



EPD - BANGALORE

**Purchase Specification for
Silicone Rubber Injection
Moulding Machine- 630 T**

**SPECIFICATION NO.
EP-WEX-IM/2015-16**

		<p>Vacuum device complete with pump a) Flow rate : 63 cu.m/ hr b) Vacuum Pressure : 0.1mBar integrated to the Injection Molding Cycle in auto mode</p> <p>Effective vacuum connections should be provided in the mould . The suction point in the mould must be design such that it must not block during operation.</p> <p>Digital display of vacuum pressure with PLC Interlock</p> <p>Multi zone heating (preferably three zones) to ensure effective heating through platens and heating plate attached to CRB.</p> <p>Core Puller arrangement to avoid warping of FRP rod during molding sync with machine program</p> <p>Silicone stuffing device with hydraulic opening and closing with volume matching the machine capacity specification.</p> <p>Safety curtain at front and rear end of the machine for operator safety.</p>
17.1	Mold loading & unloading facility	Machine must have facility to easily load and unload the mold and CRB together or separately.
18.0	Mould Specification (Refer Annexure I for Product drawing)	
18.1	Mould Description	2 cavity Flexi-mould suitable for manufacturing of silicone based composite Insulators of varying length by Injection moulding of HTV solid silicone rubber
18.2	Purpose	Mould to be used in formation of sheds for composite insulators as per drawing No 398713 70100M & 3-987-13-70200M by HTV silicone Rubber injection molding. These moulds shall have flexible arrangements to add and remove the inserts contributing the shed formation to manufacture the insulators of required length as per drawing.
18.3	Scope of Supply	<p>Design, manufacturing and supply of mould to manufacture composite Insulator as per Drawing No mentioned in slno 18.2 consisting of following.</p> <ul style="list-style-type: none"> ✓ Silicone nozzle point positioned at the top ✓ Silicone flow guide ✓ Cold Runner Block consisting runners for rubber flowing from centre injection point to various mold injection points, insulation slab and heating plate. ✓ Top half of the mould with flexi sheds arrangement

Wac
Ravichandran S
DGM / CTI

hlt 26/3/16
S. Arunachalam
Sr Manager / WEX

yogesh 26/3/16
Yogesh Sharma
Sr Manager / CI

Seshapathi
Seshapathi S
Sr Manager/ IE

Y Ravi
Y Ravi
Dy Manager / WEX



EPD - BANGALORE

**Purchase Specification for
Silicone Rubber Injection
Moulding Machine- 630 T**

**SPECIFICATION NO.
EP-WEX-IM/2015-16**

		<ul style="list-style-type: none"> ✓ Internal ejectors in top and bottom halves of the mold cavities for easy and safe ejection of moulded component. ✓ Bottom plate with flexi sheds arrangements ✓ Effective vacuum connection to the mold ✓ Internal ejectors. ✓ Core Lifters for easy ejection of the component. ✓ Core puller arrangement (pins) to keep the FRP rod at the center during injection moulding ✓ Suitable sliding ejector mechanism to component mounting and removal of the component easy during injection molding process. ✓ Support the overhanging of insulator & easy mounting and removal of component from the machine (enclosed photo or sketch of this mechanism in Techno commercial bid)
18.4	Drawing Approval	Drawing for machine Platen , mold and CRB to be approved by BHEL before manufacturing.
18.5	Overall Dimensions	Mould should match to Injection moulding machine platen such that in open condition sufficient clearance is available between upper and lower half of the mould. This clearance is needed for easy mounting and removal of components during moulding process and cleaning of the mould during operation.
18.6	Injection Moulding Length	Mould shall be so designed to produce 1350 mm length of Insulator in each cavity. (Ref drawings in annexure)
18.7	Top half of mould with flexi sheds arrangement	Top and bottom halves of this mould shall have arrangement for adding and removing the inserts which contributes the shed formation in Injection moulding.
18.9	Internal and External Ejector	For de-molding the component from the Mould to avoid component bending and shed damage internal ejector must be provided in top and bottom halves of the mould. The ejector system must be effective and must not get problem during the operation.
18.10	Core puller	Core puller pins (sync with the injection moulding cycle software) to keep the FRP Rod at center without moving during injection molding. This shall not leave any undulation on the finished component.
18.12	Material	Material used in mould should be – Base Steel C-45 OR equivalent Inserts in the mould should be Steel P-20 (Impax Supreme or Thruhard Hi Hard) OR NAK 80 or equivalent. Supplier should indicate the material of construction of mould, in their offer.

M...
26/3/16
Ravichandran S
DGM / CTI

...
26/3/16
S. Arunachalam
Sr Manager / WEX

yogesh
26/03/16
Yogesh Sharma
Sr Manager / CI

...
Seshapathi S
Sr Manager/ IE

...
26/3/16
Y Ravi
Dy Manager / WEX

18.13	General	<p>Alignment of All the sheds should be proper. Addition and Removal of inserts from the mould should be easy and must be able to add and remove inserts without removing mold from the machine upto flexi sheds arrangement.</p> <p>Fasteners used in the machine and mold must be IS standard and easily available in market.</p> <p>Tear groove must be provided around the article, in the inserts for easy removal of flash from injection molded component. Landing of tare groove must be such that the partition line mark must be negligible.</p> <p>Cavity surface should be induction hardened and treated, polished followed by mat finished preferably and nitriding to facilitate easy ejection of the moulded component during injection molding process.</p> <p>End inserts of Mold must be suitable to Metal fittings design and must have biting ring to avoid damages to the component and provide proper sealing.</p>
18.14		<p>Suppler has to take necessary drawing approval of the mold drawing showing all the features in the submitted drawing before taking up mold manufacturing.</p>

19.0 Cold Runner Block

19.1	Purpose	<p>It shall designed such that the runner wastage for the molded component must be minimum. During operation it must provide the optimum temperature uniformly to have better rubber flow during injection molding process.</p> <p>Just before material entering into the mold cavities CRB must maintain the rubber temp to avoid rubber curing in these channels during operation.</p>
19.2	Scope of supply	<p>Complete CRB system consisting following</p> <ol style="list-style-type: none"> 1. Oil circulation zone to control runner temperature, 2. Silicone runner guide 3. Nozzles (optimum locations for minimum runner wastage) 4. Insulation slab 5. Heating plate & Power supply 6. Silicone flow control mechanism

Ravichandran S
26/12/16
Ravichandran S
DGM / CTI

S. Arunachalam
28/13/16
S. Arunachalam
Sr Manager / WEX

Yogesh Sharma
26/03/16
Yogesh Sharma
Sr Manager / CI

Seshapathi S
Seshapathi S
Sr Manager/ IE

Y Ravi
26/12/16
Y Ravi
Dy Manager / WEX