17th Annual PQSynergy™ International Conference and Exhibition 2017

PEA
PROVINCIAL ELECTRICITY AUTHORITY

Impact of Power Quality on Rice Mills

กาญจนบุรี

สุพรรณบุรี

นครปฐม
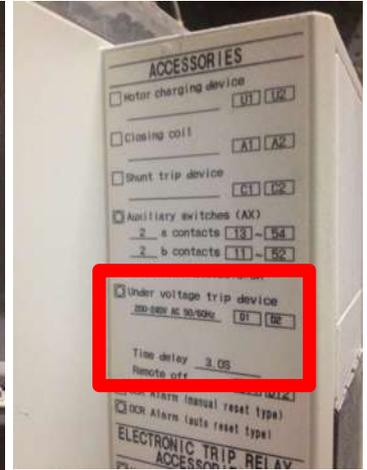
สมุทรสาคร

อ.บ้านโป่ง

IMPACT OF POWER QUALITY ON RICE
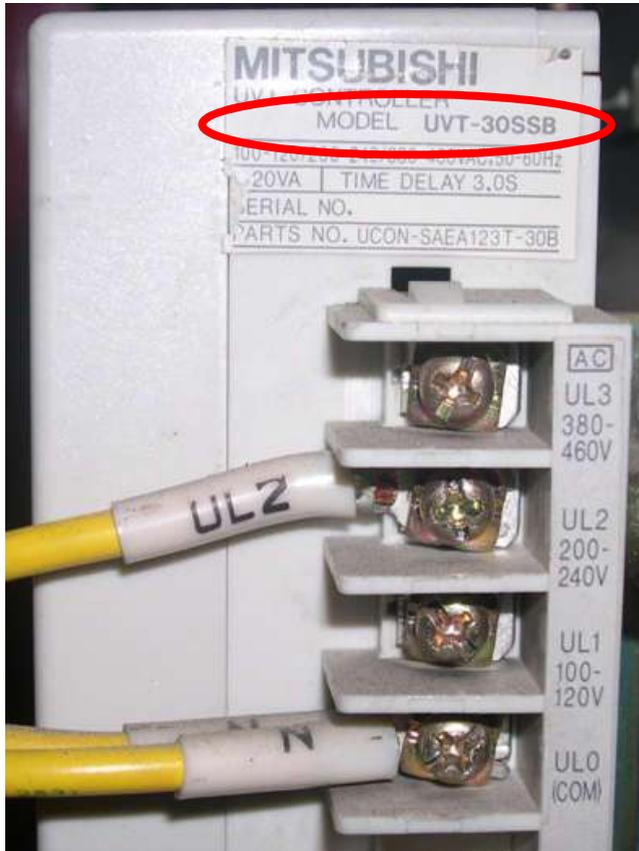
MILLS

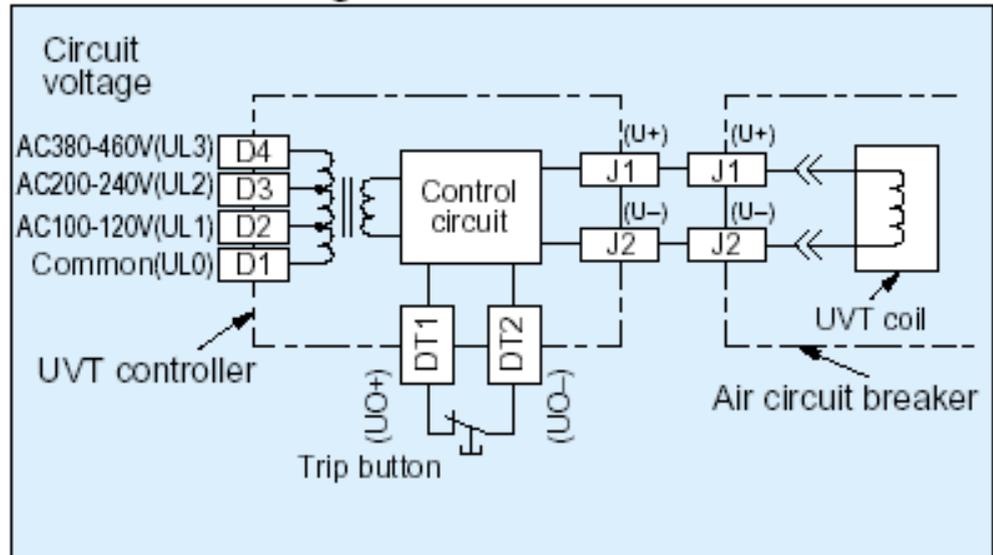# Protection Equipment

High Voltage Side

Low Voltage Side At MDB

●UVT circuit diagram

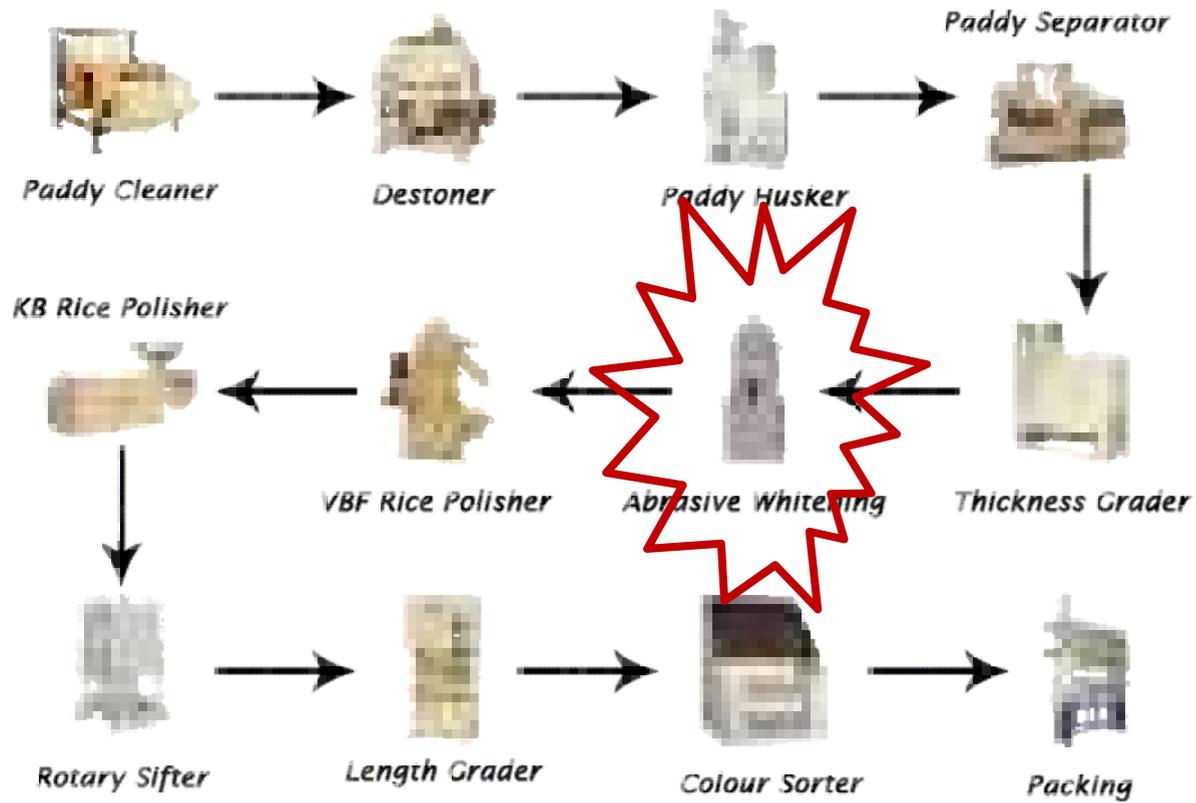# Control part

Start Motor By Star - Delta

Control part
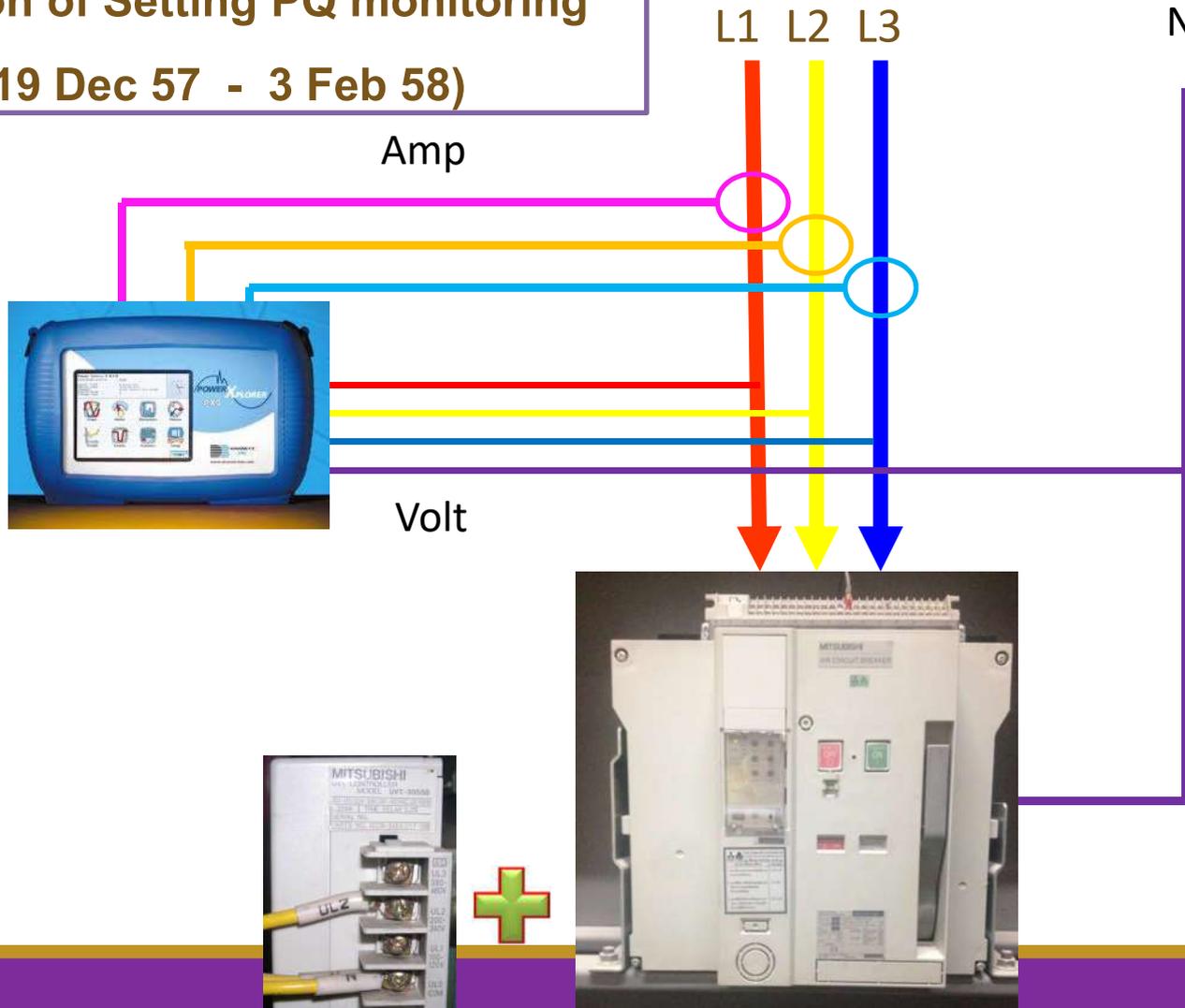

Inverter

Control Speed Drive

Rice Milling process

Position of Setting PQ monitoring

(19 Dec 57 - 3 Feb 58)

L1 L2 L3

N

Amp

1 st

Volt

9

Volt

2 nd

Electric Power Statistics From PEA

Date	Time	FEEDER	status	Cause
9 Jan 2015	14:41:00	PTU03	T/R1	Assumed Animal (IF=1446A)
31 Jan 2015	9:38:00	PTU03	T/R1	Accident from building site zone Pratan Market

Electric Power Statistics From Rice Mill

Date	Time	Rice Mill
9 jan 2015	14.44	interruption
31 jan 2015	9.43	Outage

Event Details/Waveforms

Event #131 at 01/09/2015 02:42:05.302
AV Mild Bipol Trans Pos 1/2 Cyc
CATEGORY: Transient

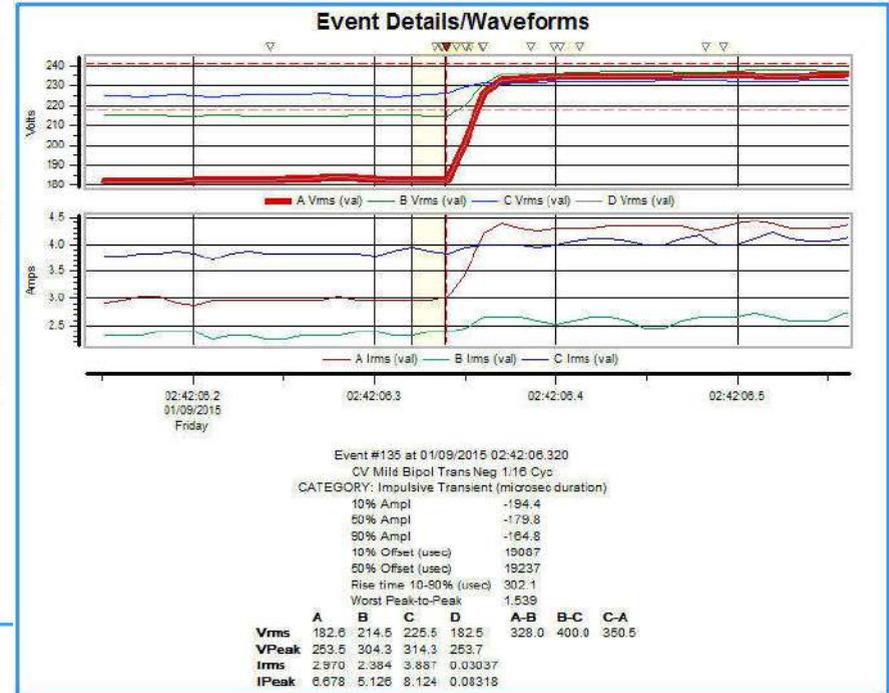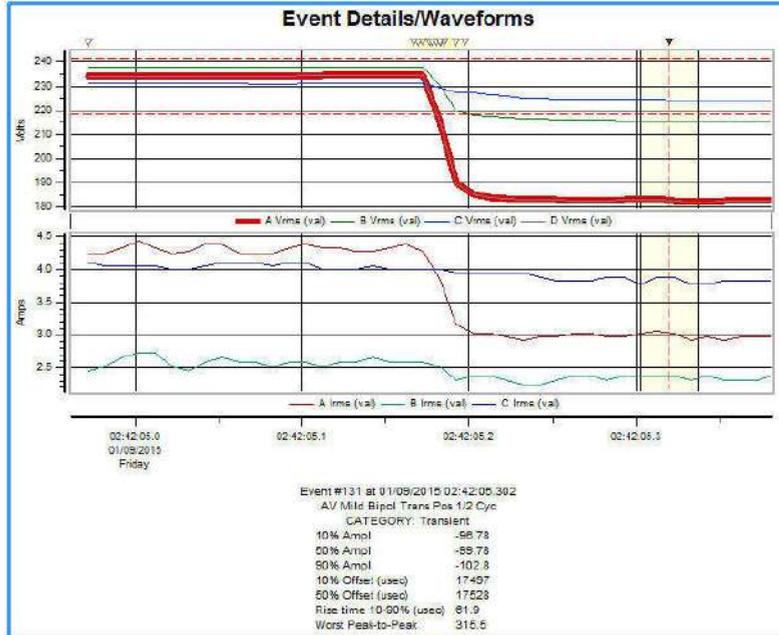|	
10% Ampl	-96.78
50% Ampl	-99.78
90% Ampl	-102.8
10% Offset (usec)	17497
50% Offset (usec)	17528
Rise time 10-90% (usec)	61.9
Worst Peak-to-Peak	316.5

Event Details/Waveforms

Event #135 at 01/09/2015 02:42:06.320
CV Mild Bipol Trans Neg 1/16 Cyc
CATEGORY: Impulsive Transient (microsec duration)

10% Ampl	-194.4
50% Ampl	-179.8
90% Ampl	-164.8
10% Offset (usec)	19087
50% Offset (usec)	19237
Rise time 10-90% (usec)	302.1
Worst Peak-to-Peak	1.539

	A	B	C	D	A-B	B-C	C-A
Vrms	182.6	214.5	225.5	182.5	328.0	400.0	350.5
VPeak	253.5	304.3	314.3	253.7			
Irms	2.970	2.384	3.887	0.03037			
IPeak	6.678	5.126	8.124	0.08318			

9 Jan 2015 Time 14:42:06 Dip 7 %

Date	Time	Feeder ID	Com ID2	Protection Alarm	Caption	Additional	wheather
9-01-2015	2:41:00	PTU03	PTU06VB-01	Overcurrent Relay	T/R1	Assumed Animal (IF=1446A)	Nomal

Event Details/Waveforms

Event #3982 at 01/31/2015 09:38:23.350
DVrms Momentary Interruption
CATEGORY: Short Duration Momentary Interruption
Threshold crossed 23.0 V
Magnitude 0.115 V
MaxRMS 218.2 V
Duration 0.6323 Sec.

31 Jan 2015 Time 09:38:23 Interruption

Date	Time	Feeder ID	Com ID2	Protection Alarm	Caption	Additional	wheather
31-01-2015	9:38:00	PTU03	-	Overcurrent Relay	T/R1	Accident from building site zone Pratan Market	Nomal

Suggestion

1. **Change Voltage Relay in control part from single phase coil to 3 phase Coil.**
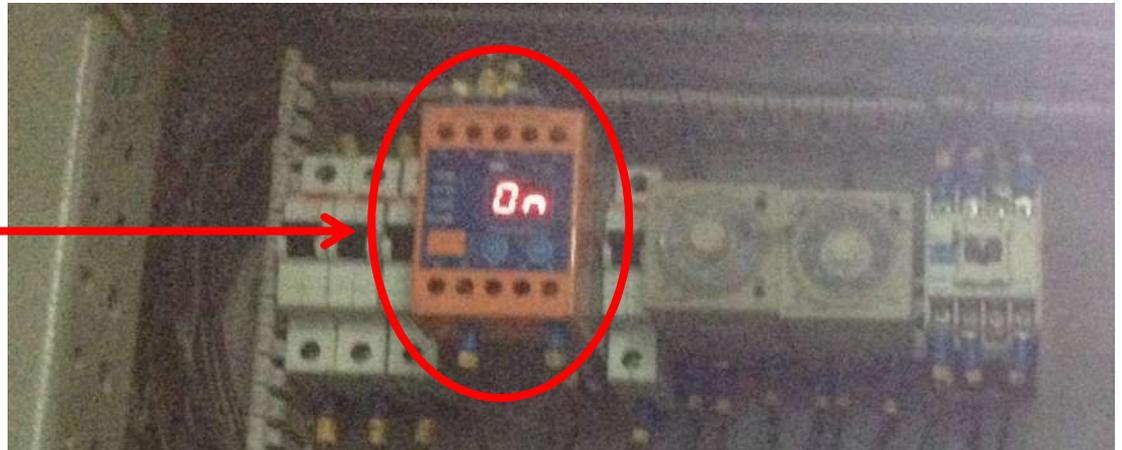
2. Rice Mill has made Shutter for protect whitening process.

Additional in 2017

1. **Manager of Rice Mill found every time they have dip event. Magnetic contactor will break down always. So PEA suggest Change Start Motor from Star – Delta type to soft start and install Coil Lock equipment for protect Magnetic contactor break down.**

Coil Lock

2. **Rice mill has problem : Inverters can't operate when have dip event.**

PEA suggest install function restart auto into inverters or install online UPS

for control part of inverters.

Online UPS

Thank You