• PB • OSB • MDF

X-RAY DENSITY PROFILE ANALYZER

DPX300

TO MEASURE BOARD THICKNESS AND TO PROVIDE THE DENSITY PROFILE

The DPX300 is a laboratory machine, used to supply the density profile of particleboard, OSB or MDF samples, measured along the thickness. The samples may be of varying thickness and may be measured individually or in groups so as to highlight any particular differences in material distribution at various points on the same board (e. g. different distribution on the two sides of the same board). The machine has been manufactured using top quality products and the most advanced, sophisticated technology. Its ergonomic and functional design provide handy access to all instruments in a work friendly environment.

MAIN FEATURES

• No contact with the sample • High sensitivity and good measuring accuracy • Greater intrinsic safety in relation to radioactive sources.

A special 3D programme designed to run with Windows, is used to set up the main parameters required to operate the equipment and to manage the measurement data collected. Thanks to this programme it is possible to view the density profile graph during the measurement procedure, to store it, print it, or to process some of the measurements. You can also select and display, for instance, some of the functions listed below: • Average density • Mirror image on the same density profile graph to highlight any differences which there could be between the two surfaces • Maximum and minimum points • Profile density as a percentage (0-100%) or in kg/m^3 • Comparison of two different density profiles on the same graph • Magnifying of any one area of the density profile.

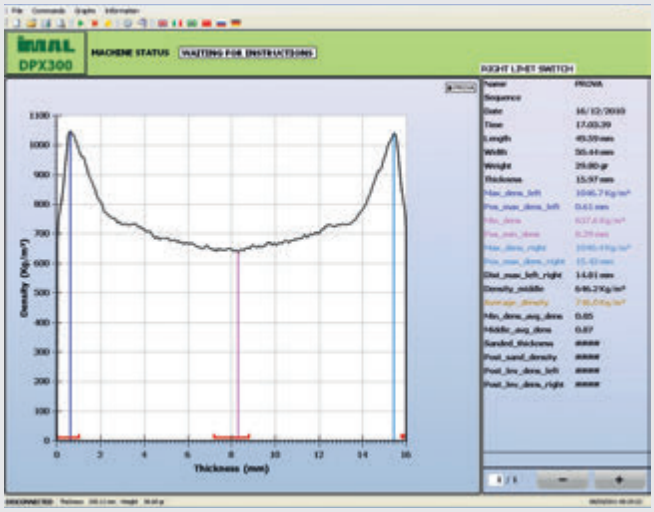
Each graph can be stored in the programme's database, which is Access (*.mdb) format, and by means of a simple dialogue box, it is possible to carry out searches on the data stored, using various search criteria (more than one of these may be used at a time) like: • Production name • Lot • Thickness • Date • Time period (last x days) • You can also configure zones called "average left", "average centre" and "average right" of the board on which you may calculate a partial density average, and which can be shown on the graph.

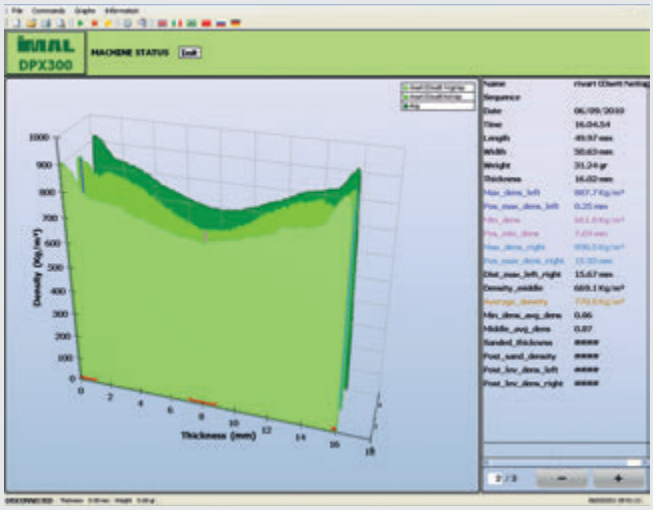
The whole machine has been planned and designed with the operator's safety as the main objective; this is why an X-ray tube has been used instead of a radioactive source.
The intrinsic safety of employing an X-ray tube is due to two main factors: • If there is no power supply going through to the X-ray tube, there is no emission whatsoever • As tube emission is strictly linked to the control electronics, it is possible to obtain an amount of X-ray emission which gives excellent measuring resolution and accuracy but which, at the same time, is well below the intensity of radioactive sources normally used in industry, and therefore less dangerous.

Furthermore, the material used to construct the container, and the internal layout of the various components are such that there is no risk of any emission outside the apparatus.

FUNCTIONING PRINCIPLE

The system proposed, based on the X-ray control theory, can analyse the density profile without any contact at all between material and measuring instrument: it comprises an X-ray source and a receiver, between which the density profile sample is placed. The sample is placed in a tray holder and is moved using high precision mechanics, which guarantee extremely small and accurate positioning and movements. Two sample holders are supplied so that the operator may prepare a second set of samples while the first lot is being tested, to speed up the various operations.
The machine is of horizontal construction, which, as well as ensuring that it takes up as little space as possible, means that it is also easily integrated with other IMAL automatic and semi-automatic measuring equipment like Autolab and IB700. All the electronics required to govern movement and operation of the measuring unit (X-ray tube and relative receiver), are housed in one solid and compact assembly. The ideal emission intensity for the material being tested is obtained by varying the current and/or voltage to the X-ray tube. Rapid response and precision are the two main features of the receiver employed. The combination of these two features makes it possible, for the first time ever, to reach incredible speeds, whilst maintaining at the same time, exceptional precision as well as excellent measuring repeatability.





TECHNICAL DATA	
SIZE OF SAMPLE HOLDER	350 mm
SAMPLE THICKNESS	1÷ 100 mm
MEASURING TECHNOLOGY ADOPTED	Collimated X-ray source 25 kV - 0.25 mA
SCANNING SPEED	0.01 ÷ 0.5 mm/s
RESOLUTION	0.01 ÷ 0.05 mm
REPEATABILITY	0.1%
PRECISION	±0.1%
DATA PROCCESSING STANDARDS	DIN, EN, ASTM, ANSI