



AIFILL CYLINDER FILLING – BY IGAS TECHNOLOGY SOLUTIONS

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We are World Leaders in the innovative design, engineering and delivery of technical solutions to the Industrial Gases & Clean Energy sectors, providing guaranteed, risk-free solutions to maximise return on investment for our customers.

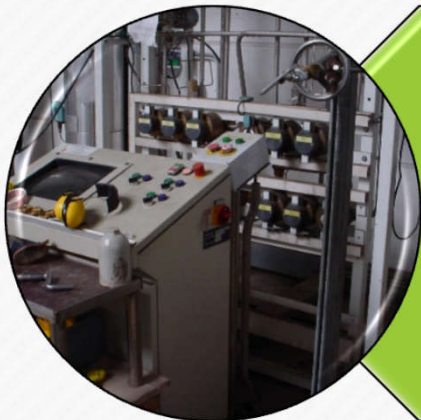
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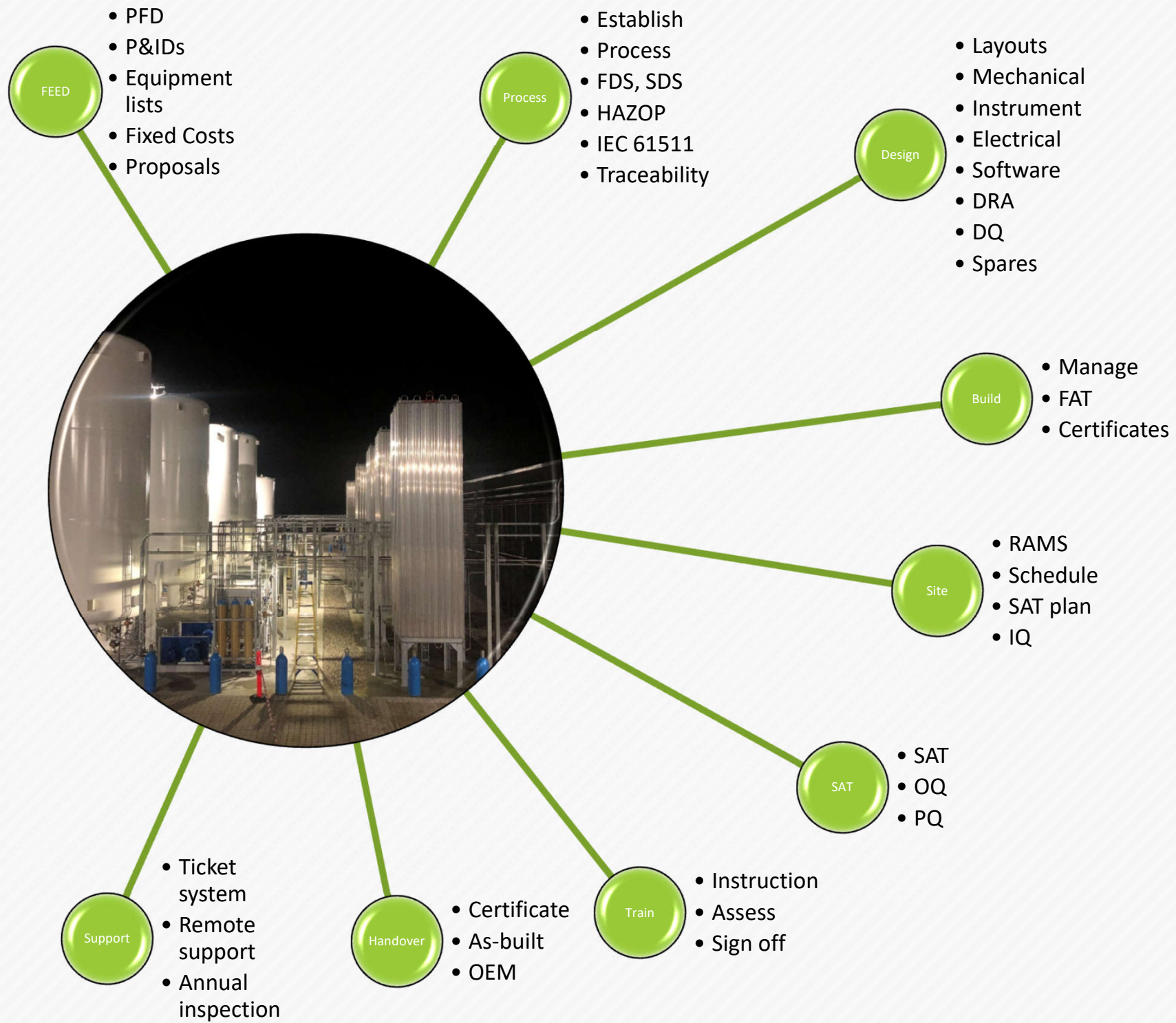
Pre 1980's: manual; <200bar; rack filling; limited factory build; Unbalanced valves; Bespoke projects



1980's introduction of: bespoke semi-auto filling (pressure temperature compensation); 200 & 230 bar; pallet filling; balanced valves; still limited factory build; still bespoke projects; manual information recording; high maintenance costs



Late 1990's: introduction of modular valve systems and more factory build; 300bar; high quality balanced valves; some mass flow filling; still bespoke projects; limited information recording; still high maintenance costs



Modular – Robust - High Quality – Options - Factory Built - Factory Tested

WHY CHOOSE IGAS – FACTORY BUILT PACKAGES

Pump Systems



- PLC Control (AiFILL)
- Data recording
- Speed options
- O2 features
- Medical features
- Up to 600bar design

SIVL suction & return



O2 cold end fire shield



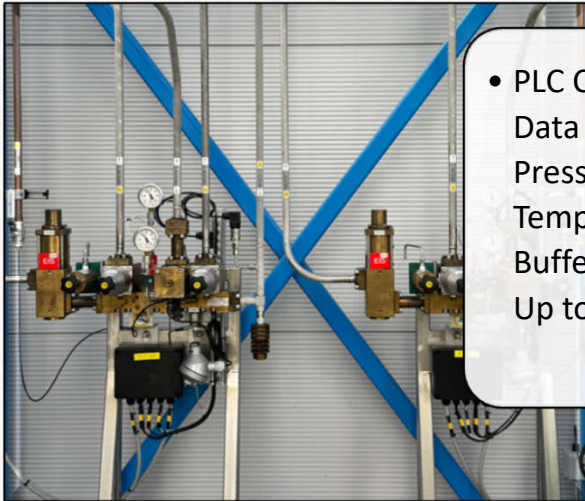
Factory built skid



Modular – Robust - High Quality – Options - Factory Built - Factory Tested

WHY CHOOSE IGAS – FACTORY BUILT PACKAGES

Line Manifolds (Safety Panels)



- PLC Control (AiFill)
- Data Recording
- Pressure safety
- Temperature safety
- Buffer system
- Up to 600bar design

Skid & Buffer Pack



Safety Shielding for O2



Skid & 3 Cylinder Buffer



Modular – Robust - High Quality – Options - Factory Built - Factory Tested

WHY CHOOSE IGAS – FACTORY BUILT PACKAGES

Filling Modules



- PLC Control (AiFill)
- Data recording
- Pressure Temp Filling
- Mass Flow Filling
- Dual Fill-Vent-Vacuum
- Safety Shielding
- HMI Interface
- RFID Interface
- Up to 600bar design

Central PLC & E/Stop Hub



Mixtures & Mono Gas



Operator Interface (HMI)



Modular – Robust - High Quality – Options - Factory Built - Factory Tested

WHY CHOOSE IGAS - FACTORY BUILT PACKAGES

Pump Systems



- Pallet Filling
- Rack Filling
- Bundle
- Trolley Filling
- Safety Cages
- Up to 600bar design

Cages Down



Cage Up



Pallet Lifters





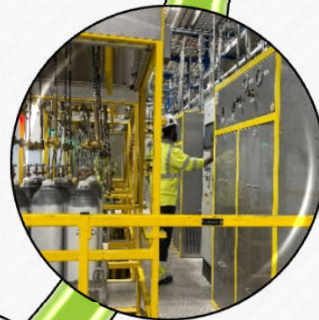
AiFill



What - a powerful, future proof, modular based control system; standardised software; Quick & easy commissioning; Retrofit to existing systems



Who – In-house experts; Built upon tried and trusted Siemens S7-1500 (ET200SP) platform with Ignition SCADA & HMI Systems

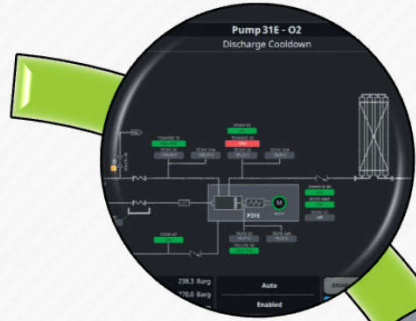


Where – deployed globally for many clients; Multi language support; secure support from anywhere in world; local configuration

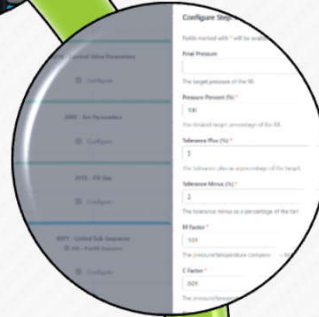


When – first commissioning in 2016 (G1)

An Evolution in Filling Technology



Operations – simple interface



Modular – building block construction (IRIS); local configuration;



Process View – diagnostics for swift problem solving

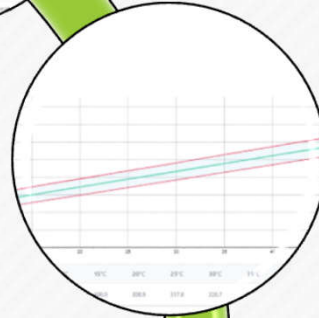


Dashboards, Records – statistics & metrics; historical data logging; auto fill records & certificate generation; database

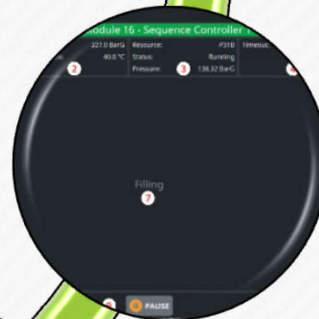
An Evolution in Filling Technology



Recipe based – easy creation/modify by Client; parameters for filling; held in SQL database



Recipe Example – Oxygen Standard 300bar recipe in IRIS



Sequences – easy creation/modification by Client; execution order of tasks for filling; held in SQL database

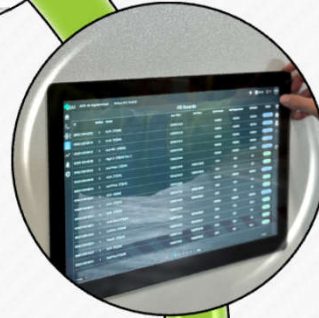


Security – to ensure only authorised users can import recipes to the live system

An Evolution in Filling Technology



Sequence Design –
Utilising a user friendly flow
charting approach



Parameters – All technical
parameters are explained in
each step to ensure the
correct values are entered



Parameters – are saved
during commissioning
meaning the user does not
need to reengineer these
every time

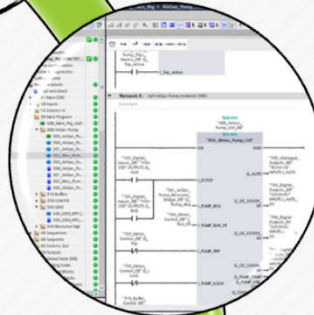


IRIS – strategic advantage by saving
costly engineering overheads to alter fixed
sequences should operations change.
Engineers can optimise the fill processes
using historical data from past fills

AiFill



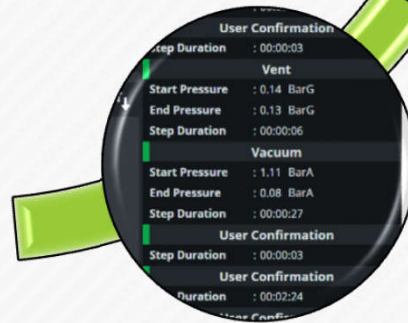
Hardware – PLC's Siemens S7-1500 based; long-term support; compact IO; direct mounting filling module



PLC Software – Siemens TIA PORTAL; Compliant with IEC61131-3 for programming Languages; IGAS use a mix of Ladder, S7-Graph, SCL and CEM

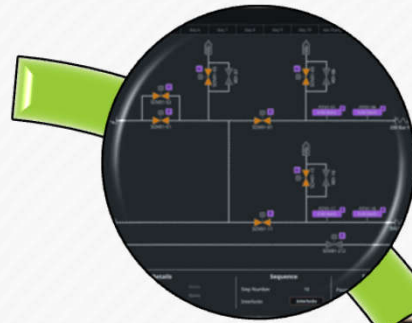


Ignition SCADA – HMI PC based using Windows 11 LTSC (Long Term Support Channel); Central system - changes reflected on each device instantly; 21" touch screen; Fixed or pedestal mount; RFID login option



Database – PostgreSQL database; Each Step of fill is recorded for later information

An Evolution in Filling Technology



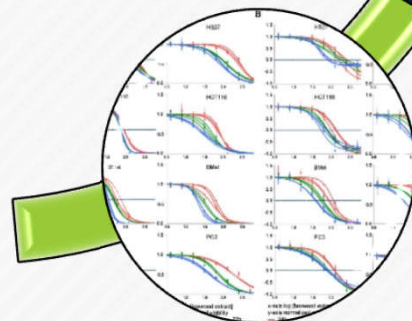
IO view – for debugging at both a basic and advanced level



Report Generation – email and SMS alarming



Next Level Features – Predictive maintenance based on live plant data; Setpoint optimiser to allow for automatic suggested improvements



Data & metrics – Time management data to allow for shop floor metrics; Enhanced filling metrics and tracking tools

*Not Just an Evolution in Filling Technology,
THE Evolution in Filling Technology*

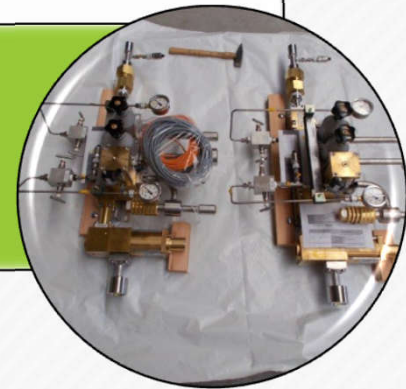
- Dedicated resource
- Offer at project
- Tailored

Support



- Dedicated resource
- Offered early in project
- Onsite for SAT
- Strategic holding

Spares





Projects

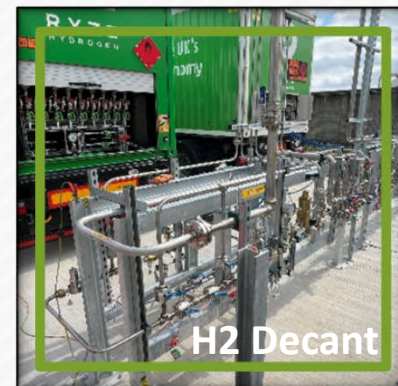
Cryogenic
Equipment

Filling
Equipment

Hoses &
Connectors

Refrigerant
Equipment





- Proven Track Record in global Solutions delivery
- Experienced Team
- Gases Expertise (Operations & Projects)
- Client Partnering
- Turnkey or Part-Turnkey
- Factory Testing Methodology, 'plug & play'
- High quality, proven technology