YBG

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YBG GROUP INTERNATIONAL

Thermodynamic Performance Intelligence
& Industrial Oxyhydrogen Combustion Enhancement

COMPANY PROFILE & CAPABILITY OVERVIEW

Prepared for: [Recipient Name / Organisation]

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YBG Group International Pty Ltd · ABN 22 636 934 999

ybggroup.com.au

COMPANY OVERVIEW

YBG Group International Pty Ltd is a registered Australian technology and advisory company (ABN 22 636 934 999 · ACN 636 934 999) operating at the intersection of industrial thermodynamic performance intelligence and combustion enhancement technology for utility-scale thermal infrastructure.

The group's activities focus on thermal power, industrial process heat, and combustion-driven infrastructure across Australia, India, and international markets — delivered through two complementary technology platforms and a structured India execution partnership.

> *"YBG Group's technology engagement with industrial hydrogen and combustion enhancement dates to 1985 — predating the emergence of industrial hydrogen as a mainstream energy transition topic by three decades."*

GROUP STRUCTURE

YBG Group International Pty Ltd operates as the corporate parent incorporating three platforms:

ControlAlign™
Industrial Thermodynamic Intelligence
ybgglobal.com

HydroHub™
Industrial Oxyhydrogen Combustion Enhancement
ybgindustrial.com

HHO™ · Hydrogen Health Optimization™
Consumer Hydrogen Wellness Technology
hho.company

LEADERSHIP

Peter Griffiths

Chief Managing Director
YBG Group International Pty Ltd

REGISTERED ADDRESS
PO Box 139, Berowra Heights
NSW 2082, Australia

CONTACT
info@ybggroup.com.au
+61 449 703 635

WEB PRESENCE

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Corporate:    ybggroup.com.au
ControlAlign: ybgglobal.com
HydroHub:     ybgindustrial.com
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Peter Griffiths' direct engagement with hydrogen technology, electrochemical gas generation, and industrial combustion enhancement spans four decades — beginning in 1985 with hands-on exposure to the foundational science and the people developing it, long before industrial hydrogen became a mainstream energy conversation.

He has led the development of both the ControlAlign™ thermodynamic intelligence framework and the HydroHub™ industrial oxyhydrogen platform, and directs the group's engagement strategy across thermal power markets in Australia, India, and internationally.

The FMCG fleet deployment programme — ten plants, seven Indian states, independently verified outcomes — and the ControlAlign™ framework both originate from his direct field investigation of performance anomalies observed during Industrial Oxyhydrogen deployments across Indian industrial boilers.

TECHNOLOGY PLATFORMS

Two platforms. One deployment sequence.

ControlAlign™ and HydroHub™ are independently deployable and jointly positioned as a Phase 1 / Phase 2 performance improvement sequence for thermal power operators — diagnostic intelligence first, combustion enhancement second.

PLATFORM 1

ControlAlign™ — Industrial Thermodynamic Intelligence

ybgglobal.com

ControlAlign™ is a remote, historian-derived thermodynamic performance intelligence service for utility-scale thermal assets. It reconstructs the thermodynamic performance layer of operating units — identifying heat-rate drift, fuel-intensity variance, and recoverable performance value against each unit's own best demonstrated operating envelope.

DEPLOYMENT REQUIREMENTS

- No hardware installation
- No DCS modification
- No plant outage
- No capital expenditure
- Read-only access to existing historian data

WHAT IT DELIVERS

Deterministic, audit-grade identification of heat-rate deviation from engineered baseline. Quantification of recoverable fuel value in operator-native units — ₹ Cr per year per unit. A thermodynamic visibility layer that conventional DCS and operational reporting does not provide.

SPEC · CONTROLALIGN™

Diagnostic turnaround	24–48 hours
Data requirement	Existing DCS historian
Hardware	None
Capex	Zero
Output	Recoverable value in ₹ Cr/unit/year

Indicative value — Indian coal fleet

For a 500–660 MW subcritical coal unit operating at typical Indian load factors, recoverable fuel value identified through ControlAlign™ diagnostics commonly ranges from ₹30–60 Cr per year per unit. Across a multi-unit fleet, aggregate recoverable value is substantial and immediately actionable.

Phase 1 — ControlAlign™ Diagnostic baseline → **Phase 2 — HydroHub™** Combustion enhancement → **Phase 3 — Fleet Intelligence** Multi-unit optimisation

PLATFORM 2

HydroHub™ — Industrial Oxyhydrogen Combustion Enhancement

ybgindustrial.com

HydroHub™ is a combustion-adjacent industrial oxyhydrogen system that improves effective flame emissivity and radiative heat transfer within utility-scale boilers, furnaces, and kilns — delivering verified heat-rate uplift and lower emissions intensity per MWh without fuel switching, capital-intensive retrofit, or modification to existing combustion control architecture.

How it works. On-demand electrolysis of de-ionised water generates industrial oxyhydrogen at the point of use — no bulk hydrogen or oxygen storage on site. Oxyhydrogen is introduced into the combustion zone alongside the primary fuel as a controlled, rate-limited, subordinated intervention interlocked with the host plant's burner management system. The result: improved radiative heat transfer to absorbing surfaces, more complete primary fuel carbon burn-out, lower stack emissions, and more stable boiler operation under variable fuel quality.

DEPLOYMENT EVIDENCE & VALIDATION

Deployed. Measured. Documented.

HydroHub™ Industrial Oxyhydrogen is not a laboratory hypothesis. It is a deployed industrial technology with a documented multi-site operational record and independent third-party institutional validation.

~13%
Average steam-to-fuel improvement
Ten-plant FMCG fleet · India

~60%
NOx reduction
Instrumented stacks · India

₹7.6 Cr
Average annual fuel savings
Fleet average · India

<2 yrs
Per-site payback period
Achieved at all ten sites

CASE STUDY — TEN-PLANT FMCG FLEET DEPLOYMENT

India · Seven States · Biomass Boiler Fleet

Client: Confidential — major Indian FMCG beverage bottler under global brand licence
Geography: Andhra Pradesh, Tamil Nadu, Gujarat, Telangana, Maharashtra, Karnataka, Odisha
Assets: Biomass-fired steam boilers — syrup prep, bottle washing, pasteurisation, CIP
Equipment: 7,500 L/hr and 10,000 L/hr Industrial Oxyhydrogen generators per site
Programme: Single-plant pilot in coastal AP — proven, then rolled out to nine additional sites

Energy & Process

- ~13% avg steam-to-fuel uplift across fleet
- More stable boiler operation under variable biomass
- Reduced excess-air operation, lower stack losses
- No measurable impact on line OEE

Emissions

- ~60% NOx reduction at instrumented stacks
- Measured CO and unburned-HC reduction
- Direct contribution to brand owner's Scope 1 reporting pathway

Financial

- Annual fuel cost reduction ~₹7.6 Cr across fleet
- Per-site payback within two years at all ten sites
- Lower boiler maintenance from reduced soot fouling

Food safety: zero non-conformities in subsequent FSSC 22000 audits · no HACCP changes · HMIs integrated into existing SCADA.

Source: Testimonial from immediate past Head of Operational Excellence at Coca-Cola India bottling operations, who led adoption across the fleet.

INDEPENDENT INSTITUTIONAL VALIDATION · NTPC · UIBC · NANGIA ANDERSEN LLP

Independent validation for Indian thermal power is documented in the joint report 'Modern Energy: India–UAE Collaboration in Renewable Energy' published by the UAE–India Business Council (UIBC) with Nangia Andersen LLP. Section 4.3 — authored by Mr. Rajan Varshney, DGM – New Initiatives, NTPC Ltd — explicitly references Industrial Oxyhydrogen electrolysers for co-firing in coal and gas boilers and adoption across industries for heat generation in India. Senior-level institutional validation by a serving NTPC executive.

Download: ybgindustrial.com/evidence

Deployment identifiers withheld under commercial confidentiality. Outcome data sourced from client testimonial and site instrumentation records. Results are site-specific and depend on combustion architecture, fuel quality, and operating conditions.

INDIA ENGAGEMENT

The YBG–Wevolve Consortium

HydroHub™ and ControlAlign™ deployments in the Indian thermal power market are executed through the YBG–Wevolve Consortium — a structured commercial partnership between YBG Group International (Australia) and Wevolve Projects (Pune, Maharashtra).

Wevolve Projects provides India-facing project execution, engineering coordination, stakeholder engagement, and operational deployment capability across the Indian coal and industrial process heat fleet — complementing YBG Group's technology platforms and international advisory function.

The consortium structure positions YBG Group and Wevolve Projects as a unified delivery entity for thermal performance improvement engagements across India's national and state utility operators — with CMD-level utility access, ministry relationships, and established execution infrastructure in Maharashtra and across the Indian thermal power market.

RELEVANCE TO MAHARASHTRA

Maharashtra operates one of India's largest state thermal generation fleets through MAHAGENCO. The combination of aging subcritical assets with heat rates above CERC normative benchmarks; rising coal fuel costs and supply variability; state-level emissions intensity commitments; and the imperative to improve existing fleet performance during the energy transition — creates a compelling and immediate case for thermodynamic performance intelligence and combustion enhancement deployment across Maharashtra's operating coal fleet.

YBG Group and the YBG–Wevolve Consortium are positioned to deliver measurable, verified improvement — beginning with a no-obligation ControlAlign™ diagnostic on one or two MAHAGENCO units to establish the recoverable value baseline before any commercial commitment.

PROPOSED ENGAGEMENT PATHWAY

01 Introductory Presentation

YBG Group presents ControlAlign™ and HydroHub™ to Maharashtra energy sector leadership. No commercial commitment required.

02 ControlAlign™ Diagnostic — Phase 1

Remote thermodynamic diagnostic on one or two nominated MAHAGENCO units. Read-only historian data. No hardware, no outage, no capex. Deliverable: recoverable value in ₹ Cr per unit per year. Turnaround: 24–48 hours.

03 Results Review

Diagnostic findings presented to plant engineering and management. Baseline established. Recoverable value confirmed. Phase 2 decision made on demonstrated data — not proposal language.

04 HydroHub™ Deployment — Phase 2

Engineering, integration, and commissioning on proven units. Scheduled into existing planned shutdown windows. No production loss. Independent M&V; verification against Phase 1 baseline.

05 Fleet Expansion

Rollout across additional MAHAGENCO units based on verified outcomes. Fleet-level monitoring through ControlAlign™ Fleet Intelligence.

CONTACT & NEXT STEPS

A full technical presentation, certification documentation, and deployment evidence package is available immediately upon request.

Peter Griffiths
Chief Managing Director · YBG Group International
+61 449 703 635
info@ybggroup.com.au · ybggroup.com.au

India Execution
YBG–Wevolve Consortium
Wevolve Projects · Pune, Maharashtra