

4.4.1. SPECIAL PHASED ARRAY ULTRASONIC PROBES PERFORMANCES USED WITHIN ONTARIO POWER GENERATION INSPECTIONS

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The paper presents technical aspects of designing, manufacturing, lab and field performances of special 1-D linear array probes used for in-situ inspection of turbine component and weld inspection. The probes are categorized in the following categories (see Table 1).

Table 1. Types of Special PAUT Probes

Probe type	Technical problem	Application	Remarks
P 19	Limited access	L-1 steeple	Inspection under the blades
P 31	Limited access	R10, R9 blades	Inspection on curved platform, excavations
P 52	Limited access	L-0 steeple	High accuracy in near surface zone-side technique
P 58	Limited access	L-0, L-1 blades	Sub-miniature probe; Use L-waves direct contact
P 62	Limited access	R20,6 blade	Sub-miniature probe – T-waves
P63	Limited access	R20, R6 blades	Sub-miniature probe – t-waves
P 37	Optimize inspection	Blades-top	Optimize detection-sizing; sub-miniature probe
P56	Optimize inspection	Blades-wing	Optimize detection-sizing;
P 15	Software-productivity	L-0 steeple	Multi-head L-waves, single outlet
P 16	Software-productivity	L-1 steeple	Multi-head L-waves, single outlet
P 81	Sizing deeper range	BFPV	12 MHz, 64-el-hard face L-waves
WK 43-30REX	Sizing-skip	Welds [8 – 25 mm]	Integral wedge Rexolite™; high-damped probe
WK 9-30REX	Sizing-skip	Welds [20 – 50 mm]	Integral wedge-Rexolite™, high damped probe
WK 44-30REX	Sizing skip	Welds [40 – 80 mm]	Integral wedge Rexolite™

Examples of probe characterization, detection and sizing performances are presented for each group. Figure 1 illustrates different aspects of special probe performances in detecting and sizing linear indications.

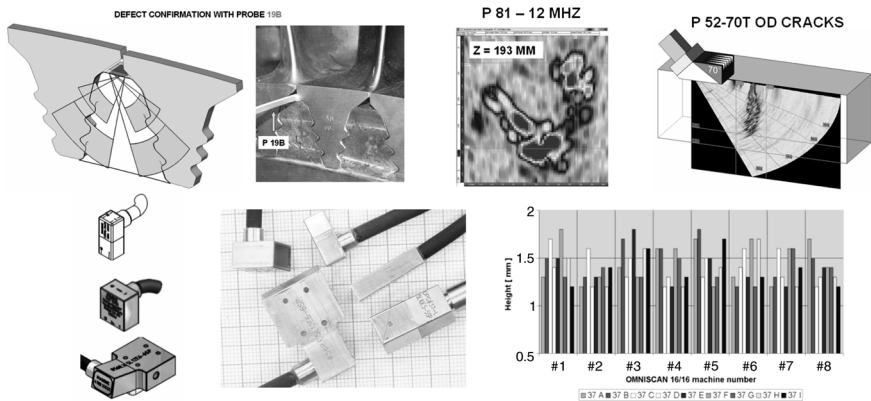


Fig. 1. Examples of special probes performances for detection and sizing linear defects