Automatic Border Weft Insertion in Handlooms - An Innovation Developed by Mr. Banumurthi

Mr. P.L. Banumurthi (65) belongs to traditional weavers' community living in Dhurugam village, Thiruvannamalai District. He developed Automatic Border Weft Insertion in Handloom. He recieved SRISTI Sanman Award during 2006. He has been awarded by National Innovation Foundation in the 4 th round competition during 2007. The new design making set reduces one labour instead of two labourers required in the conventional system.This also increases the efficiency of weaving by doubling the speed, i.e. 4 meter weaving can be achieved by a single weaver instead of 2 meter weaving time required in conventional loom by two weavers in contra color border sarees. A weaver will earn upto Rs. 15000 per month through this innovation from Rs. 10000 per month in weaving silk sarees in the conventional loom.

Working Mechanism of Automatic Border Weft Insertion Technology

Usually, border weft yarns are inserted by two persons - one assistant for inserting weft on one side border and the weaver himself for inserting weft on the other side border. A modification is done in the handloom to carry out automatic weft insertion on both border sides.

There are two bobbins containing border weft thread kept on left hand side and right hand side of the looms. Weft yarn passes through a guide bar, the lifting of which is controlled by the jacquard. The body warps are controlled by the heald frames and the border warps on both sides of body warps are controlled by jacquard separately.

At first, right side treadle and jacquard treadle are pressed with right leg. Now, the right side border head is raised. Shuttle passes from right to left. During that passage, it inserts the right border weft. Both the treadles are released and again pressed. Now the left border weft gets raised and when the shuttle passes from left to right it carries the left border weft as well as body weft both are inserted in the shed.

Now, left side treadle and jacquard treadle are pressed with left leg. There is a shed change for both the body as well as border warp yarns. Shuttle passes from right to left. When it passes, it carries the right border weft. Both the treadles are released and again pressed. The left border weft gets raised and when the shuttle passes from left to right, it carries the left border weft as well as body weft through the shed.

By following the above sequence repeatedly the border wefts and body wefts are inserted automatically and for inserting one complete weft (both border wefts and body weft) the

same body shed has to be kept opened twice. Jacquard punching has to be done according to the sequence very carefully. The cost of new design making set in the existing loom is Rs.5000/-.

Advantages of Modernization

1. It will reduce the drudgery by increasing the speed of weaving (double the speed).
2. It will reduce one labour instead of 2 required in conventional weaving.
3. The quality of saree finishing is fine and neat and it fetches good market demand.
4. The video demo can be seen: https://www.youtube.com/watch?v=chhWHjeSrCk

Feedback from Textile Technology Institute and Indian Institute of Handloom Technology

We have shown this technology to S.S.M. Institute of Textile Technology & Polytechnic College, Komarapalayam, Erode district.

Prof Gopalakrishnan, Design Department of the S.S.M. Institute of Textile Technology & Polytechnic College, Komarapalayam has endorsed this innovation and he confirmed the advantages mentioned in this new method. They also assured to take up this project for little refinement before adoption in other areas. Their contact address is

Prof. R.Muthusamy,
Principal I / c,
S.S.M. Institute of Textile Technology & Polytechnic College,
Salem Main Road, S.S.M.Nagar, Komarapalayam - 638 183
Namakkal Dt. Phone : 04288 - 260197, 262197
email : ssmitt@sancharnet.in

We also forwarded this innovation to Director, Handlooms in Kuralagam, Chennai. In turn, Department of Handlooms and Textiles, have deputed one Technical Officer Mr Mahalingam to verify the innovation and later after verification, they have confirmed the usefulness of innovation to handloom weavers. We are expecting their official letter of appreciation.

Two scientists viz Mr Panneerselvam and Mr YK Suryavanshi from Indian Institute of Handloom Technology, Salem, Tamil Nadu have visited this new technology on 26 July 2006 at T Ramanathapuram village and confirmed the usefulness of new technology for improving the productivity of handloom weavers. Test Report is shown in Annexure.

Training to Weavers

New portable loom using iron frame loom for easy transport and easily installed at the village where training is needed. This loom fitted with modified 'jacquard' design, fly shuttle, improved charka and alterations in the resource centre managed by Mr. Banumurthi, Durugam village, Thiruvannamalai district. The cost of making one portable loom will be Rs. 50,000 for new looms and accessories. It will be undertaken under the supervision of Mr PL Banmurthi in addition to using local carpenters' assistance.

In order to a scale up this innovation SEVA has sanctioned a loan amount of Rs.50,000 to Mr. Banumurthy through grassroots innovators association. Later SEVA helped him to avail Rs 1.86 lakhs from Micro venture capital during 2009. His turn over of sales of handloom sarees incresed two times and extra net return is Rs 55,000 annually . It gives additiobnal employment for 4 women weavers enggaed in new innovation in his village.

His innovation has been disseminated in the exhibition and training to the weavers as given below :

1.Training of weavers on New Skill Development for adopting innovative Border Weft Insertion in Handloom :

SEVA has selected 30 weavers from 3 SHGs in T.Ramanathapuram village, Madurai District for undergoing 10 days training from 5-7-2006 to 14-7-06. After this training the SHGs are sanctioned with bank loan under Economic Assitance to the tune of Rs. 4 lakhs for installing new models of handlooms in their premises. During 2012 we have conducted survey about the outcome of training in T.Ramanathapuram and Dhurugam village found that only two weavers are able to follw the new technique . We found that the supply of yarn is under the control of rich waevers/intermediaries and they have to follow the system which discourage adoption of innovation in handlooms.

2. Demonstration through Exhibitions :

During 27-29 September 2103 with help of PSG college of Engineering the innovator has demonstrated his automatic weft insertion technique in CODISSIA Hall in Coimbatore where more than 10,000 members including weavers visited and benefitted. He has been selected for first prize among 512 exhibitors and received cash award of Rs 1 lakh handed over by Prof Anil Gupta who participated as chief guest in the award ceremony . In the Delhi exhibition he received best Craftsman award for the year 2012 from National Craft Council and received Rs 50,000.

3. Adoptation in Kalachetra Foundation :

The innovator has installed one units of new innovation in Kalachetra Foundation,Thruvanmiyur, Chennai during 2006. Many weavers undergo training in this centre and earn good income compared to conventional method of weaving of sarees.

4. Training of weavers in Maharashtra

Mr. Banumurthi innovator has installed his innovation in Kopargan village near Shirdi, Maharashtra is a weaver's handloom Mr. Jayaraj Pawar (Cell: 9518763552) during Feb. 2018.Weavers training programme has been organized on 24-25 April 2018 at Kopargon, Maharashtra. This programme is to orient the local handloom weavers of Yeola on " Automatic weft insertion in handloom". This innovation is very useful for silk sarees where body and border colour of saree varies or in contrast both in design and colour. This type of sarees will fetch premium price and therefore weavers get on additional income up to 20-30 of normal income. Mr. Vivekanandan and Banumurthi have facilitated the training. The trainees have been exposed to this innovation and trainee undergo developing skill to operate the new model while it saves time and labour.(details with list of participants in Annexure-1)

5. Training of weavers in Telangana

Mr. Banumurthi innovator has installed his innovation in Dharmavaram town in Telengana state in the weaver's loom of Mr. Nageswar Rao last week of March 2018. (Mr Nageswar Rao is running about 100 handlooms in a multistoreyed building and many weavers are employed). We are in discussion with the master weaver in providing training programme for the local weavers in future.

6. Training of weavers in Odisha

Mr. Banumurthi visited Kraushansarapura, Khurda district, Odisha for Training programme to handloom weavers on 20-28 November 2018. Mr. Parvesh Chandra weavers agent (contact phone: 9437708254) made arrangements for all logistics for the weavers training.

7. Training to School Children:

During COVID 19 pandemic period promoted the idea of engaging school children for learning skills in handloom weaving. Nowadays there is no transfer of skill from older generation to younger generation and lack of vocational training in schools especially in handloom weaving. He therefore invited 20 students for undergoing two days training programme in his native village Durugam, Thiruvannamalai district during May 2020. There is good demand for such training in nearby villages too.

Awards :

He received awards for his innovation from the following agencies: SRISTI Ahmadabad during 2006. National Innovation Foundation, Ahmadabad award during 2007 received from the President of India. Craft Council of India New Delhi during 2013 with cash award of Rs.50000. PSG Institute award for best Innovator during 2013 in the CODISSIA exhibition,

Coimbatore with cash award of Rs.100000. Craft Council of India, Chennai, Kamala Devi Award during 2015.

Address of the Innovator:
Mr. P. L. Banumurthi,
Road street, Durugam - village,
Vannangulam – Post,
Thiruvannamalai - District, Pin code – 632 315
Cell: 9994466498

Annexure - 1
Training Programme on Innovation in Handloom Weaving in Maharashtra

Mr. Banumurthi innovator has installed his innovation in Kopargan village near Shirdi, Maharashtra in a weaver's handloom Mr. Jayaraj Pawar during Feb. 2018.

Weavers training programme has been organized on 24-25 April 2018 at Kopargon, Maharashtra. 26 members attended.

Installation of Innovation at Jayaraj Pawar Weaving Unit

The trainees asked many doubts / clarifications and also experienced new tripple pedelling. The weavers convinced that if they undergo training for few more days they will become expert weavers. They also assured that they will install the new model in their respective handloom with modifications in the Jacquard, pedal and 'pavu'.

Daily two batches between 9 am and 12 noon and between 3p.m. and 6 p.m. were organized on 24th and 25th April 2018. The list of 26 weavers attended the training are given below.

Demonstration to Weavers

Trainees Practice in new Unit

List of Weavers attended Two days training at Kopagan
First Batch Training

S. No.	Name & Address
1.	Mangesh vilas Bakale Gangadrwaja Yeola Nasik, Maharashtra – 423401, Cell : 9272572672
2.	Kohateiya Chirtaman Kohlciya,Kanadi Lane, Yeola, District Nasik (Maharashtra), Cell: 8087658582
3.	Datta Kavntilal Bakle Gowngadaewaja Tanthi,Maidan, Yeola, District Naisk, Maharashtra, Cell : 9423478158
4.	Mr. Prakash R. Pawar Laxminagar Kopargan-423601,District Ahamed Nagar, Cell : 7276335125
5.	Mrs. Bhavana Prakash Pawar Lasminayar, Kopargan, District Ahmednagar- 423501, Cell: 7020435135
6.	Mrs. Manish Nitin khanayure D.G. Road, Yeola (Nashik)- 423401, Cell : 09226743118
7.	Jayaraj Ramchandra Pawan Laxhmi Nagar, Kopargan, District Ahmed Nagar- 423601, Cell : 09518763552
8.	Nitin Chandrakanth Kanapure, D.G. Road, Yeola, Nashik – 423 401
9.	Radha Shyam Sanjay Makeji, Tal: Kopargan, District : A. Nagar- 423601, Cell : 9272062628
10.	Soni Jayraj Pawar Laxminagar, Kopargan, District Ahmednagar – 423601, Cell : 08087513949
11.	Tushar Nitin, Khanapur D.G. Road Yeola, District. Nashik, Cell : 09226743021

Second batch Training

S. No.	Name & Address
1.	Sechin Arjun Pawar Uitha Nagar, Yeola, District Nashik, Cell : 09271606183
2.	Amal . Raju Pawar Prya Deranja Yeola, District Nasik, Cell: 08390283830
3.	Sachin Shandilal Karajkor Ad. Pareyaon Post. Angangan, Yeola, District Nashik, Cell : 08983120324
4.	Vishnu Pavansa Kokne W/O : Patel Masjid, Yeola (Nashik), Cell ; 7522900660
5.	Gayatri Vishnu Kokne D/O. Patel Masjid, Yeola (Nashik), Cell : 09225156144
6.	Deepak Raugnath Khindare Vallabh Nagar, Yeola, District Nashik, Cell : 08087712164
7.	Paresh Rajendra wade Yeala (Nasik), Cell : 8605543376
9.	Yogesh Arun Whatriya Yeola (Masilk), Yagade village, Cell: 9209984345
10.	Saujy P. wade Lhai gali , Yeola, Nashik District, Cell : 8605543376
11.	Indubai R. Pawar Laxminagar, Kopagon, Ahmednagar District. Cell : 9511767351
12.	Shekhar A. Kshartiya Yeola, Nashik, Cell : 9209984523
13.	Yeola (Nasik) Cell : 9028203267
14.	Krishna Talk Yeola, Nasik District, Maharashtra

Test Report from Indian Institute of Handloom Technology, Salem

Annexure - 2

GOVERNMENT OF INDIA
MINISTRY OF TEXTILES
INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY
FOULKES COMPOUND THILLAINAGAR
SALEM – 636001.
Phone No.0427-2296943 Fax No.0427-2295254 Email-iiht_salem@sancharnet.in

No.IHT/HB/403/2006 | 1732

Dated the 8th August, 2006

Shri P.Vivekanandan
SEVA,
45 TPM Nagar,
Viratipattu,
MADURAI-625 010.

Sub: Evaluation of "Automatic Border weft Insertion" Developed by Shri P.L.Banumurthi..

Sir,

Please find enclosed herewith the observation/Evaluation report of the faculty of this Institute regarding the said technique.

From the study it is found that the "Automatic Temple Border weaving Technique" of Shri P.L Banumurthi can be very well adopted in the Handloom cluster where the weavers are weaving Temple border Sarees using 3 or 2 cut shuttles.

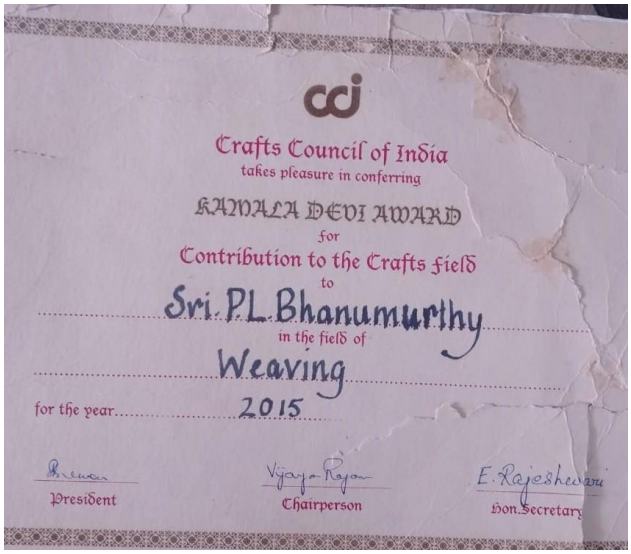
You are requested to obtain a declaration from Shri P.L Banumurthi stating that the Development is of his own and send a copy of the same for our records.

Yours faithfully,

Encl: Observation report

(Dr. S.B. MUTTAGI)
DIRECTOR

Awards Received by Mr. Banumurthi



Crafts Council of India
takes pleasure in conferring
KAMALA DEVI AWARD
for
Contribution to the Crafts Field
to
Sri. P.L. Bhanumurthy
in the field of
Weaving
for the year 2015

President | Chairperson | Hon. Secretary

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CERTIFICATE OF AWARD

This certificate of award is presented to ~~Dr./~~Mr./~~Ms.~~ P. L. Banu murthi in honour of his/her outstanding performance by way of an exemplary exhibit in the National Level Exhibition on Ideas, Inventions and Innovations, a concurrent event of GRD centenary year celebrations, presented by PSG Institutions and Organised by PSG College of Technology, at CODISSIA Trade fair complex, Coimbatore, during 27-29 September 2013 and has secured First Place.

Chairman
i3 Expo 2013

Managing Trustee
PSG & Sons' Charities

हथकरघा उद्योग के संरक्षण को चले अभियान : हमीद

क्राफ्ट काउंसिल द्वारा आना खां हाल में आयोजित भारत की साड़ी प्रदर्शनी में प्रसिद्ध बुनकर पीएल भानुमूर्ति को सम्मानित करती योजना आयोग की सदस्या डॉ. सइदा एस हमीद।

जासं, नई दिल्ली : दिल्ली क्राफ्ट काउंसिल द्वारा आयोजित साड़ियों की तीन दिवसीय प्रदर्शनी भगवान दास रोड स्थित आना खां सभागार में बृहस्पतिवार से शुरू हो गई है। प्रदर्शनी का उद्घाटन योजना आयोग की सदस्य डॉ. सइदा एस हमीद ने किया। इस अवसर पर उन्होंने कहा कि वस्त्र निर्माण की भारतीय कला दुनियाभर में मशहूर है, लेकिन दुर्भाग्य की बात है कि भारत में ही बुनकरों की स्थिति अच्छी नहीं है। यहां बुनकरों एवं हथकरघा उद्योग को संरक्षित एवं संवर्धित करने के लिए राष्ट्रीय स्तर पर अभियान चलाए जाने की जरूरत है। प्रदर्शनी में देश के कई हिस्सों से आए बुनकरों ने वस्त्र निर्माण कला के नमूने पेश किए हैं। प्रदर्शनी में पहले दिन डॉ. हमीद ने तमिलनाडु के प्रसिद्ध बुनकर पीएल भानुमूर्ति को सूत्रकार सम्मान से सम्मानित किया।

क्राफ्ट काउंसिल की सचिव प्रतीक्षा सोमैया ने कहा कि यह अपनी तरह की पहली प्रदर्शनी है। इसका उद्देश्य बिना सिले वस्त्रों की विरासत और इसकी संस्कृति को बढ़ावा देना है।

प्रदर्शनी में चंदेरी : प्रदर्शनी में चिकनकारी, लिनन, खादी, प्रिंट, कांथा, बंधनी, इकत, तसर, लहरिया तथा दक्षिण भारतीय बुनाई के नमूने पेश किए गए हैं।

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Minister warns docs against stir

நம் வழி வேளாண்மை

பருவம் 22 | ஜூலை – செப்டம்பர் 2013 | இதழ் 2

பானுமூர்த்தி – ஆட்டோமெட்டிக் கோர்வை தறி நெசவாளர் பரிசு பெறுதல்

இயற்கை வழி விவசாயிகள், மூலிகை வைத்தியர்கள் மற்றும் அடித்தள கண்டுபிடிப்பாளர்களின் குரலோசை

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