



RFSU Handover Playbook

12 checkpoints, ITR basics and a punch-list workflow for getting a system from construction complete to Ready for Start-Up.

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Every project defines these steps in its own commissioning procedure and contract. Terms differ between companies (for example ITR, check sheet or test record). Use this as a starting framework, and always follow your project's procedures, permit-to-work system and safety rules.

1. The road to RFSU: 12 checkpoints

Ready for Start-Up (RFSU) means a system is mechanically complete, tested and safe to introduce process fluids or energy. Getting there is a chain of checkpoints. A gap at any one shows up later as a delay, a failed start-up or a disputed handover.

#	Checkpoint	Done when
1	System and subsystem boundaries frozen	Marked-up P&IDs; and single-line diagrams agreed by construction, commissioning and operations
2	ITR register built	Every tag in each subsystem has its required ITRs listed
3	Construction ITRs complete	Installation checks signed for every tag (often called A-sheets)
4	Mechanical completion walk-down	Joint walk-down done; punch items raised and categorised
5	Mechanical Completion (MC)	Category A punch for MC cleared; MC certificate signed
6	Pre-commissioning ITRs complete	Flushing, cleaning, megger, loop checks etc. signed (often B-sheets)
7	Ready for Commissioning (RFC)	Utilities available, procedures approved, RFC certificate signed
8	Commissioning tests executed	Function tests, interlock and cause-and-effect tests, run-in tests recorded
9	Start-up-critical punch cleared	All punch items that block start-up are closed and verified
10	Safety systems verified	ESD, fire and gas, relief valves and other safety items tested and certified
11	RFSU certificate signed	Commissioning, operations and HSE sign the RFSU certificate
12	Handover dossier accepted	Dossier complete and accepted by the receiving party

Tip: track every checkpoint per subsystem, not per project. A project is never "80% ready". Individual subsystems are either ready or not, and that is what start-up sequencing depends on.

2. Breaking the plant into systems and subsystems

Commissioning works system by system. A **system** performs one function (for example cooling water). A **subsystem** is the smallest part that can be tested and handed over on its own (for example cooling water pump A and its piping, valves and instruments).

Good subsystem boundaries

- Follow function, not construction areas. A pump skid that spans two areas is still one subsystem.
- Draw the limits on marked-up P&IDs; and single-line diagrams, and get them signed before ITRs are assigned.
- Put every tag (equipment, line, instrument, cable) in exactly one subsystem. No orphans, no duplicates.
- Keep subsystems small enough to complete in days or weeks, not months.
- Agree the start-up sequence early: utilities (power, air, water) first, then process systems.

Example numbering

Level	Example	Meaning
System	41	Cooling water
Subsystem	41-01	Cooling water pump A and suction/discharge piping
Subsystem	41-02	Cooling water pump B and suction/discharge piping
Subsystem	41-03	Cooling water header, exchangers and return line

Common mistake: changing boundaries after ITRs are assigned. Every change moves tags, ITRs and punch items between subsystems. Freeze boundaries early and control changes formally.

3. ITRs by discipline

Inspection and Test Records (ITRs) prove that each tag was installed and tested correctly. Most projects split them into construction checks and pre-commissioning or commissioning checks. Typical examples:

Discipline	Construction checks (examples)	Pre-commissioning / commissioning (examples)
Mechanical	Installation and levelling, grouting, alignment, nameplate check	Lubrication, direction of rotation, run-in test, vibration readings
Piping	Line walk against isometrics, supports, bolt torque, pressure test	Flushing and cleaning, reinstatement after testing, leak test
Electrical	Cable installation, glanding and termination, earthing	Insulation resistance test, motor solo run, protection relay test
Instrumentation	Installation and hook-up, tubing, calibration certificate	Loop check, function test, cause-and-effect test
HVAC	Ductwork and damper installation, equipment mounting	Air balancing, fan run test, damper function test

Every ITR should record

- Tag number, subsystem and discipline
- The test performed, the acceptance criteria and the result
- Test equipment used and its calibration reference
- Who performed it, who witnessed it, and the date
- Any punch items raised during the test

Tip: link ITRs to tags, not to paperwork. When the ITR register shows outstanding ITRs per subsystem, you can see real readiness at a glance instead of counting signed sheets.

4. The punch-list workflow

A punch item is anything incomplete or incorrect found during a walk-down or test. Categories decide what blocks progress. A common scheme (your project may differ):

Category	Meaning	Must be closed before
A	Affects safety, integrity or operation	Mechanical completion or RFSU, as the procedure defines
B	Does not stop safe start-up	Final handover or acceptance
C (if used)	Minor or cosmetic, documentation	Close-out, as agreed

Lifecycle of a punch item

Step	Who	What happens
1. Raised	Anyone on the walk-down	Item recorded with tag, location, description, category and photo
2. Assigned	Commissioning lead	Responsible party and target date set
3. Actioned	Responsible contractor	Work done; evidence added
4. Verified	Person who raised it, or their delegate	Checks the fix on site
5. Closed	Commissioning lead	Item closed with date and name; no reopening without a new item

A good punch item

- Says what is wrong *and* what done looks like: "Missing support at elbow, line 41-CW-0102. Install support per isometric."
- Has one tag and one responsible party. Split items that need two contractors.
- Includes a photo and location so anyone can find it.
- Is categorised on the spot, while everyone on the walk-down agrees.

5. Running a walk-down

Walk-downs are where most punch items are found. A well-run walk-down saves weeks of back-and-forth.

Before

- ☐ Subsystem boundary drawings printed or on a tablet
- ☐ ITR status for the subsystem checked: no point walking down a system with half its construction ITRs open
- ☐ Construction, commissioning, operations and HSE invited; client representative if required
- ☐ Permits and site access arranged; PPE suitable for the area
- ☐ Tablet or punch forms ready, with photos enabled

During

- ☐ Walk the system in flow order, following the P&ID;
- ☐ Check against drawings: supports, valves, instruments, labels, insulation, access
- ☐ Raise each item once, with category agreed by the group
- ☐ Take a photo of every item and note the exact location

After

- ☐ Punch list issued within 24 hours, with responsible parties and target dates
- ☐ Category A items reviewed in the next daily meeting
- ☐ Next walk-down date set for verification

6. RFSU readiness checklist

Use this for each subsystem before asking for the RFSU signature.

☐	All construction and pre-commissioning ITRs signed
☐	Mechanical Completion and RFC certificates signed
☐	All punch items that block start-up closed and verified
☐	Commissioning procedures executed and results recorded
☐	Safety systems tested: ESD, fire and gas, interlocks and trips as applicable
☐	Relief valves installed with valid test certificates; car-sealed valves in the correct position
☐	Temporary items removed: blinds, strainers, temporary supports, test equipment
☐	Line-up checked and valve positions confirmed against the start-up procedure
☐	Utilities available and stable: power, instrument air, cooling water, nitrogen
☐	Operating procedures approved; operators trained on this system
☐	Pre-start-up safety review complete and actions closed
☐	Spare parts and consumables for first run available
☐	Control room displays, alarms and trips verified for this system
☐	Permit-to-work and isolation status handed to operations
☐	RFSU certificate ready for commissioning, operations and HSE signatures

7. What goes in the handover dossier

The dossier is the evidence that the system was built, tested and accepted. A typical structure:

Section	Contents
1. Certificates	Mechanical Completion, Ready for Commissioning, RFSU and handover certificates
2. System definition	Boundary drawings, tag list, subsystem register
3. ITR records	Signed construction and commissioning ITRs, ordered by tag
4. Test records	Pressure test packs, flushing records, calibration and electrical test results
5. Punch status	Final punch list with closure evidence; open category B items with owners and dates
6. Safety	Safety system test results, relief valve certificates, pre-start-up review
7. Vendor documents	Manuals, data sheets, certificates of conformity
8. As-built drawings	Red-line mark-ups or as-built drawings for the system
9. Preservation	Preservation records from installation to handover

Tip: build the dossier as you go, not at the end. If every signed ITR and closed punch item is filed by subsystem on the day it happens, the dossier at handover is a print job, not a project.

8. Copy-ready templates

Punch item

Field	Example
Punch no.	41-01-P-023
Subsystem / tag	41-01 / P-4101A
Discipline	Mechanical
Category	A
Description	Coupling guard missing. Install guard per vendor drawing.
Location	Pump house, grid C4, level 0
Raised by / date	J. Smith / 12 Mar
Responsible / target date	Mechanical contractor / 15 Mar
Verified by / date	
Closed by / date	

ITR register (per subsystem)

Tag	Discipline	ITR	Status	Signed by	Date	Open punch
P-4101A	Mechanical	Alignment	Done			0
P-4101A	Electrical	Motor solo run	Open			1
FT-4101	Instrument	Loop check	Open			0

Doing this in software

Discipline Commissioning Suite holds the subsystem register, ITRs and punch lists in one place, installs on a tablet or phone for use during walk-downs, and produces branded dossier PDFs. The free Starter plan covers one project. Try it at projectcommissioning.life.

This playbook is general guidance. It does not replace your project's commissioning procedures, contract requirements, codes or safety rules.