

Atlas Copco



PF6 FlexSystem and Scalable Quality Solution 3 Integration

Pocket Guide

1 Revision history

Revision	Date	Author	Description
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2 Purpose of this document

This document describes the configuration steps that are required to integrate a PF6 FlexSystem and the Scalable Quality Solution 3 (SQS3).

The document only details the tasks that are specific to the basic integration of the two products. The reader of the document needs to possess good knowledge of the configuration and operation of all components involved as a prerequisite.

3 Prerequisites

These components are required for a successful integration of the PF6 FlexSystem and SQS3:

- A PF6 FlexSystem with at least one drive and a spindle connected
- A PF6 FlexSystem FW revision supported by SQS3 according to the SQS3 Fact Sheet: <http://toosneas0004/portal/content.php/3343-Single-Qualition-Solution-tool-connectivity-corner>
- A ToolsTalk2 version compatible with the FW revision of the PF6 FlexSystem
- Scalable Quality Solution 3.3.0 or newer

4 PF6 FlexSystem configuration

4.1 ToolsTalk 2

The following instructions have been written for ToolsTalk 2. You require a ToolsTalk2 installation connected to your PF6 FlexSystem to access the critical configuration parameters. All parameters required for this integration are available from the *Plant Structure* view in ToolsTalk2.

4.2 Configure modes and programs

If there are no modes and tightening programs configured on the PF6 FlexSystem, configure them now. Use the settings required for the tightenings you intend to do.

4.3 Configure the virtual station

SQS3 will communicate to the PF6 FlexSystem via Open Protocol. It must be enabled properly.

1. Switch to the Virtual Station panel and open the virtual station of your PF6 FlexSystem.
2. Under *PROTOCOLS*, click the button *CONFIGURE* next to *Open protocol*.
3. Switch the attribute *Enabled* to *On*.
4. Leave the *Port* at the default '4545' or change it to another port number if needed.
5. Switch the attribute *Use legacy counter* to *Off*, leave the *PLC Index* unchanged and close the dialog.

Back in the view of the virtual station, make sure a TASK with the name *Multi Spindle Tightening* is selected. If not, assign it to the virtual station.

4.4 Configure time server settings

SQS3 will update date and time on the controller every time it selects a tightening program. This is to ensure that all tasks (tightening and non-tightening) of an SQS3 assembly process are in the correct chronological order. The PF6 FlexSystem must allow SQS3 to set date and time.

1. Switch to the *Settings* view of ToolsTalk2.
2. In the *TIME* stanza make sure the field *Source* is set to *Manual* and the *Time* zone is set correctly. You do not need to worry about the actual date and time since SQS3 will set it every time in selects a mode on the FlexSystem.

5 Scalable Quality Solution 3 configuration

5.1 Add the PF6 FlexSystem

The Open Protocol connection to the virtual station of the PF6 FlexSystem need to be configured:

1. In the *Station Tree*, add a new *Tool* to the *Hardware* of your station. Select the tool of type "PF6 FlexSystem".
2. Enter a *Tool/channel name* for the system. Also enter the *IP Address* of the system and set the *Port* to the number of the Open Protocol port you assigned to the virtual station.
3. Set the *Number of spindles* attached to the PF6 FlexSystem. It is important that this field correctly represents the number of spindles as the value will be used to validate plausibility of the SQS3 configuration later on.
4. On the *Options* tab make sure the parameter *Set time of controller* is checked

5.2 Assign the PF6 FlexSystem to bolt cases

Assign the new PF6 FlexSystem to the bolt cases linked to your station and select the modes you want to use as tightening programs. The SQS3 will enable the tool for these bolt cases and select the modes when you run the SQS3 operator guidance.

5.3 Assign spindle or channel numbers to bolt locations

After linking the PF6 FlexSystem with a bolt case, the numbers of the channels or spindles must be mapped to every bolt location of this bolt case so SQS3 will know how to associate the result data coming from the PF6 FlexSystem with the individual bolt locations. Simply select every bolt location of the bolt case, enter the corresponding *Channel number* and *Apply* the changes.

The following rules apply when assigning channel numbers to bolt locations:

- Channel numbers do not have to be assigned to bolt locations in sequential order or a continuous manner. The numbers can be in any order and increments can be greater than 1.
- The number of distinct channels assigned to bolt locations can never be greater than the *Number of spindles* configured for the PF6 FlexSystem (see chapter 5.1). This rule is enforced across all bolt cases of a station and will result in configuration errors if violated.
- The number of bolt locations in a bolt case does not have to match the number of spindles of a PF6 FlexSystem. If there are more bolt locations in a bolt case than spindles, it will simply take multiple tightenings to complete the bolt case (stitching). If there are more spindles than bolt locations, SQS3 can fasten two or more bolt cases simultaneously if the channel numbers have been assigned accordingly.

6 Troubleshooting

6.1 No connection from SQS3 operator guidance to the PF6 FlexSystem

The status light that represents the virtual station of the PF6 FlexSystem in the SQS3 operator guidance remains red. This means that the SQS3 is unable to establish a network connection to this virtual station.

Cause	Solution
The network settings of the PF6 FlexSystem do not meet the settings of the network it is in. The controller is completely unavailable on the network.	Use ToolsTalk 2 or the web UI of the PF6 FlexSystem to verify its network settings with a network administrator. Correct them if needed.
The network settings of the PC that hosts the SQS3 do not meet the requirements of the network it is in. No other network device can be reached from the PC.	Use the <i>ping</i> command to reach other devices on the network. If there's no connection to other network devices, verify the network settings of the PC with a network administrator and correct them if needed.
The IP address of the PF6 FlexSystem and/or the Open Protocol port of the virtual station are incorrectly configured in SQS3.	In the SQS3 Configurator, open the PF6 FlexSystem you configured. Check the IP address and the Open Protocol port and correct them if needed.
Network IP address conflict	Check the web UI of the PF6 FlexSystem or ToolsTalk 2 for error messages about IP address conflicts. If there is one, configure a different, unique IP address on the PF6 FlexSystem and adjust the configuration of SQS3 accordingly.

6.2 No connection from SQS3 Configurator to virtual station

The button *Read programs from tools* of the *Bolt Case Link* on the station does not populate the field *Mode number* with the mode numbers of the PF6 FlexSystem. Instead, you receive the message "Not able to synchronize; please check your settings".

Cause	Solution
There's no network connection available from the PC that runs the SQS3 Configurator to the PF6 FlexSystem.	This can be normal in environments where production networks are isolated from other networks. Simply enter the mode manually into the <i>Mode number</i> field.
There are no modes configured on the PF6 FlexSystem.	Configure at least one mode on the PF6 FlexSystem.

6.3 Tool not enabled/mode not selected

The status light that represents the virtual station in the SQS3 operator guidance is green but the SQS3 cannot properly enable the tool and select a PSet when tightenings are to be done.

Cause	Solution
There are no modes configured on the PF6 FlexSystem.	Configure at least one mode on the PF6 FlexSystem.
The PF6 FlexSystem does not allow SQS3 to update date and time prior to enabling the spindles.	Make sure the PF6 FlexSystem allows manual updates of date and time as described in chapter 4.4.



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