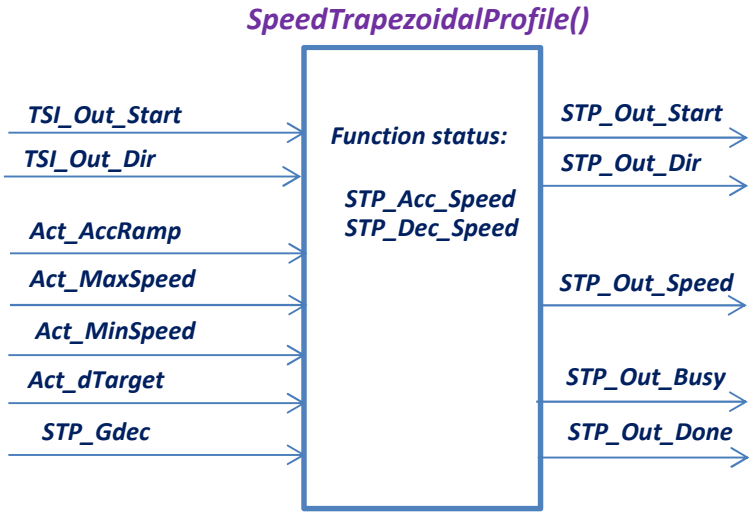
Speed trapezoidal profile function V. 1.0

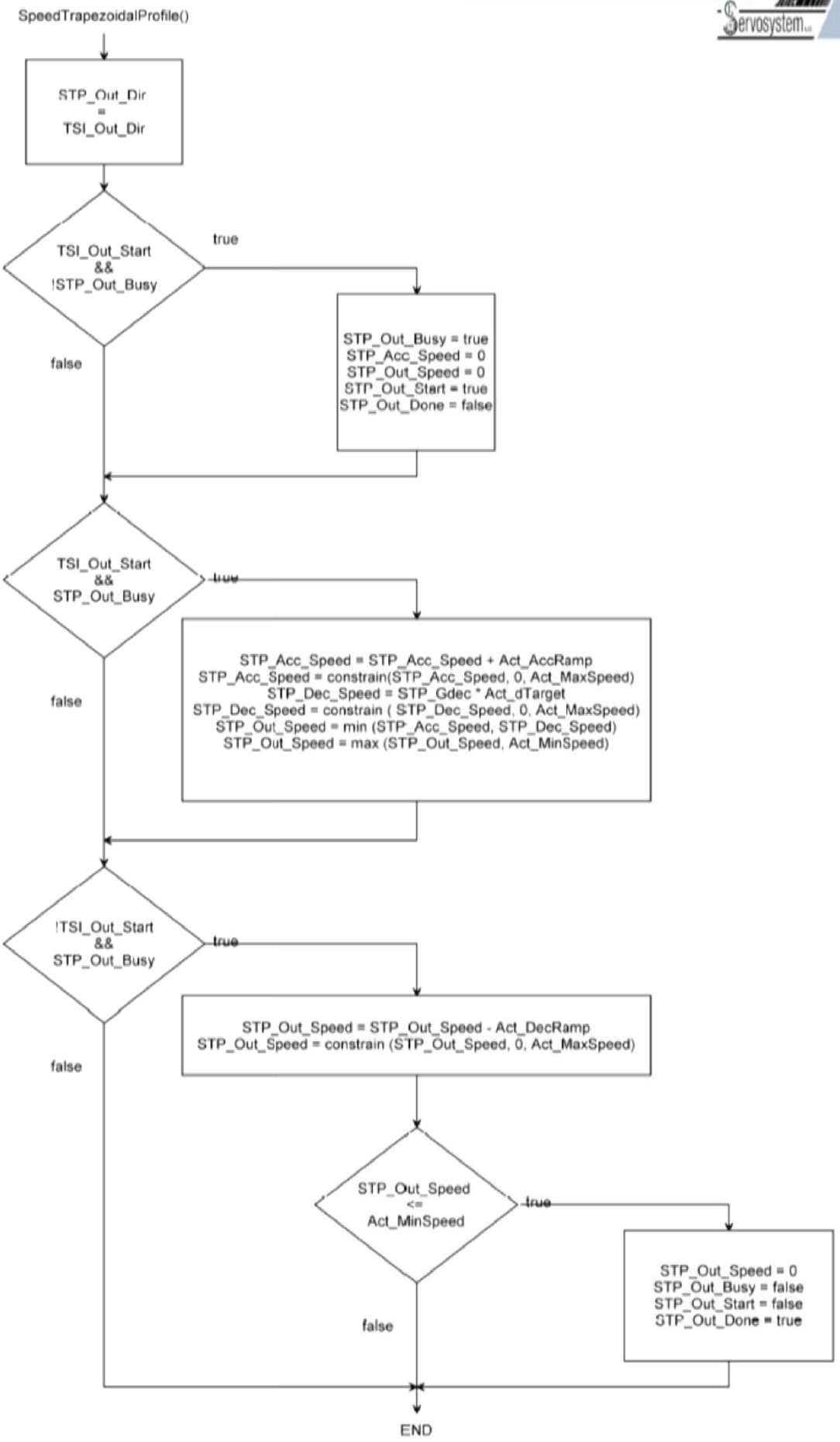
Descriptions

This function generates a like speed trapezoidal profile command. The acceleration ramp command is linear (controlled by a value added at each loop of this function. The deceleration ramp instead is the result of a proportional control of the distance to the target position multiplied for a coefficient gain.

Syntax:	***SpeedTrapezoidalProfile()***
Input parameters:	***TSI_Out_Start, TSI_Out_Dir, Act_MinSpeed, Act_MaxSpeed, Act_AccRamp, STP_Gdec, Act_dTarget.***
Output parameters:	***STP_Out_Speed, STP_Out_Start, STP_Out_Dir, STP_Out_Busy, STP_Out_Done***
Status:	***STP_Acc_Speed, STP_Dec_Speed***
Calls:	




```
void SpeedTrapezoidalProfile()

{
 STP_Out_Dir = TSI_Out_Dir;

 if (TSI_Out_Start && !STP_Out_Busy )
    {
    STP_Out_Busy = true; STP_Acc_Speed = 0;
    STP_Out_Speed = 0; STP_Out_Start = true; STP_Out_Done = false; }

 if (TSI_Out_Start && STP_Out_Busy )
    {
    STP_Acc_Speed = STP_Acc_Speed + Act_AccRamp;
    STP_Acc_Speed = constrain(STP_Acc_Speed, 0, Act_MaxSpeed);

    STP_Dec_Speed = STP_Gdec * Act_dTarget;
    STP_Dec_Speed = constrain ( STP_Dec_Speed, 0, Act_MaxSpeed);

    STP_Out_Speed = min (STP_Acc_Speed, STP_Dec_Speed);
    STP_Out_Speed = max (STP_Out_Speed, Act_MinSpeed);
    }
 if (!TSI_Out_Start && STP_Out_Busy )
    {
    STP_Out_Speed = STP_Out_Speed - Act_DecRamp;
    STP_Out_Speed = constrain (STP_Out_Speed, 0, Act_MaxSpeed);
    if  (STP_Out_Speed <= Act_MinSpeed )
      {
      STP_Out_Speed = 0; STP_Out_Busy = false; STP_Out_Start = false;
      STP_Out_Done = true;
      }
    }
}
```


SpeedTrapezoidalProfile()
STP_Out_Dir = TSI_Out_Dir
TSI_Out_Start && !STP_Out_Busy
true
false
STP_Out_Busy = true
STP_Acc_Speed = 0
STP_Out_Speed = 0
STP_Out_Start = true
STP_Out_Done = false
TSI_Out_Start && STP_Out_Busy
true
false
STP_Acc_Speed = STP_Acc_Speed + Act_AccRamp
STP_Acc_Speed = constrain(STP_Acc_Speed, 0, Act_MaxSpeed)
STP_Dec_Speed = STP_Gdec * Act_dTarget
STP_Dec_Speed = constrain (STP_Dec_Speed, 0, Act_MaxSpeed)
STP_Out_Speed = min (STP_Acc_Speed, STP_Dec_Speed)
STP_Out_Speed = max (STP_Out_Speed, Act_MinSpeed)
!TSI_Out_Start && STP_Out_Busy
true
false
STP_Out_Speed = STP_Out_Speed - Act_DecRamp
STP_Out_Speed = constrain (STP_Out_Speed, 0, Act_MaxSpeed)
STP_Out_Speed <= Act_MinSpeed
true
false
STP_Out_Speed = 0
STP_Out_Busy = false
STP_Out_Start = false
STP_Out_Done = true
END