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Service Technician Instruction	ST-169	16 July 2015

Engine type **J624-G/H**

Subject **DIA.NE XT3/4**
Monitoring the engine ramp-down time

Service Technician Instruction ST-169 describes a new functionality in our engine management systems DIA.NE XT3 and XT4, which has been implemented since 1st May 2014 on Type J624-G/H engines and also retrofitted to engines in the field.

AFFECTED ENGINES / SCOPE OF THIS BULLETIN

All Type J624-G/H engines, as standard as from RPS version 3.50, and earlier versions with the basic update as per Quality Escape QE-65.

DESCRIPTION OF THE CONTENT

Friction losses can increase significantly in the event of problems with the crankshaft or generator bearings. This effect can be monitored with the ramp-down time.

A new function has been developed which calculates the ramp-down time considering the oil viscosity. A reference ramp-down time is calculated from this value over a number of shutdowns. This reference value describes the friction losses of the engine during a shutdown. If the ramp-down time is less than 65% of the reference value, a trip is generated and the engine data may need to be checked.

EXAMPLE

The calculated reference ramp-down time is 50 seconds
The measured ramp-down time is **<32.5** seconds

In this case an alarm (A3368) is triggered, which can only be reset from DIA.NE user level 30. We recommend calling the Jenbacher Service Hotline **immediately**, who will gladly provide support during the fault analysis.

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IN THE EVENT OF A FAULT, TAKE THE FOLLOWING STEPS INTO ACCOUNT

The following factors must be checked:

- Trend data analysis (short trend (1s data), alarm management)
- How long is the time between the speed drop and the standstill (in the control system historical trend)?
- Are the changes in the speed smooth/plausible?
- Check the temperatures on shutdown (oil, cooling water)
- Is the charge pressure plausible (is the minimum value at ramp-down 0.5 bar)?
- If available: How did previous shutdowns look (temperatures and ramp-down times)?
- If not available: How do the ramp-down times for comparable engines look?

If the data are plausible, and in addition to A3368 faults such as:

- Knocking
- Min. oil pressure
- Max. oil pressure
- Max. oil level
- Lambda deviation
- Max. crankcase pressure
- Max. valve noise

are present, the following steps should be taken into account depending on the additional faults:

- Endoscopic examination of the cylinders
- Inspection of the crankpins and main bearings
- Gearbox inspection, if fitted
- Additional inspection of the exhaust system (shutting valves → back pressure)
- Ruling out a generator fault in the alarm management

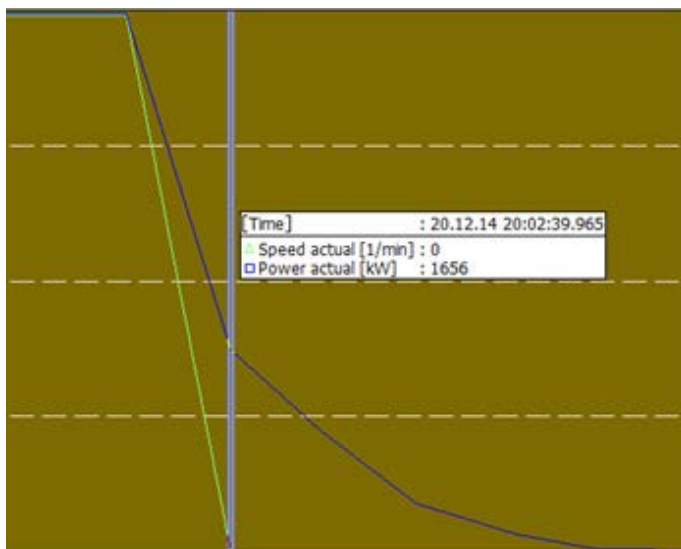
SPECIAL CASES AND EXCEPTIONS

In individual cases, the speed signal may be lost. The associated possible faults are:

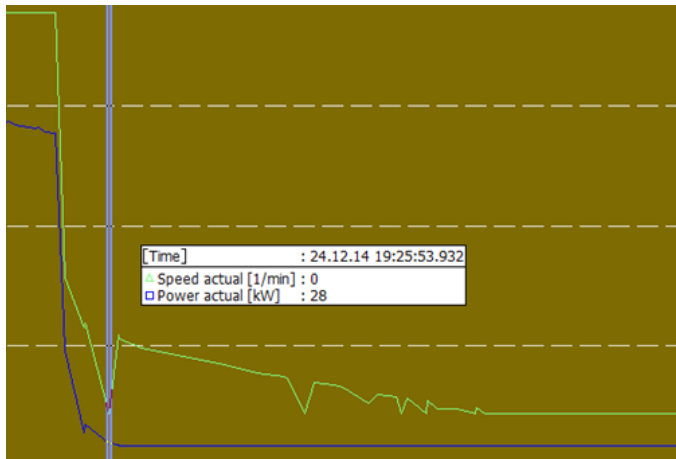
- 3025 Ignition trigger pickup missing
- 3336 SAFI trigger pickup missing
- 3331 SAFI CAN communication failure

In this case, check the speed signal separately for plausibility.

EXAMPLES OF MALFUNCTIONS DUE TO FAULTS



In this example the ramp-down time is 1 second due to the SAFI trigger pickup failure (3336).





In this example the speed has dropped to zero due to a measuring signal failure (green curve).

If **NO** further faults have occurred (see above), the alarm can be reset and the engine restarted after rectifying the engine measuring signal failure.

DISPLAY in the DIA.NE WIN

Since implementation of the ramp-down time monitoring, the following overall view is available in the DIA.NE display:

EXAMPLE of a DIA.NE WIN screenshot

M01 : Blockierung Modul									0.00 MW
	Datum	Zeit	Auslaufzeit	Mittel KWT	Mittel OTP	Mittel Ue			
1	30.01.2015	17:41	118 s	85,6 °C	76,1 °C	21,8 V			
2	19.02.2015	11:59	65 s	44,9 °C	45,7 °C	15,4 V			
3	19.02.2015	12:32	106 s	45,3 °C	48,5 °C	20,1 V			
4	19.02.2015	13:18	110 s	88,2 °C	70,9 °C	20,6 V			
5	19.02.2015	16:55	116 s	88,2 °C	76,1 °C	21,5 V			
6	20.02.2015	13:34	117 s	88,2 °C	76,4 °C	21,9 V			
7	22.02.2015	09:59	121 s	87,9 °C	76,4 °C	22,5 V			
8	23.02.2015	08:44	118 s	88,5 °C	76,5 °C	22,6 V			
9	23.02.2015	16:31	108 s	67,8 °C	67,2 °C	22,1 V			
10	24.02.2015	11:04	119 s	88,3 °C	76,2 °C	22,6 V			
11	24.02.2015	19:49	118 s	88,1 °C	76,6 °C	22,7 V			
12	26.02.2015	16:44	117 s	88,7 °C	74,9 °C	21,6 V			
13	26.02.2015	22:34	122 s	87,9 °C	76,8 °C	22,8 V			
14	27.02.2015	01:58	122 s	88,1 °C	76,6 °C	22,8 V			
15	27.02.2015	18:12	121 s	88,0 °C	76,7 °C	22,7 V			
16	27.02.2015	21:47	121 s	87,9 °C	76,6 °C	22,7 V			
17	12.03.2015	22:37	121 s	89,0 °C	81,0 °C	22,2 V			
18	13.03.2015	11:42	121 s	89,1 °C	81,8 °C	22,5 V			
19	13.03.2015	21:43	118 s	88,5 °C	79,2 °C	22,2 V			
20	15.03.2015	06:24	120 s	87,8 °C	76,7 °C	22,4 V			



RELEVANT DOCUMENTS

When working on GE Jenbacher modules, all applicable local regulations must of course be observed in addition to our documentation. We would particularly like to emphasize observation of the following documents in connection with this Service Technician Instruction:

- Technical Instruction TA 1100-0111: General conditions – Operation and maintenance
- Technical Instruction TA 2300-0005: Safety regulations

REVISION CODE

INDEX	DATE	DESCRIPTION / REVISION SUMMARY
01	Jul. 16, 2015	First version of this document

Table 01: Revision history