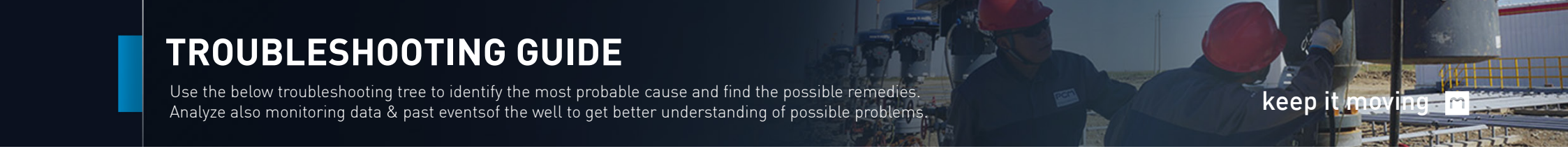
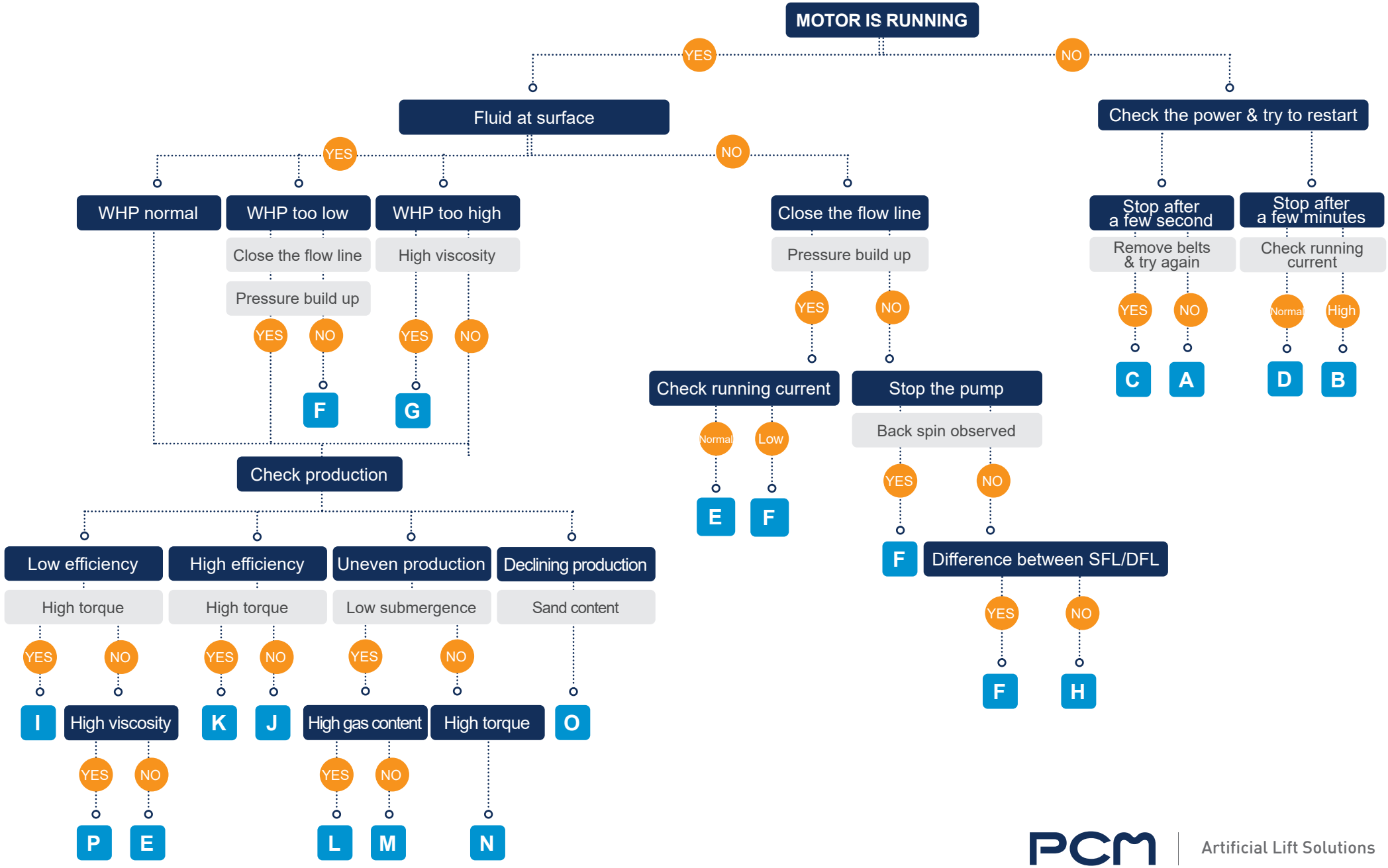
TROUBLESHOOTING GUIDE

Use the below troubleshooting tree to identify the most probable cause and find the possible remedies.
Analyze also monitoring data & past eventsof the well to get better understanding of possible problems.





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CAUSES

	Possible causes	Without workover	With flush by unit	With workover rig
A	Motor and/or VSD problem	1	-	-
B	Elastomer swelling / Rotor spaced out too low / Wrong rotor sizing	-	7	10/13/14
C	Rod string stuck / Excessive swollen / Wrong space out / Well head rams closed / Sand accumulation above the pump / Drivehead bearing problems	2	7/8	10/13/14/17
D	Check pressure switch / Wrong VSD settings or active interlocks	1	-	-
E	Pump worn out / Space out too high / High GVF	-	-	10/13/14
F	Hole in tubing / Tubing drain blown out	-	-	18/19
G	High flow loss on line due to viscosity	6/7	-	-
H	Parted rod string	-	9	-
I	Wrong space out, pump obstructed (plug) / High viscosity / Pump overloaded	3/5/6	7/8	11/16
J	Normal operation	-	-	-
K	Rotor sizing too tighten / Elastomer swollen / Products with high viscosity	3/5/6	8	11/13/14/16
L	High GVF / Not enough inflow at pump	4/5	-	12/15
M	Well bore inflow fluctuating / Wrong rotor sizing	4/6	-	14
N	Solids slugs / Rotor spaced out too low / Pump overloaded	3/5/6	7/8	11/16
O	Pump abrasion	5	-	17
P	Pump cavity filling issue due to rotor speed vs fluid viscosity	5/6	-	12

REMEDIES

Without workovers

1- Check electrical conformity
2- Check that the well head arms are opened
3- Reduce well head pressure
4- Reduce speed
5- Inject chemicals
6- Review flow line

With flush by unit

7- Re-evaluate space out procedure
8- Flush the pump
9- Pull out the rotor, inspect it and replace it if applicable

With workover rig

10- Pull out the pump and replace it if necessary
11- Change for a higherhead capacity pump
12- Change for a higher pump capacity then lower speed
13- Re-evaluate elastomer choice
14- Re-evaluate rotor sizing
15- Lower the pump setting depth
16- Increase tubing size
17- Install sand management devices
18- Replace the worn joint of tuning
19- Check the tubing drain

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