Recipe Example and Comments for the 20QP Programmable Temp Controller.

Recipe: 1

Seg 1: Guaranteed Soak at 700F for 1Hr
Seg 2: Soak at 700F for 20 min with Steam Addition (EV2)
Seg 3: Ramp to 1100F over 1min (fast as possible)
Seg 4: Guaranteed Soak at 1100F for 1Hr
Seg 5: Ramp to 1200F over 1min (fast as possible)
Seg 6: Soak at 1200F for 1hr 30min
Seg 7: End of Cycle

In programming the 20QP it is important to note that each segment is either a RAMP or a SOAK. In the Program Editor, each seg starts with a Final SP (FSP) for that segment. If the FSP is the same as the FSP for the previous segment, then the segment is a soak. If the FSP is different from the previous segment FSP, then the segment is a RAMP. Thus, to do a SOAK at 700 followed by a SOAK at 1100, there must be a RAMP segment between the segments to change the setpoint.

Ramps may be specified by TIME or by GRADIENT (deg/hr). This is set in the program initialization section. In this example we use TIME in hh:mm.

Ramps and Soaks may be GUARANTEED using Tracking Groups (TGR1-TGR10). The tracking group parameters are specified as Deg Above and Below SP. Specified in Runtime Group 9. In this example we have set TA1 to 10Deg and TB1 to 10Deg. Thus using TRG1 on a Soak segment causes the Soak Timer to HOLD (PV display will flash) anytime the PV is outside the BAND SP-10 to SP+10. Using TRG1 on a RAMP segment causes the RAMP SP to hold anytime the PV falls outside the BAND SP -10 to SP+10. If you do not want to GUARANTEE a RAMP or SOAK then use TGR0.

Each Output Event to be used in the program must be specified in the program initialization section. Only Output Events configured as Timer event, Break event, End of Cycle event or End of Profile event are used (see Configuration Section 5). In the program initialization section set these events to yes or no depending on whether the program uses the event. Only Break events are used in the program segments. The Event Status (on/off) must be set for each Break Event in each segment. For this Example, we have set EV1 to End of Cycle, EV2=break (steam addition) and EV 3=break (future use).

PID Groups (PIDG1-PIDG5) may be specified in Runtime Group 4. Each program segment may use a different PIDG. For furnace applications it is usually best to use the Primary PID settings to do this, set the PIDG = 0 for each segment.

For the above Sample Recipe, the program edit values would be as follows: (refer to User Manual pgs 115-130)
SE. 1 1 Editing Program 1

TOP GREEN DISPLAY now reads PR. 1 indicating PROG 1 Initialization Section

- t.SOK hh:mm SOAK times will be Hrs and Mins
- t.rmP hh:mm RAMP times will be Hrs and Mins
- EV. 1 yes EV1 will be used by this Prog (EOC event)
- EV. 2 yes EV2 will be used by this Prog. (Break event)
- EV. 3 no EV3 will not be used by this Prog. (Break event)
- ItSP 700 Initial SP = 700F
(Note: the status of used Break events must be specified in each segment)

TOP GREEN DISPLAY now reads 01.01 indicating PROG 1 SEG 1 Section

- F.SP 700 Indicates this will be a SOAK (no SP Change)
- hh:mm 1 Hr SOAK Time
- P.l.d.G0 No special PID, use primary settings.
- trKG 1 GUARANTEE (SP +/- 10 Band)
- b.E. 2 off EV2 off (no steam)

TOP GREEN DISPLAY now reads 01.02 indicating PROG 1 SEG 2 Section

- F.SP 700 Indicates this will be a SOAK (no SP Change)
- hh:mm0.20 20 min SOAK Time
- P.l.d.G0 No special PID, use primary settings.
- trKG 0 NO GUARANTEE
- b.E. 2 on EV2 on for Steam Addition

TOP GREEN DISPLAY now reads 01.03 indicating PROG 1 SEG 3 Section

- F.SP 1100 Indicates this will be a RAMP (SP Change)
- hh:mm0.01 1 min RAMP Time (as fast as possible)
- P.l.d.G0 No special PID, use primary settings.
- trKG 0 NO GUARANTEE
- b.E. 2 off EV2 off (no steam)
TOP GREEN DISPLAY now reads **01.04** indicating **PROG 1 SEG 4** Section

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**F.SP** 1100 Indicates this will be a SOAK (no SP Change)
**hh.mm** 1.00 1 Hr SOAK Time
**P.I.d.G0** No special PID, use primary settings.
**trKG** 1 GUARANTEE (SP +/- 10 Band)
**b.E. 2** off EV2 off (no steam)

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TOP GREEN DISPLAY now reads **01.05** indicating **PROG 1 SEG 5** Section

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**F.SP** 1200 Indicates this will be a RAMP (SP Change)
**hh.mm** 0.01 1 min RAMP Time (as fast as possible)
**P.I.d.G0** No special PID, use primary settings.
**trKG** 0 NO GUARANTEE
**b.E. 2** off EV2 off (no steam)

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TOP GREEN DISPLAY now reads **01.06** indicating **PROG 1 SEG 6** Section

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**F.SP** 1200 Indicates this will be a SOAK (no SP Change)
**hh.mm** 1.30 1 Hr 30 min SOAK Time
**P.I.d.G0** No special PID, use primary settings.
**trKG** 0 NO GUARANTEE
**b.E. 2** off EV2 off (no steam)

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TOP GREEN DISPLAY now reads **01.07** indicating **PROG 1 SEG 7** Section

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**F.SP** End Indicates end of cycle

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TOP GREEN DISPLAY now reads **PR. 1** indicating **PROG 1 Finalization** Section

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**rPt** 0 Do not repeat cycle
**bEOn** no All Break events off at end cycle
**End** mSP control at end of program SP
**mSP** 500 end of Program SP
**mPId** 0 end of program PID group, use primary settings.

=============END of Program==================================