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For Your Library —
Proceedings are available from the Second International Conference on System Simulation in Buildings, held December 1-3, 1986 at the University of Liege, Liege, Belgium. For more information, please contact Dr. Jean LeBrun, University of Liege, Laboratory of Thermodynamics, Rue Ernest Solvay, 21, Bat. C3, B-4000 Liege, Belgium.

Also, proceedings from the Building Energy Simulation Conference held August 21-22, 1985, in Seattle, WA, are still available. The contact person is Edward Knipe, 28231 Ridgepoint Court, Rancho Palos Verdes, CA 90274.

Conferences —


Apply Yourself! — The IBPSA application form has been modified slightly; it is printed on page 17.
THE HEAT EXCHANGER

by

Bruce Birdsall

Question: When it comes to "Schedules", I get confused. Could you give a simple explanation of how to use Schedules in DOE-2??

Answer: "Load Profiles" in other computer programs are known as "Schedules" in DOE-2. There are three types of basic schedules used in BDL for the entire program:

1) DAY—SCHEDULE — Defines a day's hourly profile; a separate DAY—SCHEDULE is required for each type of day.

2) WEEK—SCHEDULE — Assigns each day of the week (MON, TUES, etc.) to a particular hourly profile (DAY—SCHEDULE).

3) SCHEDULE — Defines the types of week in the year; allows for the definition of calendar periods, such as summer vacations, etc.

In its simplest form, the input for DAY—SCHEDULE looks like:

U—NAME = DAY—SCHEDULE (hours covered) (values for each hour)

For example:

LTG—1 = DAY—SCHEDULE (1,24) (0,0,0,0,0,0,0,0,0,3,6,8,1,1,1,1,0,0,0,0,0)

Optionally, this can be shortened by writing:

LTG—1 = DAY—SCHEDULE (1,8)(0) (9,11) (.3,6,8) (12,18) (1) (19,24) (0)

which is representative of the profile for a weekday. Always read the hour ending a period as the real start time for the next period; i.e., (1,8) (0) (9,11) (.3,6,8) ... indicates the lights were "off" until 8am and "on" from 8 to 11.

For weekends and holidays, let's assume that:

LTG—2 = DAY—SCHEDULE (1,24)(0)

The purpose of the WEEK—SCHEDULE should now be apparent; we have two day types — one that represents weekdays, and another for weekends and holidays. The form of the WEEK—SCHEDULE is:

U—NAME = WEEK—SCHEDULE (†) (U—NAME of DAY—SCHEDULE referenced)

† days of week covered
Using the previously defined DAY—SCHEDULEs LTG–1 and LTG–2, the example can be carried forward with:

| NORMAL = WEEK—SCHEDULE (MON,TUE,WED,THU,FRI) LTG–1 |
| (SAT,SUN,HOL) LTG–2 |

Optionally, this can be shortened to:

| NORMAL = WEEK—SCHEDULE (WD) LTG–1 (WEH) LTG–2 |

where (WD) stands for weekdays and (WEH) for weekends and holidays. If Saturday is considered part of the normal week, you have to write (MON,SAT) LTG–1 and (SUN,HOL) LTG–2.

To illustrate the purpose of the SCHEDULE, assume we have a school that is closed in the summer and on weekends and holidays. Therefore, we need another week type:

| VACATION = WEEK—SCHEDULE (ALL) LTG–2 |

where (ALL) stands for all days of the week, including holidays, and LTG–2 was the DAY—SCHEDULE representing lights as being “off” for 24 hours.

In its simplest form, the input for SCHEDULE looks like:

| U-NAME = SCHEDULE(THRU †)(U-NAME of WEEK—SCHEDULE referenced) |

† calendar period covered

To finalize the example:

| LIGHTS = SCHEDULE THRU JUN 10 NORMAL |
| THRU SEP 5 VACATION |
| THRU DEC 31 NORMAL |

Another option, “nesting of schedules”, can simplify the preparation of schedules. In the above example we could have bypassed the WEEK—SCHEDULEs by “nesting” the DAY—SCHEDULEs in the SCHEDULE itself. For example:

| LIGHTS = SCHEDULE THRU JUN 10 (WD) LTG–1 (WEH) LTG–2 |
| THRU SEP 5 (ALL) LTG–2 |
| THRU DEC 31 (WD) LTG–1 (WEH) LTG–2 |

Further, if there had been no vacation period, the DAY—SCHEDULE as well as the WEEK—SCHEDULE could have been bypassed by “nesting” as follows:

| LIGHTS = SCHEDULE THRU DEC 31 (WD) (1,8)(0)(9,11)(3,6,8)(12,18)(1)(19,24)(0)(WEH) (1,24)(0) |

In the BDL for SYSTEMS, there are special requirements for DAY—RESET schedules, in PLANT there are DAY—ASSIGN schedules, and in ECONOMICS there are DAY—CHARGE schedules, but they all follow the same pattern described above.