

TECHNICAL EVALUATION FOR PRE-QUALIFICATION OF EXISTING FISH FEED MILLS TO UPGRADE FOR SHRIMP FEED PRODUCTION THROUGH FINANCIAL ASSISTANCE UNDER DEVELOPMENT PROJECT "PILOT SHRIMP FARMING CLUSTER DEVELOPMENT PROJECT"

	NAME OF FEED MILLS	Hi-TECH FEEDS (ESTABLISHED in 1985) FISH FEED MANUFACTURING START FROM 2020	AMG-THAIUNION FEED MILL PVT LTD ESTD. 2021. (Previously: AMG Feeds Estd. 2014)	AQUA FEED (PVT) LTD. YEAR of ESTABLISHMENT 2017 PROOF: yes NTN	SHARIF FEEDS MULTAN 2021
Sr. #	PARTICULARS	OBTAINING MARKS			
1	GENERAL INFORMATION (05)	1.00	3.83	3.83	1.50
2	UTILITIES (05)	4.50	2.00	4.00	4.50
3	QUALITY CONTROLS (04)	2.00	0.00	2.00	2.00
4	STORAGE OF MATERIALS (02)	2.00	1.50	1.50	2.00
5	GRINDING SECTION (15)	2.00	2.00	1.00	4.00
6	SIEVING SYSTEM (02)	1.00	1.00	0.00	1.00
7	MIXING SECTION (03)	3.00	3.00	3.00	3.00
8	CONVEYING SYSTEM (02)	2.00	2.00	1.50	2.00
9	FEED PRODUCTION TECHNOLOGY (14)	14.00	3.00	4.00	9.50
10	ADDITIONAL INFORMATION ON EXTRUSION SYSTEM (07)	7.00	1.00	3.50	5.50
11	DRYING SYSTEM (10)	8.25	8.25	8.50	7.75
12	COATING SECTION (04)	4.00	4.00	4.00	4.00
13	COOLING SECTION (02)	2.00	2.00	2.00	2.00
14	PACKAGING SECTION (02)	2.00	0.25	1.75	1.75
15	AUTOMATION (02)	2.00	1.00	1.00	2.00
16	DETAILS OF RAW MATERIALS (03)	2.50	2.25	2.25	2.00
17	FINISHED GOODS (05)	4.00	2.00	3.50	2.50
18	CUSTOMER SUPPORT POLICY (02)	1.50	1.50	1.50	1.50
19	HUMAN RESOURCE (03)	3.00	0.00	2.50	2.00
20	TECHNICAL AGREEMENTS (03)	3.00	3.00	3.00	2.00
21	ENVIRONMENT PROTECTION (02)	2.00	2.00	2.00	2.00
22	KEY STRENGTHS AND FUTURE PLAN (03)	2.50	2.50	2.50	2.50
<b>GRAND TOTAL</b>		<b>75.25</b>	<b>48.08</b>	<b>58.83</b>	<b>67.00</b>





### Recommendation

Extrusion System technology plays a critical role in the processing of complex feed ingredients due to its functional versatility, room to change/adjust production parameters and to produce desired quality of both the floating and sinking feed. Shrimp feed is rather challenging to produce not only due to small diameter pellets but the requisite high stability in saline water, full sink ability and nutrients availability. In the questionnaire and during the physical verification process, the highest attention was therefore paid to the technological features, flexibility and versatility of extrusion systems as the most critical elements followed by other installed facilities.

1. Seven segment extruder, separate shear locks and barrel components to help desirable cook through sheer force, more extrusion time and raised flights aided by provision of steam injection in barrel and jacket.
2. Provision of segment wise injection of water in jacket to cool down the feed and to prevent feed expansion.
3. Barrel provides mid-level bolted head for installation of pressure reducing valve which is an essential component for stable sinking shrimp feed production.
4. Dual shaft conditioning cylinder for thorough mixing, kneading, gelatinization and cook, provision to add liquids, sanitary provision for wash and fitted with environment friendly vent at distant end.

In view of the minimum gaps and a capable extrusion system with installation of some additional barrel components, M/S Hi-Tech Feeds is

**Recommended** as an eligible entity, for the admissibility of grant after fulfilling the requisite formalities under this project.

1. Short barrel with only 4 segments of each of 3 x 2-3TPH extruders, do not allow sufficient processing of complex feed materials.
2. Minimum flights of screws do not exert required sheer force for sufficient friction against the barrel which is typical of extrusion cooking. More reliance on injection of steam in barrel, which expands feed-necessary for float.
3. Extruder jacket has no provision to run water to cool down and to prevent feed expansion.
4. Locally made screws (by manufacturers of extruders for plastics industry) and barrel components, with limitation of advanced metallurgy and engineering fails to meet challenges of functional versatility for quality feed production and equipment reliability.
5. No provision for any pressure reducing valve, densification tube or vacuum in the extruder barrel to remove excess pressure to increase feed density.
6. More reliance on steam for cooking at high temperature, both in the conditioner and extruder barrel which is not always recommended.

Owing to the identical Extrusion System installed by M/S Aqua Feed as at M/S AMG-Thaunion Feed Mill, with similar supplier of original equipment and subsequent local production of extruder screws and barrel components (by plastics material extruder producers) the evaluation of Aqua Feed Pvt Ltd therefore remains the same. Both the entities were unable to support any contention to modify, remodel or alter the configuration of their extruder by the supplier to make the system fully compatible to produce small diameter and stable sinking shrimp feed.

In view of the extrusion system with essential features to produce floating feed only with little room for upgradation or remodelling, M/S Aqua Feed PVT LTD is **Not Recommended** as an eligible candidate for the admissibility of grant or any further processing of their application.

1. One 5TPH double screw extruder with short barrel (4 segments).
2. Each segment has separate manifolds for steam and water injection in the jacket and the drain thereof, which suggests that extruder could produce sinking feed through appropriate formula, RPM control and cooling down the barrel to prevent feed expansion.
3. Entity provided the extruder suppliers confirmation on the suitability of system for the installation of pressure reducing valve or a densification tube for hassle free sinking shrimp feed production.
4. The screw flights found to be of sufficient height (similar to Hi-Tech Feed extruder), which is crucial for proper extrusion.

In view of the present state of extrusion system of M/S Sharif Feeds, which is compatible to produce sinking feed after installation of some additional barrel components, they are **Recommended** as eligible candidate for



		In view of the extrusion system with essential features to produce floating feed only and little room for upgradation, re-configuration or re-modelling, M/S AMG-Thaunion Feed Mills is <b>Not Recommended</b> as an eligible candidate for the admissibility of grant or any further processing of their application.		the admissibility of grant after fulfilling the requisite formalities under this project.
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Approved by Committee for standardization of specifications of M&E and Tender /Consultancy documents

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