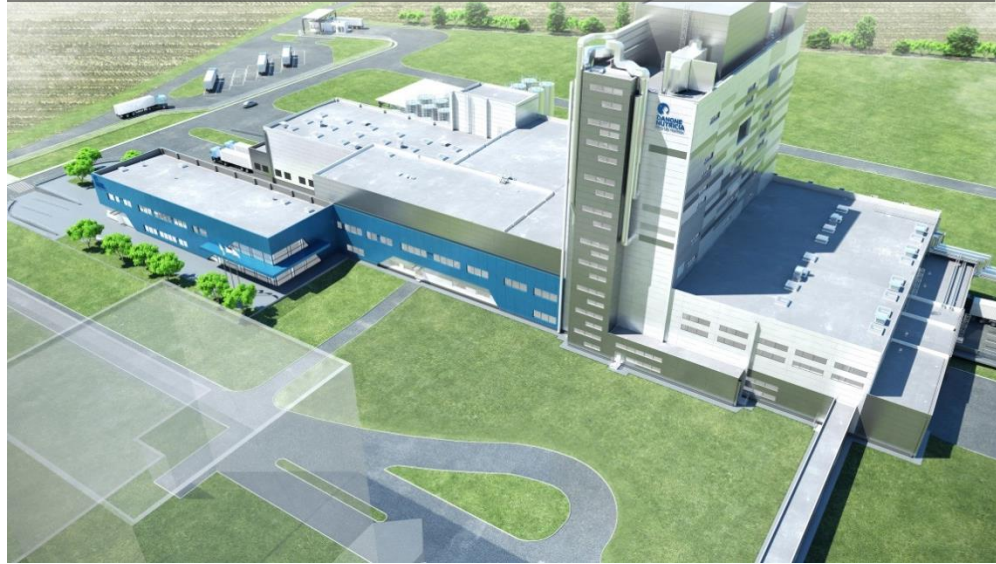


Some of our German Projects

Cook Medical, Baesweiler



Danone Nutricia, Fulda



Kraft, Bremen

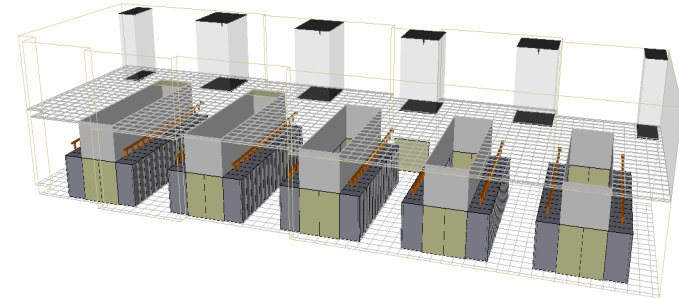


PepsiCo R&D, Hamburg



Summary

- Thought Leadership
- Leading edge design.
- Clients = Major MNC's
- Clients = Household names in the tech sector
- Constantly innovating in design and construction
- ***We Deliver***



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