



SERVICE BRIEF

Virtual Commissioning

Commission your control system against a simulated plant before it reaches site.

 MATRIX

THE CHALLENGE

Find the problems before site does

Time on site

Every day of commissioning holds up production and keeps crews on site. Logic errors found there cost far more than the same errors found in the office.

Testing on live equipment

Proving interlocks and fault handling on real plant puts people, product and equipment at risk.

Late surprises

Interfaces between suppliers, screens and sequences often meet for the first time on site, where every problem becomes urgent.

Operators not ready

Operators first see the new system on the day it goes live, with production depending on it.

WHAT WE OFFER

What virtual commissioning covers

SERVICE 01

Emulated controller

Your PLC program runs unchanged in an emulated controller (for Siemens S7-1500, PLCSIM Advanced) on our test systems, so we test the code that will run on site.

SERVICE 02

Simulated I/O and plant behaviour

Inputs are driven and equipment responds: motors run, valves move, levels and temperatures change. Process models close the loop with your controllers.

SERVICE 03

SCADA and HMI against the simulation

Operator screens, alarms, trends and commands are connected to the emulated controller and tested end to end, before any panel is built.

SERVICE 04

Sequence, interlock and fault testing

Normal runs, holds, aborts, restarts, failed sensors and tripped drives, each tested against the functional specification and recorded.

SERVICE 05

Changes to running plants

A copy of the program that runs today is simulated, so a modification is proven against it before it goes anywhere near your plant.

SERVICE 06

Witnessed tests and familiarisation

Your engineers can witness tests on the simulation before factory acceptance, and operators can see the new screens before go-live.

BEFORE AND AFTER

What changes with virtual commissioning

Commissioning on site only

- Logic errors found with crews and production waiting
- Interlocks and faults tested on live equipment
- Interfaces between suppliers first meet on site
- Operators see the system on go-live day
- Fixes made under pressure, and harder to document

With virtual commissioning

- Logic errors found in the office, fixed and retested
- Faults and trips simulated safely, as often as needed
- Interfaces tested before the equipment arrives
- Screens and alarms reviewed by your team in advance
- Site time spent on real equipment and the process

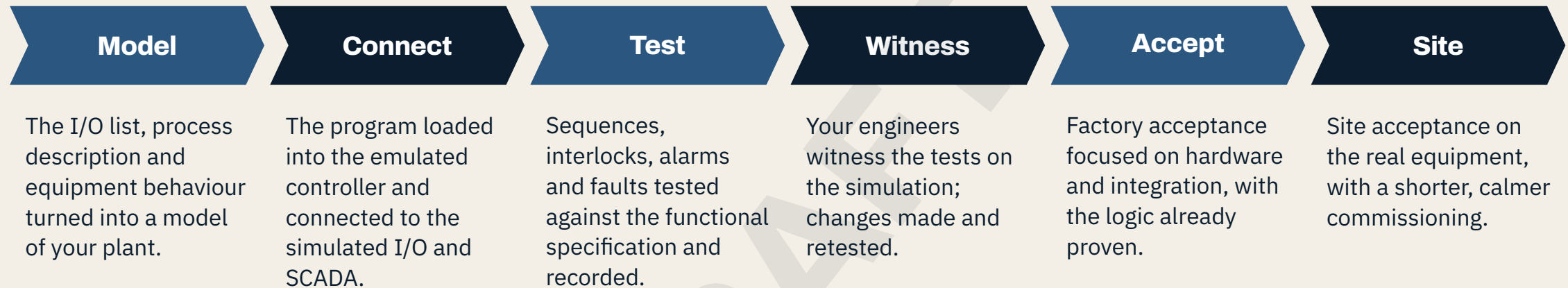
COVERAGE

What we simulate

Part of the system	How it is simulated	What it proves
Controller	Your PLC program in an emulated controller, configured like the real one	The code that will run on site
Inputs and outputs	Simulated signals with realistic feedback: run signals, valve limits, levels	I/O handling and equipment logic
Process	Models of levels, flows, temperatures and pressures, closed loop with your controllers	Control loops and process sequences
Operator interface	SCADA and HMI connected to the emulated controller	Screens, alarms, trends and commands
Communications	OPC UA and controller links to the simulated system	Data exchange and addressing
Faults	Failed sensors, tripped drives, lost communications and out-of-range values, injected on demand	Fault handling and recovery
Safety logic	Safety functions exercised in simulation to find errors early	Logic only; safety acceptance is on real equipment

HOW WE DELIVER

From specification to proven program



WHERE THE LINE IS

Simulation proves logic against a model of your plant, within that model. It never replaces tests on the real equipment, and it is never safety acceptance. Wiring, instruments, mechanics and the process itself are proven at factory and site acceptance.

WHAT YOU RECEIVE

Evidence before site

✓ Simulation model and scope

✓ Sequence and interlock test pack

✓ Tested program version and change log

✓ FAT and SAT protocols and records

✓ As-built source code

✓ Inspection and test plan

✓ Test records and deviation register

✓ Alarm list and HMI interface

✓ Functional design specification

HOW WE PROVE IT

- Each test traced to a requirement in the functional design specification
- Results recorded, with failures logged, fixed and retested
- The tested program version recorded, so site runs exactly what was proven
- Simulation writes are confined to the emulated controller, never to a real one
- Your engineers can witness any test before factory acceptance

GET IN TOUCH

Talk to us about virtual commissioning

enquiries@matrixsystems.co.uk

0121 240 7454

www.matrixsystems.co.uk

ISO 9001 certified • Cyber Essentials • CHAS • Constructionline • SafeContractor

