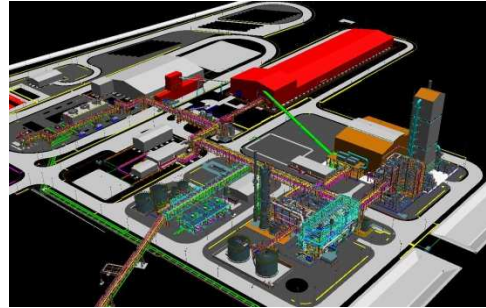




The Challenge of Modular Design Ammonium Nitrate Project Australia



Agenda



PROJECT OVERVIEW



MODULAR DESIGN



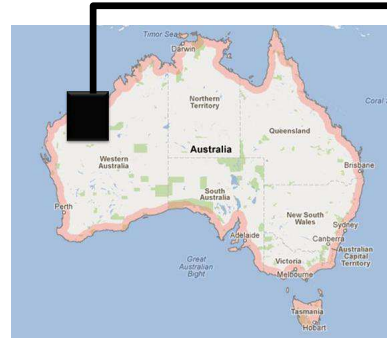
PROJECT EXECUTION



OPPORTUNITIES



PROJECT LOCATION



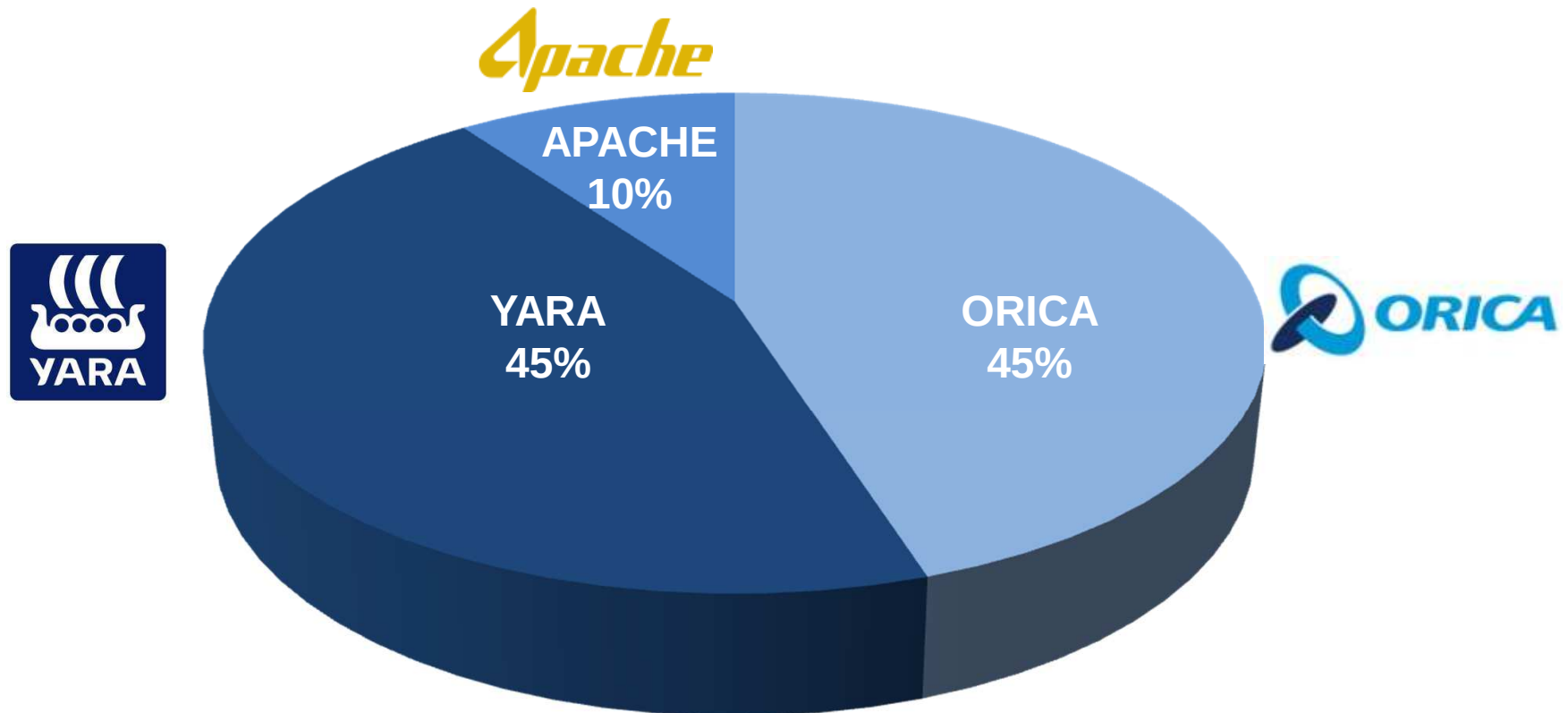
**Burrup Peninsula
Western Australia**

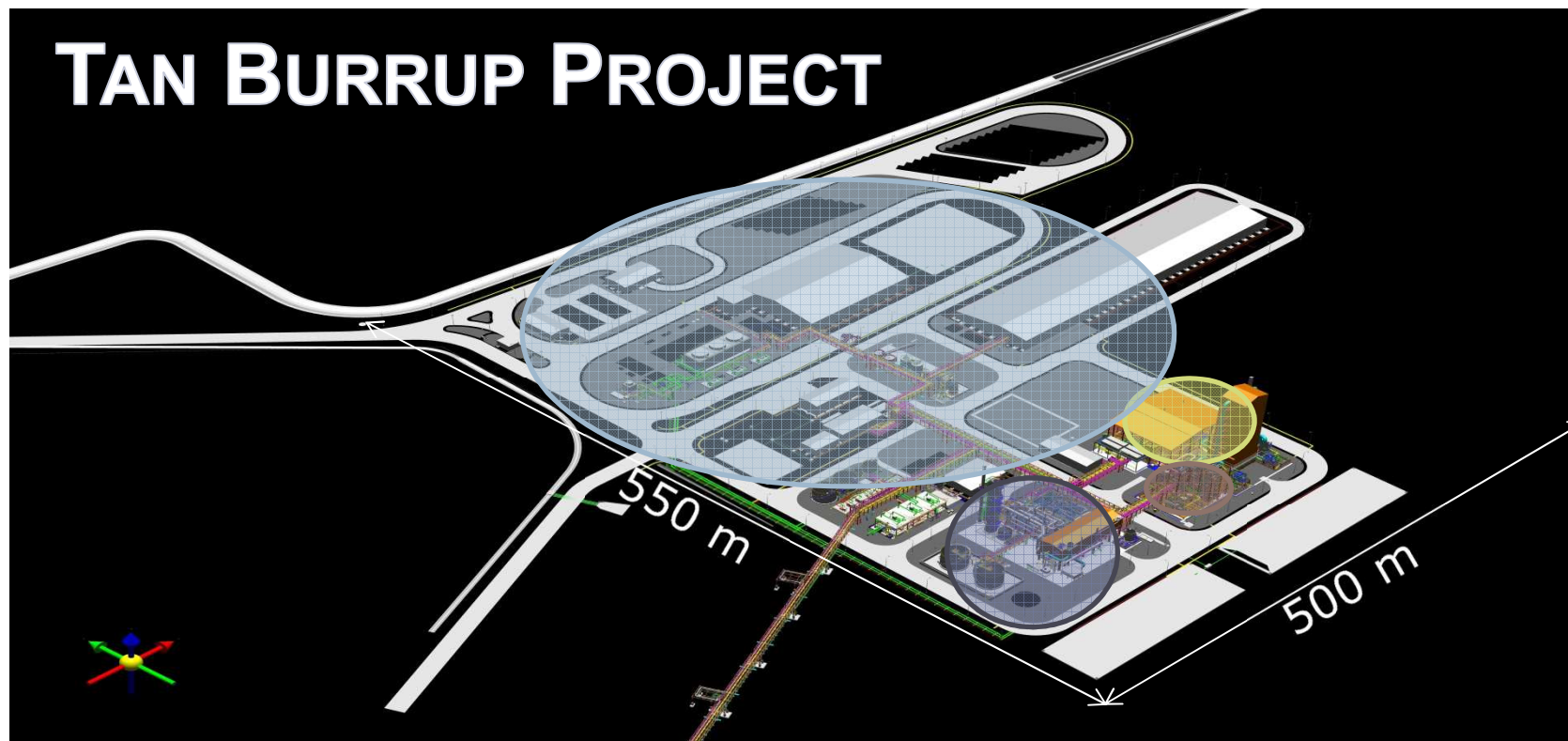


- Remote Site
- Weather and Climate extremes (*desert, cyclones*)
- Reduced Construction Manpower

TO WHOM? THE CLIENT

YARA PILBARA NITRATES PTY LTD





Nitric Acid Plant: 760 MTPD



Ammonium Nitrate Solution: 965 MTPD



Prilled Ammonium Nitrate: 915 MTPD



Utilities, Offsites, Buildings

THE CONTRACT

EPC Lump Sum Turn Key

Contract LSTK



Fixed Price / Fixed Scope

Overall Schedule



38,5 months from Effective
Date till Commercial
Operation



Agenda



PROJECT OVERVIEW



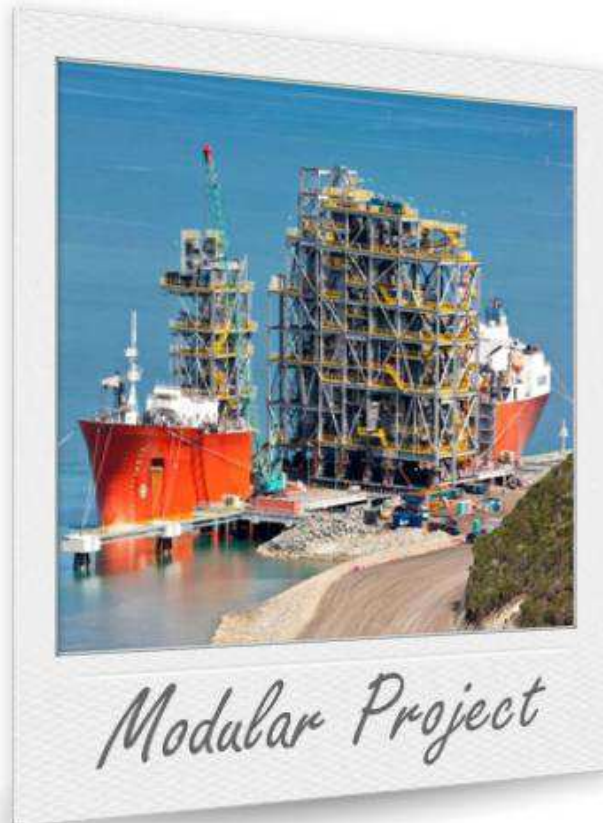
MODULAR DESIGN



PROJECT EXECUTION



OPPORTUNITIES



MODULAR PROJECTS EXECUTION BENEFITS FROM CLIENT POINT OF VIEW

Reduce Cost of Capital

Improve Cash Flow (*earlier start of production*), reduce cost of capital during construction

Lower Project Costs through higher labor productivity

Construction best practices
No weather impacts
Stable craft force yields & higher productivity
Better controlled fabrication

Early Revenue by Reducing Schedule

Modular Benefits

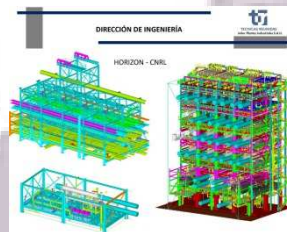
**BITUMEN UPGRADING FACILITIES
HORIZON
CANADA
90% MODULAR DESIGN**



**GAS OIL DESULPHURATION TOTAL
NORMANDY FRANCE
40% MODULAR DESIGN**

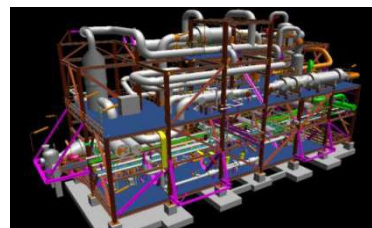
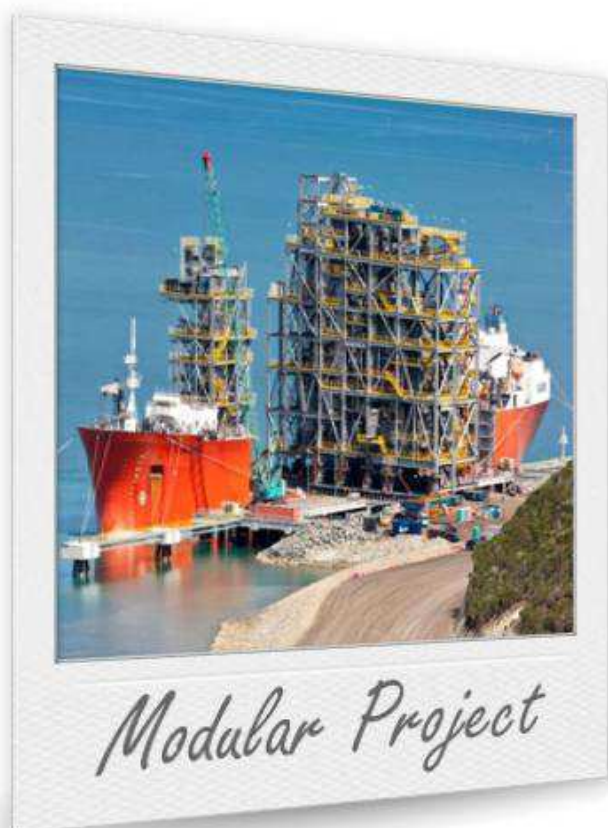


**LIQUID SEPARATION PLANT
GRAN CHACO
BOLIVIA
20% MODULAR DESIGN**



**GAS TREATMENT PLANT
GRAN CHACO
BOLIVIA
25% MODULAR DESIGN**





Modular Design

Yard
Construction

Transport

Site
Assembly



Agenda



PROJECT OVERVIEW



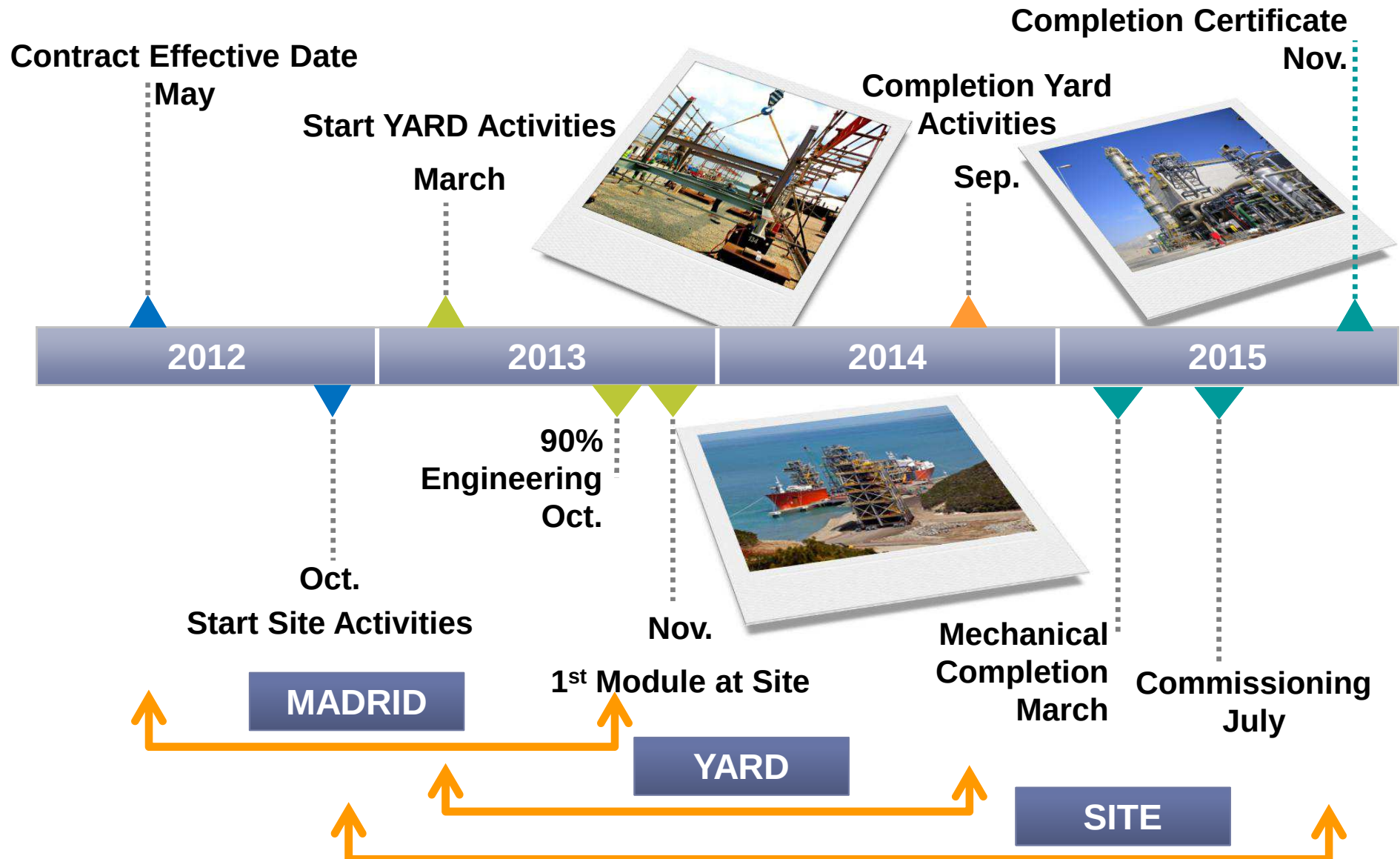
MODULAR DESIGN



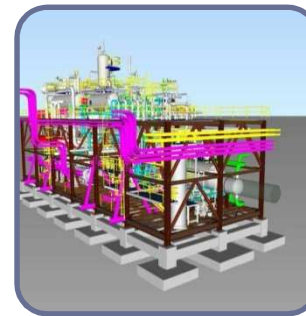
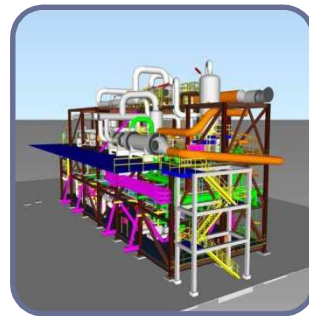
PROJECT EXECUTION



OPPORTUNITIES



ENGINEERING KEY SUCCESS FACTORS



Task Force
Integrated
Team



Software
Tools – 3D
Model



Modular
Design



Australian
Standards

OPERATING CENTERS



PROCUREMENT KEY SUCCESS FACTORS

Early Purchasing

Corporate Organization Support

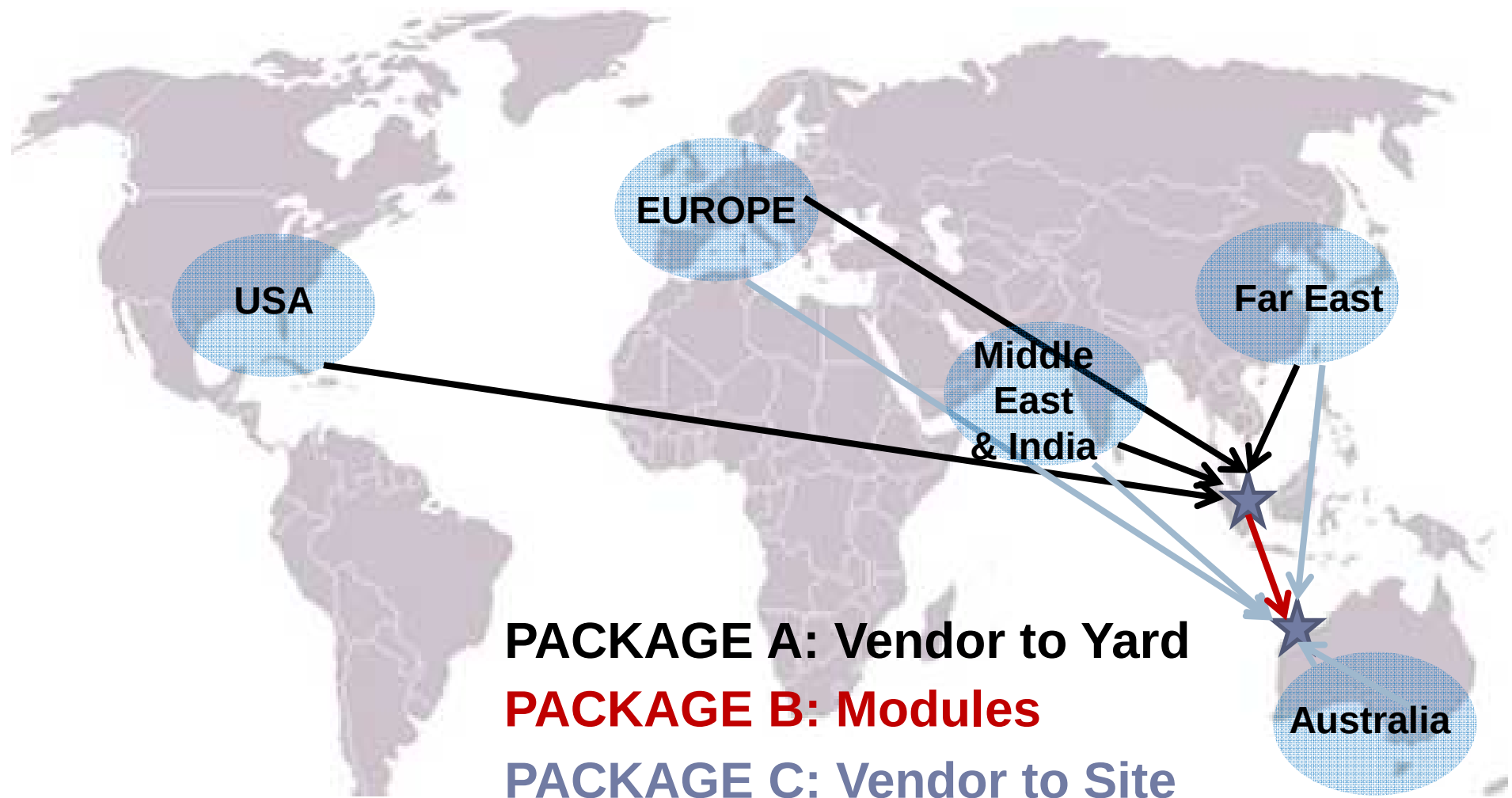
Monitor AQIS requirements

Resident inspectors

Transport Strategy



TRANSPORT STRATEGY



CONSTRUCTION KEY SUCCESS FACTORS

**Strong
Commitment to
Environmental,
Safety and
Quality
requirements**

**Planning
with
floating**

**Agreement in
place with
Unions**

**Adapt to
Australian way
of doing business**

**Implement
Lessons
Learnt**



PROTECTION OF LOCAL ABORIGINAL COMMUNITY

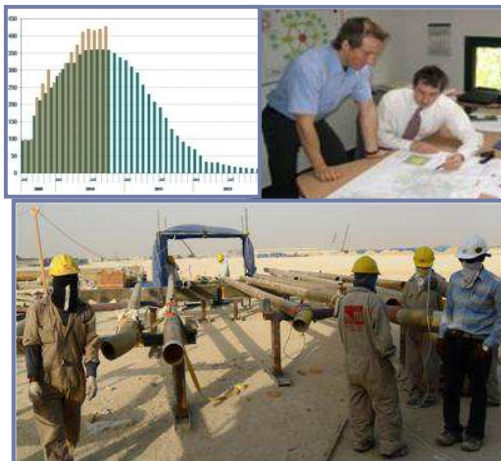


MAIN REFERENCES QUANTITIES

Equipment number	350 units
Number of Modules	150
Shipments Yard to Site	15
Concrete m3:	$\pm 20.000 \text{ m}^3$
Steel Structure Tons:	$\pm 10.000 \text{ Tm}$
Heaviest Module	1.000 Tm

→ Eiffel Tower : 7.000 Tm

→ Concorde : 200 Tm



MANPOWER	PEAK ESTIMATED
Home Office	280
TR Supervision	80
Subcontractor Yard/Site	800

PROJECT PROGRESS ⇒ AHEAD OF SCHEDULE

ENGINEERING

PLAN	ACTUAL
92%	98%

PROCUREMENT

PLAN	ACTUAL
97%	98%

CONSTRUCTION

PLAN	ACTUAL
YARD 20%	21%
SITE 7%	14%

OVERALL

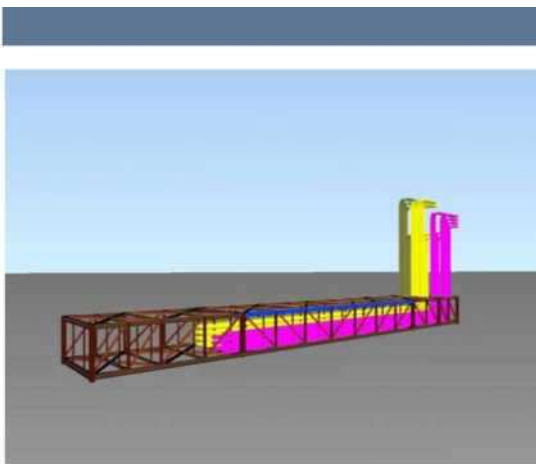
PLAN	ACTUAL
48 %	51%

UP TO 1ST AUGUST

MODULE MANUFACTURING CONTROL

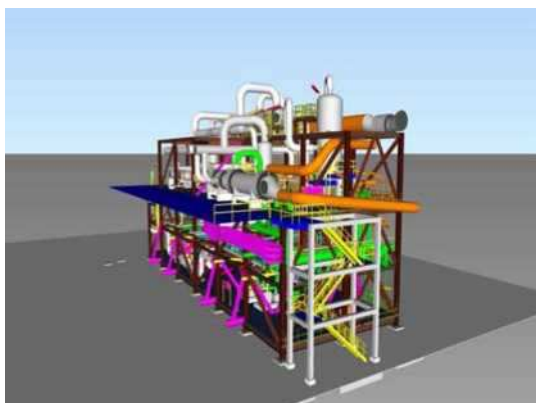


MODULE MANUFACTURING CONTROL

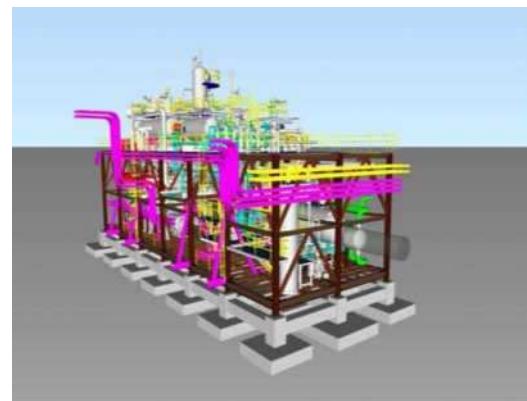


DISC	Weight (%)	Weekly			Cumm		
		Plan	Act	Dev	Plan	Act	Dev 1
Structure	0.22	4.74	8.62	3.89	99.53	96.62	-2.90
Piping	0.07	0.00	0.00	0.00	37.13	100.00	62.87
Painting	0.08	0.00	0.00	0.00	85.00	63.76	-21.24
Insulation	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mechanical	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical	0.05	0.00	0.00	0.00	0.00	30.00	30.00
Instrumentation	0.04	0.00	0.00	0.00	0.00	22.88	22.88
TOTAL	0.46	2.25	4.10	1.85	67.96	77.86	9.90

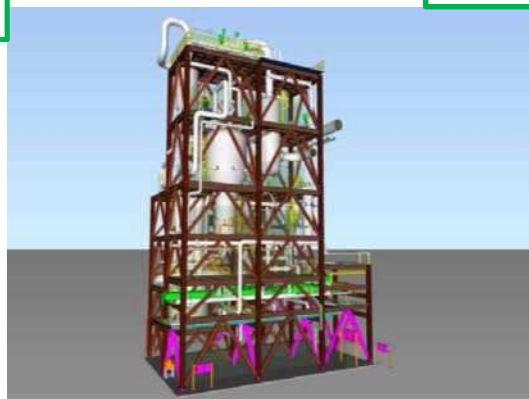
MODULE EXAMPLES



**NITRIC ACID
MODULE
PAU1211: 575 MT**



**NITRIC ACID
MODULE
PAU 1212: 715 MT**



**SOLUTION
AMMONIUM NITRATE
MODULE
PAU 3112: 535 MT**

Agenda



PROJECT OVERVIEW



MODULAR DESIGN



PROJECT EXECUTION



OPPORTUNITIES

MODULAR MARKET POTENTIAL AREAS



TAN BURRUP PROJECT



TECNICAS REUNIDAS



Australia

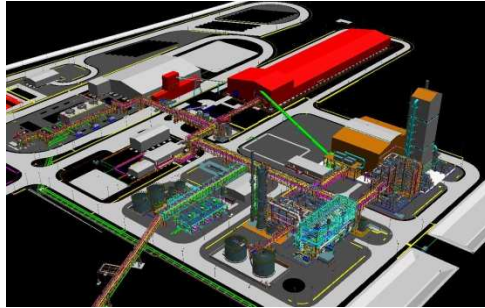


Modular Project



Own Technology





THANK YOU...
...GRACIAS...

