

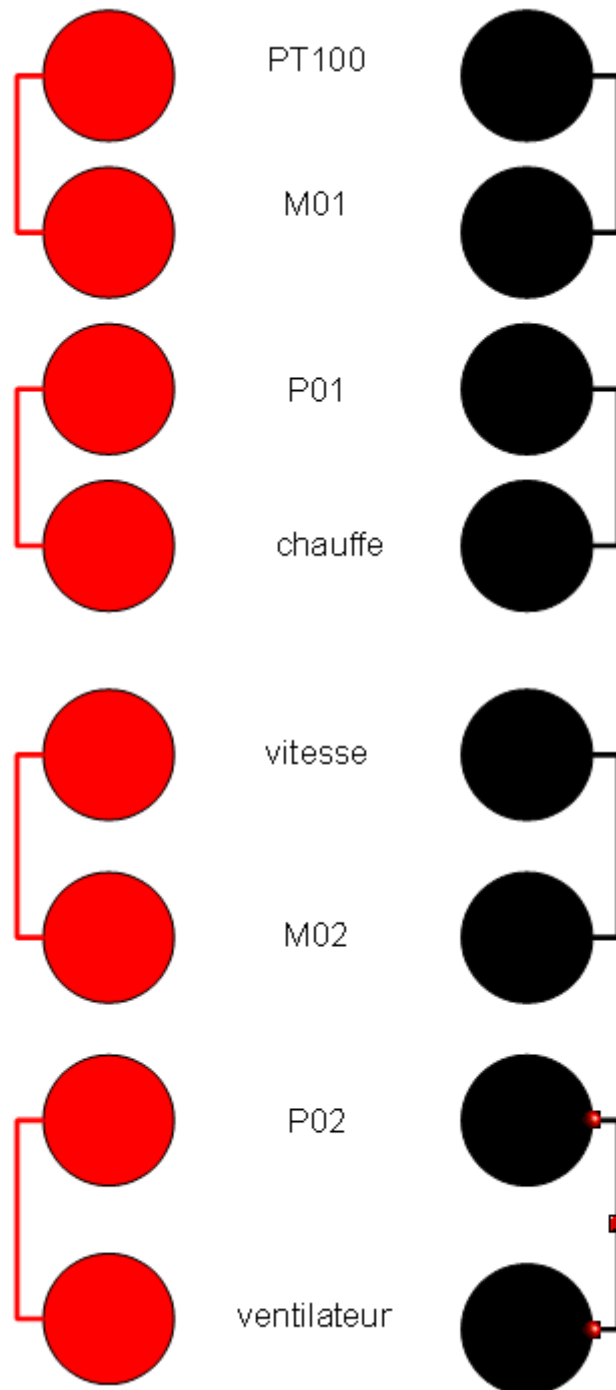
| TP2 Aero - Blanchon Vasapolli | | Pt | A | B | C | D | Note |
|-------------------------------|---|-----------------|---|---|---|---|------|
| I. | Régulation de température simple boucle (10 pts) | | | | | | |
| 1 | Donner le schéma électrique correspondant au cahier des charges. | 1 | A | | | | 1 |
| 2 | Programmer votre T2550 afin de réaliser la régulation représentée ci-dessus. | 2 | A | | | | 2 |
| 3 | Relever l'évolution de la mesure X en réponse à un échelon de commande Y. En déduire le sens de fonctionnement du régulateur (inverse ou direct). | 1 | A | | | | 1 |
| 4 | Régler la boucle de régulation, en utilisant une méthode par approches successives, en mode de régulation PI. | 4 | C | | | | 1,4 |
| 5 | Enregistrer l'influence d'une variation du débit d'air sur la température. | 2 | C | | | | 0,7 |
| II. | Régulation mixte (10 pts) | | | | | | |
| 1 | Rappeler le fonctionnement d'une boucle de régulation mixte. | 1 | B | | | | 0,75 |
| 2 | Programmer le régulateur pour obtenir le fonctionnement en régulation mixte conformément au schéma T1 ci-dessus. | 3 | A | | | | 3 |
| 3 | Déterminer la valeur du coefficient k. | 2 | D | | | | 0,1 |
| 4 | Enregistrer l'influence d'une variation du débit d'air sur la température. | 2 | D | | | | 0,1 |
| 5 | Expliquez l'intérêt d'une régulation mixte en vous aidant de vos enregistrements. Citez un autre exemple pratique. | 2 | D | | | | 0,1 |
| | | Note : 10,15/20 | | | | | |

TP2 Aero

vasapolli
blanchon

I. Régulation de température simple boucle

1)



2)



entrée 1

| Block: 01M01_OC | | | | | | |
|-----------------|------------------|-------------|--|-----------------|----------------------|------|
| Tag/Name | Comment | Connections | | LIH Name | | |
| Tag/Name | 01M01_OC | | | LIH Name | 01M01_OC | |
| Type | AI_UIO | | | DBase | <local> | |
| Task | 3 (110ms) | | | Rate | 0 | |
| MODE | AUTO | | | Alarms | | |
| Fallback | AUTO | | | Node | >00 | |
| PV | 0.0 | % | | Site/lo | 1 | |
| HR | 100.0 | % | | Channel | 1 | |
| LR | 0.0 | % | | InType | mA | |
| HiHi | 100.0 | % | | HR_in | 20.00 | mA |
| Hi | 100.0 | % | | LR_in | 4.00 | mA |
| Lo | 0.0 | % | | AI | 0.00 | mA |
| LoLo | 0.0 | % | | Res | 0.000 | Ohms |
| Hyst | 0.5000 | % | | CJ_type | Auto | |
| Filter | 0.000 | Secs | | CJ_temp | 0.000 | |
| Char | Linear | | | LeadRes | 0.000 | Ohms |
| | | | | Emissiv | 1.000 | |
| | | | | Delay | 0.000 | Secs |

PID

| Block: Bidon | | | | | | |
|-----------------|------------------|-------------|--|-----------------|----------------------|---|
| Tag/Name | Comment | Connections | | LIH Name | | |
| Tag/Name | Bidon | | | LIH Name | Bidon | |
| Type | PID | | | DBase | <local> | |
| Task | 3 (110ms) | | | Rate | 0 | |
| Mode | AUTO | | | Alarms | | |
| FallBack | AUTO | | | HAA | 100.0 | % |
| →PV | 0.0 | % | | LAA | 0.0 | % |
| SP | 0.0 | % | | HDA | 100.0 | % |
| OP | 0.0 | % | | LDA | 100.0 | % |
| SL | 0.0 | % | | TimeBase | Secs | |
| TrimSP | 0.0 | % | | XP | 100.0 | % |
| RemoteSP | 0.0 | % | | TI | 0.00 | |
| Track | 0.0 | % | | TD | 0.00 | |
| HR_SP | 100.0 | % | | Options | 00101100 | |
| LR_SP | 0.0 | % | | SelMode | 00000000 | |
| HL_SP | 100.0 | % | | ModeSel | 00000000 | |
| LL_SP | 0.0 | % | | ModeAct | 00000000 | |
| HR_OP | 100.0 | % | | | | |
| LR_OP | 0.0 | % | | | | |

Sortie 1

| Block: 02P01_OC | | | | | |
|-----------------|-----------|-------------|--|-----------|----------|
| Comment | | Connections | | | |
| TagName | 02P01_OC | | | Link Name | 02P01_OC |
| Type | AO_UIO | | | DBase | <local> |
| Task | 3 (110ms) | | | Rate | 0 |
| MODE | AUTO | | | Alarms | |
| Fallback | AUTO | | | Node | >00 |
| | | | | SiteNo | 2 |
| → OP | 0.0 | % | | Channel | 1 |
| HR | 100.0 | % | | OutType | mA |
| LR | 0.0 | % | | HR_out | 20.00 |
| | | | | LR_out | 4.00 |
| Out | 0.0 | % | | AO | 0.00 |
| Track | 0.0 | % | | | |
| Trim | 0.000 | mA | | Options | >0000 |
| | | | | Status | >0000 |

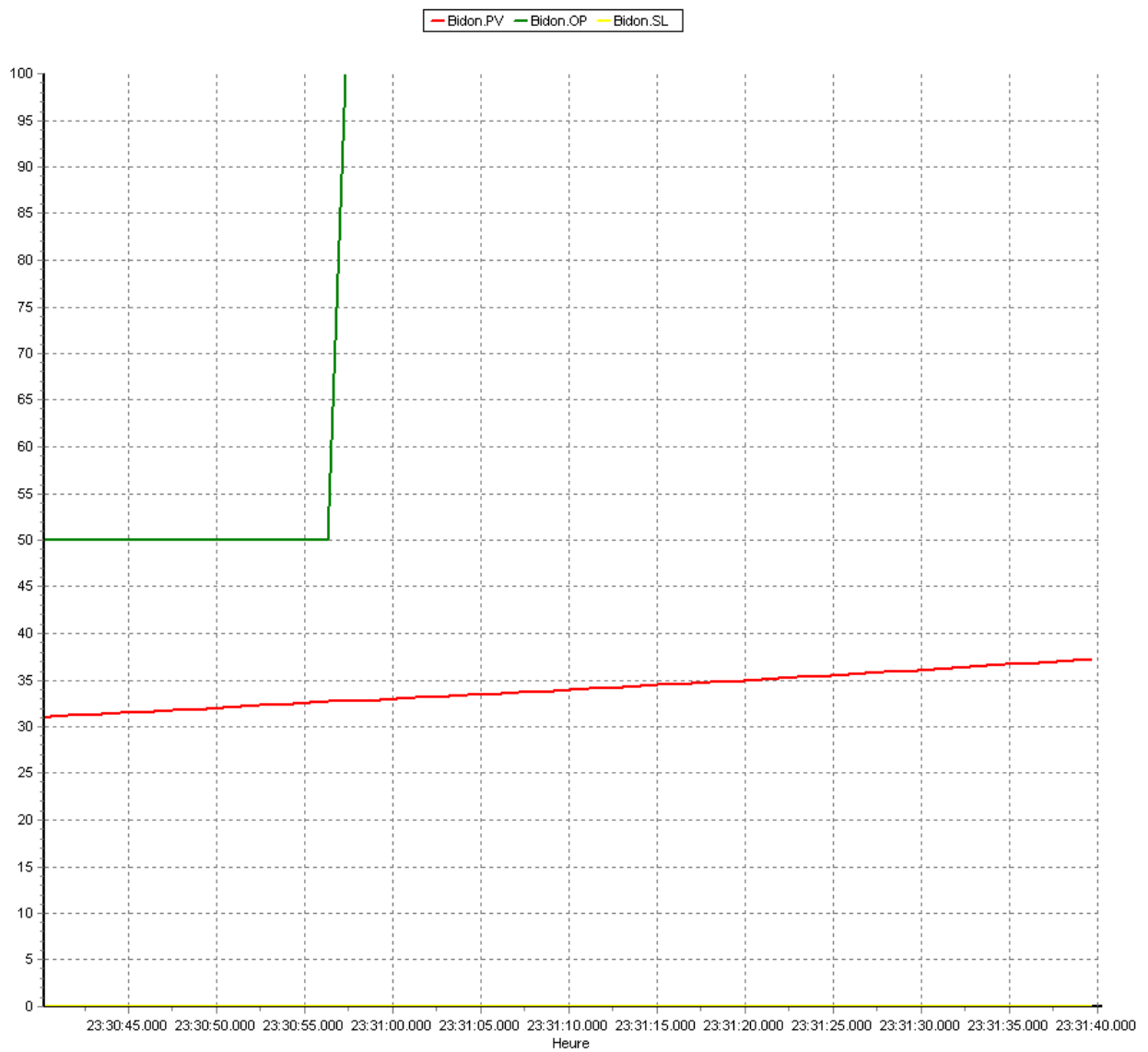
entrée 2

| Block: 01M02_OC | | | | | |
|-----------------|-----------|-------------|--|-----------|----------|
| Comment | | Connections | | | |
| TagName | 01M02_OC | | | Link Name | 01M02_OC |
| Type | AI_UIO | | | DBase | <local> |
| Task | 3 (110ms) | | | Rate | 0 |
| MODE | AUTO | | | Alarms | |
| Fallback | AUTO | | | Node | >00 |
| | | | | SiteNo | 1 |
| PV | 0.0 | % | | Channel | 2 |
| HR | 100.0 | % | | InType | mA |
| LR | 0.0 | % | | HR_in | 20.00 |
| | | | | LR_in | 4.00 |
| HiHi | 100.0 | % | | AI | 0.00 |
| Hi | 100.0 | % | | Res | 0.000 |
| Lo | 0.0 | % | | | |
| LoLo | 0.0 | % | | CJ_type | Auto |
| Hyst | 0.5000 | % | | CJ_temp | 0.000 |
| | | | | LeadRes | 0.000 |
| Filter | 0.000 | Secs | | Emissiv | 1.000 |
| | | | | | |
| Char | Linear | | | Delay | 0.000 |

sortie 2

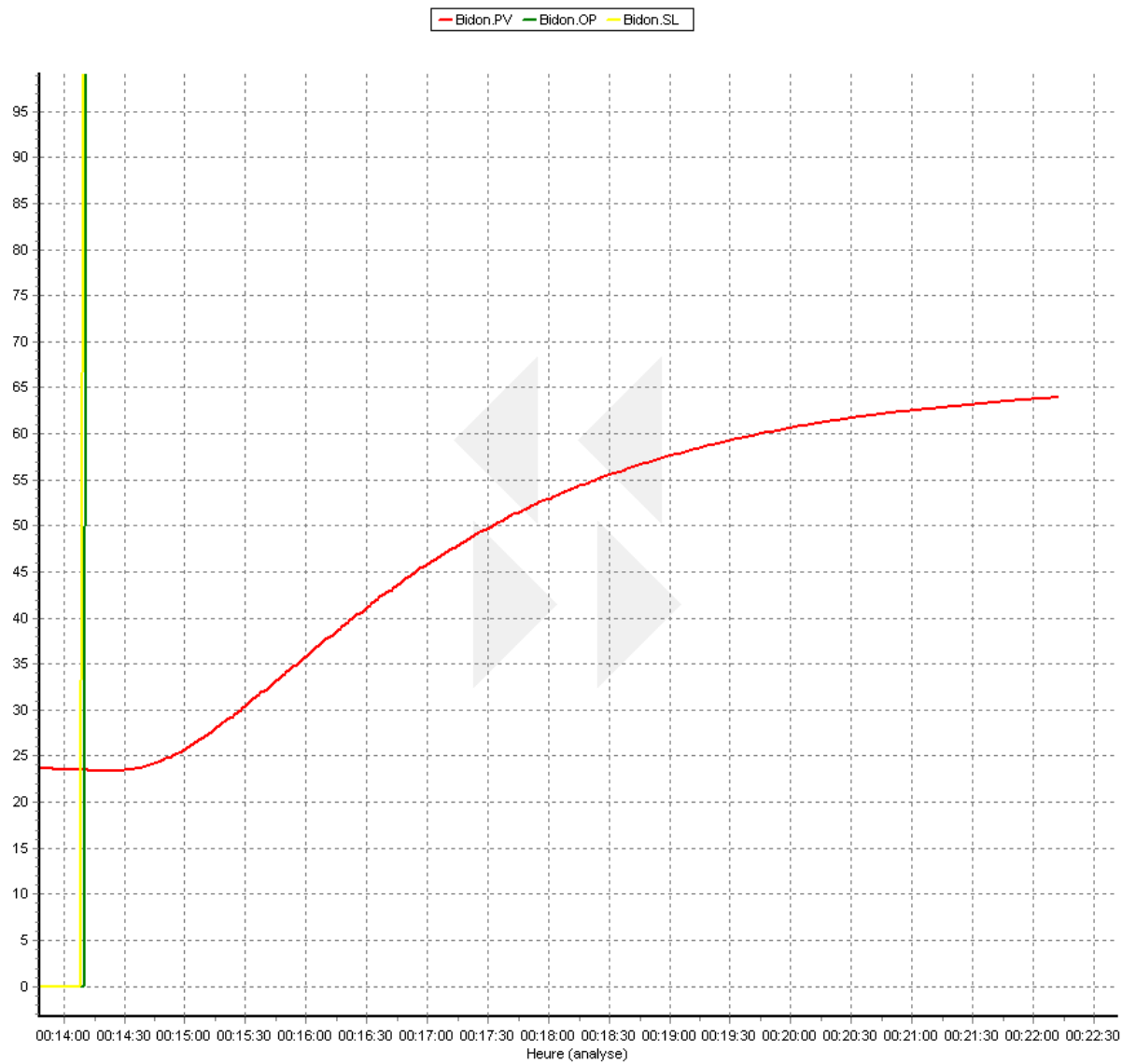
| Block: 02P02_OC | | | | | |
|-----------------|-----------|-------------|--|-----------|----------|
| Comment | | Connections | | | |
| TagName | 02P02_OC | | | Link Name | 02P02_OC |
| Type | AO_UIO | | | DBase | <local> |
| Task | 3 (110ms) | | | Rate | 0 |
| MODE | AUTO | | | Alarms | |
| Fallback | AUTO | | | Node | >00 |
| | | | | SiteNo | 2 |
| OP | 0.0 | % | | Channel | 2 |
| HR | 100.0 | % | | OutType | mA |
| LR | 0.0 | % | | HR_out | 20.00 |
| | | | | LR_out | 4.00 |
| Out | 0.0 | % | | AO | 0.00 |
| Track | 0.0 | % | | | |
| Trim | 0.000 | mA | | Options | >0000 |
| | | | | Status | >0000 |

3)



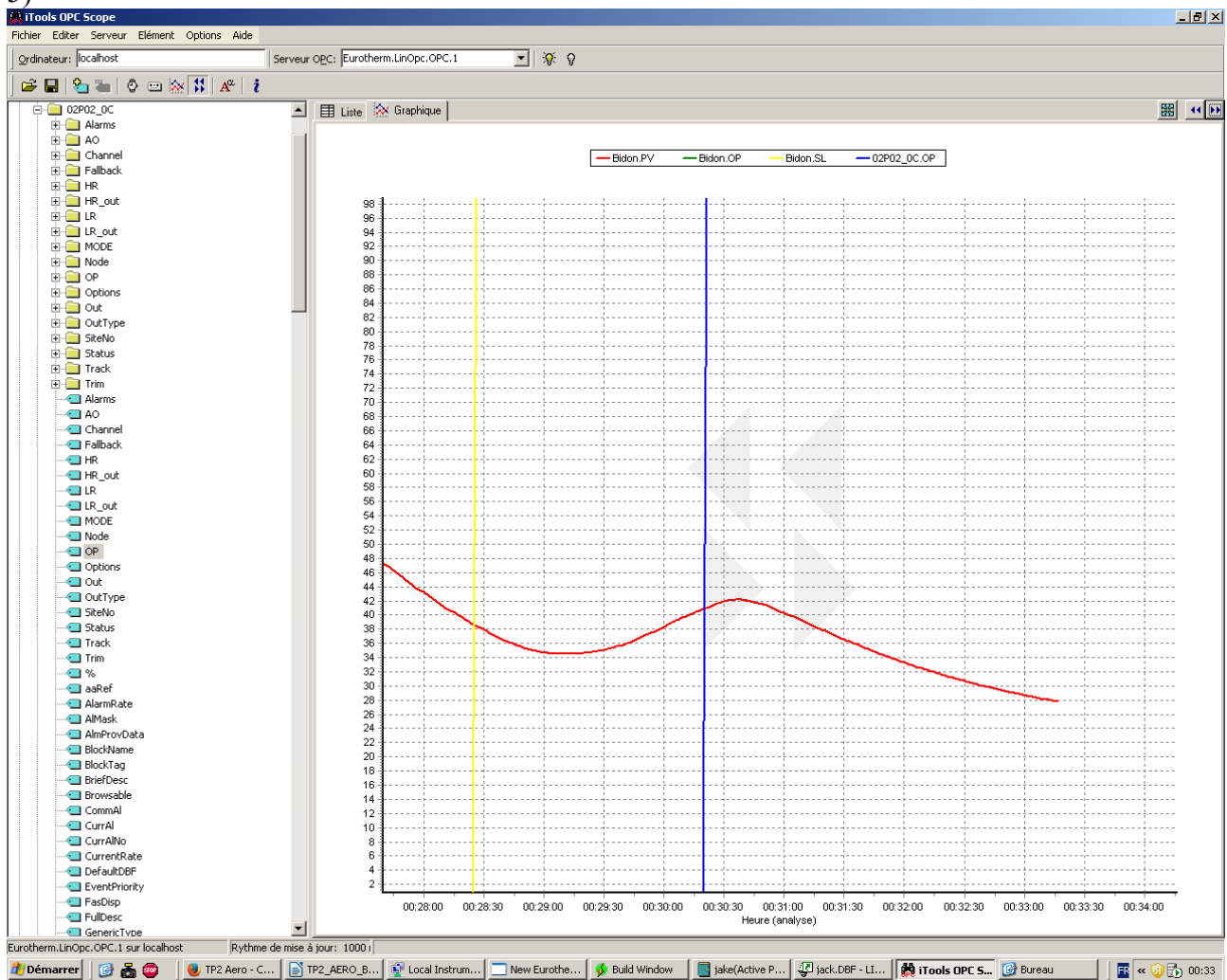
Quand on augmente Y, X augmente , procède direct, régulateur inverse

4)



| TimeBase | Secs | |
|----------|------|---|
| XP | 20.0 | % |
| TI | 0.00 | |
| TD | 0.00 | |

5)



II. Régulation mixte

- 1) on ajoute une mesure en plus pour anticiper les effets d'une perturbation sur la grandeur réglée.
- 2)

2)

The screenshot displays the Jack DBF software interface. The main workspace shows a control loop diagram with the following components and connections:

- Inputs:** Two analog input blocks labeled `AT_U10 01M01_OC` and `AT_U10 01M02_OC`.
- Controller:** A `PID Bidon` block that receives inputs from the two analog input blocks.
- Summing Junction:** A block labeled `ADD2 nul` that receives the output from the `PID Bidon` block and a feedback signal from `AO_U10 02P02_OC`.
- Output:** The output of the summing junction is connected to an analog output block labeled `AO_U10 02P01_OC`.
- Feedback:** A feedback path connects the output `AO_U10 02P01_OC` back to the summing junction via the `AO_U10 02P02_OC` block.
- Additional Block:** A block labeled `AT_U10 01M03_OC` is shown at the bottom left of the workspace.

Text instructions in the workspace:

```

!!!!!! IF NOT A LAYER DATABASE !!!!!!
!!!!!! RENAME DIAGNOSTIC BLOCKS !!!!!!
!!!!!! THEN DELETE THIS MESSAGE !!!!!!

Use I/O page to configure I/O function blocks.

```

The right-hand side of the interface features a **Palette** with various function blocks categorized under `Batch`, `Comms`, `Condition`, and `Control`. The `Control` category is expanded, showing blocks like `3_TERM`, `AN_CONN`, `ANMS`, `DG_CONN`, `DGMS`, `LOOP_PID`, `MAN_STAT`, `MODE`, `PID`, `PID_LINK`, and `SETPOINT`. Below the palette is a yellow **ADD BLOCK** tooltip that reads: "Sums a pair of scaled analogue inputs & outputs the result after applying high & low limits."

At the bottom, the **Properties** table for the selected `ADD2 nul` block is displayed:

| Tagname | nul | LIB Name | nul |
|---------------|-----------|----------|---------|
| Type | ADD2 | DBase | <local> |
| Task | 3 (110ms) | Rate | 0 |
| Alarms | | | |
| → PV_1 | 0.0 | | |
| K_1 | 1.000 | | |
| → PV_2 | 0.0 | | |
| K_2 | 1.000 | | |
| OP | 0.0 | | |
| HL_OP | 100.0 | | |
| LL_OP | 0.0 | | |

The bottom status bar shows the following information: "For Help, press F1", "Tags: None", "DB: <jack.DBF>", "413, 534", "100%", "Database Editor". The taskbar at the very bottom includes icons for "Démarrer", "TP2 Aero - C...", "TP2_AERO_B...", "Local Instrum...", "New Eurothe...", "Build Window", "jake(Active P...", "jack.DBF* - ...", "iTools OPC Sc...", "Bureau", and a clock showing "00:53".

3) $k = \Delta S / \Delta E = 29/12 = 2,4$

4) Je ne sais pas

5) Je ne sais pas